

Co-organisers



Supported by



STROKE COUNCIL

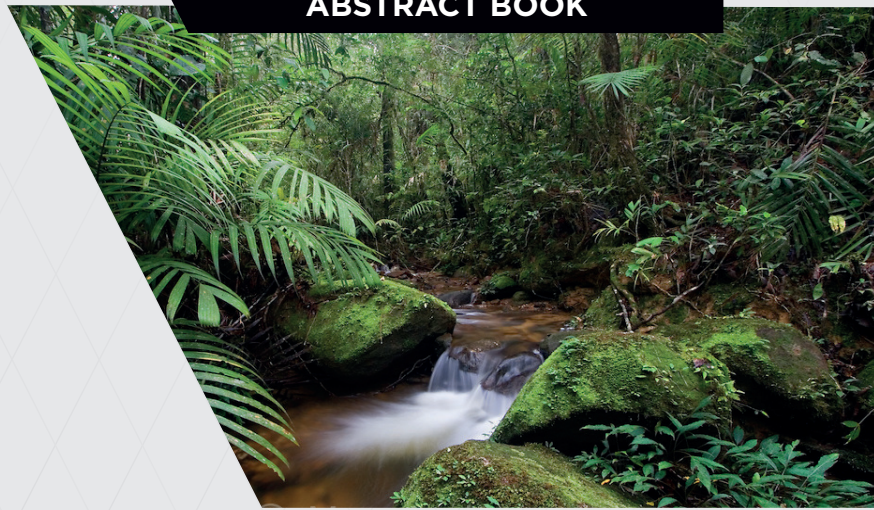
Malaysian Society of Neurosciences (Persatuan Neurosain Malaysia)



Endorsed by



ABSTRACT BOOK



Alumni Meeting 2018

of International Masters of Neurovascular Diseases (MSc)
&
Pierre Lasjaunias Neurovascular Education Team (PLANET)

5th-6th March 2018

13th Asian-Australasian Federation of Interventional & Therapeutic Neuroradiology (AAFITN) 2018

in conjunction with
Malaysian Society of Interventional Radiology (MYSIR) 2018 &
Malaysian Congress of Radiology (MCOR) 2018

7th-9th March 2018



Supporting Organisations



Venue: The Magellan Sutera, Kota Kinabalu, Sabah, Malaysia

www.aafitn2018malaysia.com

TIME	TOPIC		SPEAKER
0700 - 1730	REGISTRATION COUNTER OPEN		
		Chairperson	Dr Josephine Subramaniam
		Moderators	Assoc Prof Dr Ahmad Sobri Muda Prof Dr Hamidon Haji Basri
0800 - 0820	PL01	Plenary 1 Stroke - Unique Problems Related To Asia Pacific Patients - Device Cost Vs Stroke Care Cost	Dr Alex Tang A. L.
0820 - 0840	PL02	Plenary 2 Imaging In Stroke : Acute Stroke, ASPECT Score & Collateral Assessment	Adj Prof Dr Tchoyoson Lim
0840 - 0900		Discussion With Q & A	All Speakers Above
OPENING CEREMONY			
0900 - 1000	KL01	Keynote Lecture Why And How To Train More IR Stroke Interventionalists: Cost Effective Care	Prof Dr Sirintara Pongpech
1000 - 1030	TEA BREAK AND EXHIBIT VISIT		
AAFITN SYMPOSIUM - STROKE			
		Chairperson	Dr Alex Tang A. L.
		Moderators	Assoc Prof Dr Khairul Azmi Abd Kadir Dr Law Wan-Chung
1030 - 1050	AF01	Stroke Trial Update	Dr Rene Van Der Berg
1050 - 1110	AF02	Cost Of Device Vs Cost Of Rehabilitation / Care / Loss Of Earning Capacity	Assoc Prof Dr Bernard Yan
1110 - 1130	AF03	Thrombectomy Indication, Technique, Complications, New Randomized Studies, Types of Clots, Wake Up And After 6 Hours	Prof Dr Christophe Cognard
1130 - 1200		Stroke Panel - Case Discussions	All Speakers Above Dr Fadhli Mohamed Sani
MEDTRONIC LUNCH SYMPOSIUM			
1200 - 1230		Chairperson	Dr Jeyaledgechumy Mahadevan
		How Do We Improve Stroke Patient Outcomes? BGC Vs ADAPT Or Stent First Vs Evidence Around Mechanical Thrombectomy	Prof Dr Jan Gralla
1230 - 1400	LUNCH BREAK AND EXHIBIT VISIT		
STROKE			
		Chairperson	Dr Patrick A. Brouwer
		Moderators	Dr Fadhli Mohamed Sani Dr Sapia Sapuan
1400 - 1412	AF04	Wake Up Strokes / Stroke In Evolution - When Do We Say No?	Dr Rene Van Der Berg
1412 - 1424	AF05	How Much Imaging Is Enough? (Before Treatment ?)	Dr Winston Lim Eng-Hoe
1424 - 1436	AF06	Intracranial Artery Dissection	Prof Dr Zhang Hongqi
1436 - 1448	AF07	Intracranial Stenting Balloon Expandable (BES) Versus Self-Expandable Stent (SES)	Prof Dr Suh Dae-Chul
1448 - 1500		Q & A Session	All Speakers Above
1500 - 1530		Case Discussions	All Speakers Above
BALT TEA SYMPOSIUM			
1530 - 1600		Chairperson	Dr Josephine Subramaniam
		Preliminary Clinical Experience With The Coils OPTIMA: Report Of A Prospective, Single-Center Series And Design Of A Prospective, Multicenter, European Registry	Prof Dr Laurent Pierot

continue on next page

TIME	TOPIC		SPEAKER
1600 - 1630	TEA BREAK AND EXHIBIT VISIT		
	AAFITN ORAL PRESENTATIONS 1		
		Chairperson	Assoc Prof Dr Mohd Shafie Abdullah
		Moderators	Dr Law Wan-Chung
1630 - 1637	ST001	New DAFT (Dual Aspiration With Push And Fluff Technique) For Stent Retrievers In Acute Stroke With Large Vessel Occlusion – Increasing The Success Rate Of Recanalization	Dr Gaurav Goel
1637 - 1644	ST002	Collateral Status Affects The Onset-To-Reperfusion Time Window For Good Outcome	Prof Dr Kim Byung-Moon
1644 - 1651	ST003	Siriraj Manual Thrombectomy Outcomes In Relation To Age: A 7 Year Retrospective Analysis (Siriraj ManTRA Study)	Dr Cesar De Guzman
1651 - 1658	ST005	Phase Map: New MR Collateral Imaging Derived From Time-Resolved Contrast-Enhanced MR Angiography In Acute Ischemic Stroke	Prof Dr Kim Hyun-Jeong
1658 - 1705	ST006	The Number Of Stent Retriever Passes Associated With Futile Recanalization In Acute Intracranial Large Artery Occlusion	Dr Baek Jang-Hyun
1705 - 1712	ST007	Conscious Sedation Versus Non-Sedation For Endovascular Treatment Of Acute Ischemic Stroke	Dr Seo Jung-Hwa
1712 - 1719	ST008	Endovascular Recanalization For Chronic Symptomatic Intracranial Vertebral Artery Total Occlusion: Experience Of A Single Center And Review Of Literature	Dr Peng Gao
	END OF DAY 1		
1930 until late	FACULTY DINNER (BY INVITATION ONLY)		

TIME	TOPIC		SPEAKER
0700 - 1730	REGISTRATION COUNTER OPEN		
0800 - 1000	PLENARIES, KEYNOTE LECTURE AND OPENING CEREMONY IN LECTURE HALL A, LEVEL 1		
1000 - 1030	TEA BREAK AND EXHIBIT VISIT		
1030 - 1200	AAFITN SYMPOSIUM - STROKE IN LECTURE HALL A, LEVEL 1		
1200 - 1230	MEDTRONIC LUNCH SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1230 - 1400	LUNCH BREAK AND EXHIBIT VISIT		
	AVM / DURAL AVF		
		Chairperson	Assoc Prof Dr Winston Chong W. K.
		Moderators	Prof Dr Sirintara Pongpech Assoc Prof Dr Sia Sheau-Fung
1400 - 1412	AF24	Imaging In Haemorrhagic Strokes	Prof Dr Norlisah Mohd Ramli
1412 - 1424	AF25	Brain Arteriovenous Malformations Natural History And Risk Of Bleeding	Prof Dr Karel G. ter Brugge
1424 - 1436	AF26	Brain Arteriovenous Malformations; Angiogenesis	Prof Dr Karel G. ter Brugge
1436 - 1448	AF27	AVM: When Not To Treat	Prof Dr Choi In-Sup
1448 - 1500		Q & A Session	All Speakers Above
1500 - 1530		Case Discussions	All Speakers Above Assoc Prof Dr Sia Sheau-Fung
1530 - 1600	BALT TEA SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1600 - 1630	TEA BREAK AND EXHIBIT VISIT		
	AAFITN ORAL PRESENTATIONS 2		
		Chairperson	Dr Arvin Rajadurai
		Moderators	Prof Dato' Dr Jegan Thanabalan
1630 - 1637	ST009	Comparison Of Safety And Efficacy Of Stenting For Symptomatic Intracranial Arterial Stenosis Between The East And The West - A Systematic Review	Dr Wang Tao
1637 - 1644	ST012	The Usefulness Of TCD With A Transorbital Approach In CAS Perioperative Period	Dr Yohei Tanaka
1644 - 1651	ST013	Early Mechanical Thrombectomy In Patients With A Large Hyperacute Ischemic Stroke	Dr Jeon Yoo-Sung
1651 - 1658	ST014	Tips And Techniques For Optimal Stentriever Placement In Mechanical Thrombectomy: Is Longer Better?	Asst Prof Dr Kim Youngsoo
1658 - 1705	ST015	Use Of Angioscopy For Intravascular Assessment Of Plaque Protrusion After Carotid Artery Stenting	Asst Prof Dr Yukiko Enomoto
1705 - 1712	ST016	Histopathological Evaluation Of The Radio Frequency (rf) - Thrombectomy Device Treated Vessel In Rabbit Model	Dr Chris Chon Chi-Hang
1712 - 1719	ST017	Impact Of Balloon Guide Catheter Catheterization Location On Mechanical Thrombectomy In Acute Stroke Patients	Prof Dr Kim Dong-Joon
	END OF DAY 1		
1930 until late	FACULTY DINNER (BY INVITATION ONLY)		

TIME	TOPIC		SPEAKER
0700 - 1730	REGISTRATION COUNTER OPEN		
0800 - 1000	PLENARIES, KEYNOTE LECTURE AND OPENING CEREMONY IN LECTURE HALL A, LEVEL 1		
1000 - 1030	TEA BREAK AND EXHIBIT VISIT		
1030 - 1200	AAFITN SYMPOSIUM - STROKE IN LECTURE HALL A, LEVEL 1		
1200 - 1230	MEDTRONIC LUNCH SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1230 - 1400	LUNCH BREAK AND EXHIBIT VISIT		
	ANEURYSMS		
		Chairperson	Prof Dr George Wong Kwok-Chu
		Moderators	Dr Mohd Redzuan Ismail Dato' Dr Azmin Kass Rosman
1400 - 1412	AF36	Shaping And Navigation Of Microcatheters In Aneurysmal Coiling	Prof Dr Han Moon-Hee
1412 - 1424	AF37	Aneurysmal Coiling Using Multiple Microcatheters: Technical Variety	Prof Dr Han Moon-Hee
1424 - 1436	AF38	The Evolution Of Endovascular Treatment For Intracranial Aneurysms	Prof Dr Hidenori Oishi
1436 - 1448	AF39	Aneurysm Surgery Post Coiling: Difficulties	Assoc Prof Dr Allan Taylor
1448 - 1500		Q & A Session	All Speakers Above
1500 - 1530		Case Discussions	All Speakers Above Prof Dr Alessandra Biondi Dato' Dr Azmin Kass Rosman
1530 - 1600	BALT TEA SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1600 - 1630	TEA BREAK AND EXHIBIT VISIT		
	AAFITN ORAL PRESENTATIONS 3		
		Chairperson	Dr Fadhli Mohamed Sani
		Moderators	Dr Sharon Casilda Theophilus
1630 - 1637	ST019	Ten Years Experience Of Endovascular Management In Indian Patients With Acute Basilar Artery Occlusion	Dr Kamaldeep Chawla
1637 - 1644	ST020	Utility And Problem Of Metal Artifact Reduction Technique In CBCT Imaging	Dr Masahiro Nishihori
1644 - 1651	ST021	Reperfusion Using ADAPT Technique With ACE68 In The Treatment Of Acute Ischemic Stroke: An Initial Experience	Asst Prof Dr Santhosh Raj
1651 - 1658	ST022	Results Of The Thrombectomy In Patients With Acute Ischemic Stroke In Bach Mai Hospital (Experiences From 180 Cases)	Prof Dr Pham Minh-Thong
1658 - 1705	ST023	Current Status Of Acute Thrombectomy In Tokyo Based Upon A Questionnaire Survey Conducted By Bureau Of Social Welfare And Public Health, Tokyo Metropolitan Government	Dr Toshiaki Ueno
1705 - 1712	ST024	In Vivo Testing Of Thrombolytic Patch For Ischemic Stroke Treatment On Swine Model	Dr Qin Zhen
	END OF DAY 1		
1930 until late	FACULTY DINNER (BY INVITATION ONLY)		

TIME	TOPIC		SPEAKER
0700 - 1730	REGISTRATION COUNTER OPEN		
0800 - 0830	BREAKFAST SYMPOSIUM		
		Chairperson	Dr Wickly Lee
	Anatomy - ECA Anatomy		Prof Dr Choi In-Sup
	PLENARY LECTURES - ANEURYSMS		
		Chairperson	Dr Winston Lim Eng-Hoe
		Moderators	Dr Cindy Sadikin Datuk Dr Pulivendhan Sellamuthu
0830 - 0850	PL03	Plenary 3 State Of The Art Imaging For Diagnosis And Treatment Of Aneurysms	Prof Dr Karel G. ter Brugge
0850 - 0910	PL04	Plenary 4 Paediatric Aneurysms, Causes And Imaging	Prof Dr Karel G. ter Brugge
0910 - 0930	PL05	Plenary 5 Anticoagulation: Types, Efficacy And Reversal	Dr Jameela Sathar
0930 - 1000		Aneurysms Case Discussions	All Speakers Above Assoc Prof Dr Khairul Azmi Abd Kadir Datuk Dr Pulivendhan Sellamuthu Dr Nader Sourour
1000 - 1030	TEA BREAK AND EXHIBIT VISIT		
1030 - 1200	AAFITN SYMPOSIUM - ANEURYSMS		
		Chairperson	Dr Arvin Rajadurai
		Moderators	Assoc Prof Dr Navin Mulimani Dato' Dr Kantha Rasalingam
1030 - 1050	AF08	New Devices In Aneurysms Treatment	Prof Dr Christophe Cognard
1050 - 1110	AF09	Aneurysms: Dissecting And Bleb Aneurysms - Treatment	Prof Dr Choi In-Sup
1110 - 1130	AF10	Aneurysms: Surgical Vascular Anatomy Relevant To Endovascular Coiling	Assoc Prof Dr Allan Taylor
1130 - 1200		Aneurysms: Case Discussions	All Speakers Above Dato' Dr Kantha Rasalingam
1200 - 1230	STRYKER LUNCH SYMPOSIUM		
		Chairperson	Dr Jeyaledchumy Mahadevan
		The DAWN Of A Newer Era; Extending The Treatment Window For Acute Stroke Therapy	Dr Raul Gomes Nogueira
1230 - 1400	LUNCH BREAK AND EXHIBIT VISIT		
1400 - 1530	NEURO STATE OF THE ART - STROKE		
		Chairperson	Dr Uday S. Limaye
		Moderator	Prof Dr Hamidon Haji Basri
1400 - 1412	AF11	Dissection - Intracranial Vs Extracranial	Prof Dr Shakir Husain Hakim
1412 - 1424	AF12	Dissection - Stenting Vs Thrombectomy / Angioplasty	Assoc Prof Dr Anchalee Churojana
1424 - 1436	AF13	Tandem Lesions in Stroke	Dr Patrick A. Brouwer
1436 - 1448	AF14	Stroke In Pregnancy	Assoc Prof Dr Bernard Yan
1448 - 1500		Q & A Session	All Speakers Above
1500 - 1530		Case Discussions	All Speakers Above Dr Mohd Redzuan Ismail

continue on next page

TIME	TOPIC		SPEAKER
	WOMEN IN IR		
1530 - 1535	AF15	Radiation Dose For Women In IR Related To Pregnancy / Fertility	Dr Anis Shafina Mahfudz
1535 - 1540	AF16	Women In IR Survey	Dr Jeyaledchumy Mahadevan
1540 - 1600		Moderator	Prof Dr Sirintara Pongpech
		Open Discussion	Prof Dr Alessandra Biondi Dr Chng Soke-Miang Dr Cindy Sadikin Dr Cindy Sotalbo Dr Jeyaledchumy Mahadevan Dr Kim Hyun-Jeong Dr Lakmalie Paranehewa Dr May Adel Alhamid Dr Nguyen Thi Thu Trang Prof Dr Sirintara Pongpech Dr Trang Mong Hai Yen Asst Prof Dr Yukiko Enomoto
1600 - 1630	TEA BREAK AND EXHIBIT VISIT		
	AAFITN ORAL PRESENTATIONS 4		
		Chairperson	Dr Patrick A. Brouwer
		Moderators	Assoc Prof Dr Rozman Zakaria Dr Sapiah Sapuan
1630 - 1637	AN001	Surpass Flow Diverter In The Treatment Of Acutely Ruptured Aneurysms – Indian Multicenter Experience	Dr Gaurav Goel
1637 - 1644	AN002	Endovascular Treatment Of Posterior Inferior Cerebellar Artery Aneurysms: Technical Challenges	Dr Gaurav Goel
1644 - 1651	AN003	Balloon Test Occlusion In Complex Intracranial Aneurysms	Dr Guruprasadh Chandrashekhar
1651 - 1658	AN004	Progress After Coil Embolization In Regrowth Cerebral Aneurysm That Previously Underwent Surgical Clipping	Prof Dr Jeong Hae-Woong
1658 - 1705	AN005	Clinical And Angiographic Outcomes Of Treatment Of The Very Large And Giant Cerebral Aneurysms: A Study Of Siriraj Hospital Experience	Dr Ittichai Sakarunchai
1705 - 1712	AN008	Development Of A Support Robot For Neuroendovascular Intervention	Dr Reo Kawaguchi
1712 - 1719	AN009	Non-Invasive Intravenous Conebeam CT Angiography For Follow Up Assessment Of Pipeline Embolization Device Upon Aneurysm Obliteration, In-stent Stenosis And Vessel Wall Apposition	Dr Ronald Li
1719 - 1726	AN010	Use Of Flow Divertors For Treatment Of Posterior Circulation Aneurysms	Dr Satish Lahoti
	END OF DAY 2		
1930 until late	CONFERENCE DINNER - FOR ALL DELEGATES		

TIME	TOPIC		SPEAKER
0700 - 1730	REGISTRATION COUNTER OPEN		
0800 - 1000	BREAKFAST SYMPOSIUM AND PLENARIES IN LECTURE HALL A, LEVEL 1		
1000 - 1030	TEA BREAK AND EXHIBIT VISIT		
1030 - 1200	AAFITN SYMPOSIUM - ANEURYSMS IN LECTURE HALL A, LEVEL 1		
1200 - 1230	STRYKER LUNCH SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1230 - 1400	LUNCH BREAK AND EXHIBIT VISIT		
	NEURO STATE OF THE ART - AVM / DURAL AVF		
		Chairperson	Prof Dr Pham Minh-Thong
		Moderators	Prof Dr Hidenori Oishi Assoc Prof Dato' Dr Hari Chandran
1400 - 1412	AF28	Dural AVF: Is There A Role In Closing Arterial Feeders?	Prof Dr Shigeru Miyachi
1412 - 1424	AF29	Dural AVF: Indirect CCF - Best Approach	Dr Cuong Tran-Chi
1424 - 1436	AF30	Liquid Embolic Agents: Types, Pros And Cons	Assoc Prof Dr Khairul Azmi Abd Kadir
1436 - 1448	AF31	Liquid Embolic Agents: Effects On Vessel Wall	Assoc Prof Dr Allan Taylor
1448 - 1500		Q & A Session	All Speakers Above
1500 - 1530		Case Discussions	All Speakers Above Assoc Prof Dato' Dr Hari Chandran Prof Dr Hidenori Oishi
1530 - 1600	WOMEN IN IR SESSION IN LECTURE HALL A, LEVEL 1		
1600 - 1630	TEA BREAK AND EXHIBIT VISIT		
	AAFITN ORAL PRESENTATIONS 5		
		Chairperson	Dr Cuong Tran-Chi
		Moderators	Dr Mohd Redzuan Ismail Assoc Prof Dr Sia Sheau-Fung
1630 - 1637	AN011	Stent Placement For Ruptured Intracranial Dissecting Aneurysms: A Possible Treatment Option For Inevitable Condition	Prof Dr Toshio Higashi
1637 - 1644	AN012	Prevalence Of Recurrence And Retreatment Of Intracranial Saccular Aneurysms Treated With Coil Embolization: Single Center Experience During Past 10 Years	Assoc Prof Dr Lee Jae-Il
1644 - 1651	AN013	Assessment Of MAFA Ratio As A Prognostic Marker Of Intra Cranial Aneurysm Occlusion After Flow Diverter Treatment Using 3DRA	Dr Jagadeesan Dhanasekaran
1651 - 1658	AN014	Treated Aneurysms: When To Order Each Test	Assoc Prof Dr Marlise Peruzzo Dos Santos
1658 - 1705	AN015	Endovascular Coil Embolization Of Internal Carotid Artery Anterior Wall Aneurysms	Prof Dr Masaru Hirohata
1705 - 1712	AN016	Clinical Application Of Insertion Force Sensor System For Coil Embolization Of Intracranial Aneurysms	Dr Noriaki Matsubara
1712 - 1719	AN019	Blister Aneurysms - Should We Treat Them In Acute Phase?	Dr Vijay Jayakrishnan
1719 - 1726	AN020	A Single-Centre Review Of Management And Outcomes Of Ruptured Dissecting Vertebral Artery Aneurysms In Hong Kong	Dr Joanna Ho Wing-Kiu
	END OF DAY 2		
1930 until late	CONFERENCE DINNER - FOR ALL DELEGATES		

TIME	TOPIC		SPEAKER
0700 - 1730	REGISTRATION COUNTER OPEN		
0800 - 1000	BREAKFAST SYMPOSIUM AND PLENARIES IN LECTURE HALL A, LEVEL 1		
1000 - 1030	TEA BREAK AND EXHIBIT VISIT		
1030 - 1200	AAFITN SYMPOSIUM - ANEURYSMS IN LECTURE HALL A, LEVEL 1		
1200 - 1230	STRYKER LUNCH SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1230 - 1400	LUNCH BREAK AND EXHIBIT VISIT		
	NEURO STATE OF THE ART - ANEURYSMS		
		Chairperson	Prof Dr Michael Mu-Huo Teng
		Moderators	Assoc Prof Dr Rozman Zakaria Dato' Dr Kantha Rasalingam
1400 - 1412	AF40	ELAPSS Score For Prediction Of Risk Of Growth Of Unruptured Intracranial Aneurysms	Prof Dr George Wong Kwok-Chu
1412 - 1424	AF41	Embolizing Intracranial Aneurysms Without Assist Technique - How Far Can We Go?	Assoc Prof Dr Kittipong Srivatanakul
1424 - 1436	AF42	Value Of Advanced Imaging In Acute SAH With Multiple Aneurysms	Dr Rene Van Der Berg
1436 - 1448	AF43	Treatment Of Wide-Necked Rupture Aneurysm	Dr Rene Van Der Berg
1448 - 1500		Q & A Session	All Speakers Above
1500 - 1530		Case Discussions	All Speakers Above Dato' Dr Kantha Rasalingam Dr Md Yuzairif Md Yusof
1530 - 1600	WOMEN IN IR SESSION IN LECTURE HALL A, LEVEL 1		
1600 - 1630	TEA BREAK AND EXHIBIT VISIT		
	AAFITN ORAL PRESENTATIONS 6		
		Chairperson	Prof Dr Shakir Husain Hakim
		Moderators	Dr Fadhli Mohamed Sani Dr Sharon Casilda Theophilus
1630 - 1637	AO001	Intravascular Ultrasound Guide For Intracranial And Extracranial Venous Stenosis	Dr Yan Feng
1637 - 1644	AO002	Radiological Evaluation And Treatment Strategies Of Craniofacial High Flow Vascular Malformations With Cavernous Sinus Drainage	Dr Su I-Chang
1644 - 1651	AO003	Management Of Intraorbital Extraocular Lymphatic And Venous Malformation With Bleomycin	Dr Idries Hussin
1651 - 1658	AO004	Intralesional Bleomycin Injection Treatment For Venous Malformations In Head And Neck Region: 9-Year Experience In Siriraj Hospital	Dr Keerati Charoontamwong
1658 - 1705	AO005	Feasibility Of Ultra-Low Dose Cerebral Angiography: Digital Subtraction Head Angiography Phantom Study	Ms Park Danbi
1705 - 1712	AO006	Transcervical Access Via Direct Neck Exposure For Neuro-Interventional Procedures At The Hybrid Angiosuite	Asst Prof Dr Jeon Hong-Jun
1712 - 1719	AO008	Outpatient Neurointervention Clinic - Satisfaction Survey	Ms Park Danbi
	END OF DAY 2		
1930 until late	CONFERENCE DINNER - FOR ALL DELEGATES		

TIME	TOPIC		SPEAKER
0700 - 1730	REGISTRATION COUNTER OPEN		
0800 - 0830	BREAKFAST SYMPOSIUM		
		Chairperson	Dr Cuong Tran-Chi
	Anatomy - Anatomy For BAVM		Prof Dr Choi In-Sup
	PLENARY LECTURES - AVM		
		Chairperson	Prof Dr Hamidon Haji Basri
		Moderators	Dr Umair Rashid Chaudhry Assoc Prof Dr Sia Sheau-Fung
0830 - 0850	PL06	Plenary 6 Spinal AVM - Imaging and Anatomy Correlation And When To Stop Treatment	Prof Dr Sirintara Pongpech
0850 - 0910	PL07	Plenary 7 WEAVE™ Intracranial Stent Trial: Final Trial Results In 152 Consecutive Patients Treated On-Label	Prof Dr Michael J. Alexander
0910 - 0930	PL08	Plenary 8 AVM - Imaging Pre / Post AVM Treatment: In Acute Haemorrhage, Planning & Post Treatment	Adj Prof Dr Tchoyoson Lim
0930 - 1000		Case Discussions	Prof Dr Michael J. Alexander Dr Winston Lim Eng-Hoe Dr Mario Muto Dr Arvin Rajadurai
1000 - 1030	TEA BREAK AND EXHIBIT VISIT		
1030 - 1200	AAFITN SYMPOSIUM - AVM / DURAL AVF		
		Chairperson	Assoc Prof Dr Mohd Shafie Abdullah
		Moderators	Assoc Prof Dr Rozman Zakaria Prof Dato' Dr Jegan Thanabalan
1030 - 1050	AF17	ARUBA: What Do We Do Now	Dr Uday S. Limaye
1050 - 1110	AF18	Long Term Results Of AVM Treatment With Embolization. Risk Of Haemorrhage After Complete Treatment	Assoc Prof Dr Kittipong Srivatanakul
1110 - 1130	AF19	Dural AVFs: How To Avoid Complications	Assoc Prof Dr Anchalee Churojana
1130 - 1200		Case Discussions	All Speakers Above Prof Dato' Dr Jegan Thanabalan Dr Wickly Lee
1200 - 1400	LUNCH BREAK AND EXHIBIT VISIT		
	NEURO STATE OF THE ART - STROKE		
		Chairperson	Prof Dr Michihiro Tanaka
		Moderators	Dr Hilwati Hashim Dr Law Wan Chung
1400 - 1412	AF20	How To Build Up National And Local Stroke Treatment Networks	Prof Dr Jan Gralla
1412 - 1424	AF21	Distal Emboli During Stroke Thrombectomy - What To Do?	Dr Rene Van Den Berg
1424 - 1436	AF22	Corelab Assessed Results Of A 'Real Life Cohort' Of 201 Ischemic Stroke Patients Treated With Embotrap	Dr Patrick A. Brouwer
1436 - 1448	AF23	Stroke - Benefit Of Balloon Occlusion Catheters; Aspiration Versus Stent Retrievers	Dr Patrick A. Brouwer
1448 - 1500		Q & A Session	All Speakers Above

continue on next page

1500 - 1530		Case Discussions	All Speakers Above
TIME	TOPIC		SPEAKER
MICROVENTION TEA SYMPOSIUM			
1530 - 1600		Chairperson	Prof Dr George Wong Kwok-Chu
		The FRED Flow-Diverter Stent For The Treatment Of Intracranial Aneurysms	Prof Dr Christophe Cognard
TEA BREAK AND EXHIBIT VISIT			
AAFITN ORAL PRESENTATIONS 7			
		Chairperson	Prof Dr Jeong Hae-Woong
		Moderators	Dr Patrick A. Brouwer Dr Sapiah Sapuan
1630 - 1637	DF001	Cavernous Sinus Dural Arteriovenous Fistula: Selective Embolization Vs Sinus Packing	Dr Asuka Elisabeth Kropp
1637 - 1644	DF002	Interventional And Surgical Treatment For Spinal Dural Arteriovenous Fistula	Dr Bian Lisong
1644 - 1651	DF003	Innovative Approach For Endovascular Treatment Of Skull Base Dural Arterio-Venous Fistulae	Dr Guruprasadh Chandrashekhar
1651 - 1658	DF005	The Osseous Venous Structures Adjacent To The Jugular Tubercle Associated With Anterior Condylar Dural Arteriovenous Fistula	Dr Katsuhiro Mizutani
1658 - 1705	DF006	Treatment Of Transverse-Sigmoid Sinus Dural Arteriovenous Fistula (TSDAVF), Through Petrosqamous Branch Of Middle Meningeal Artery Using Ethylene-Vinyl Alcohol Copolymer (EVOH) Or PHIL With Detachable Microcatheter	Assoc Prof Dr Khairul Azmi Abd Kadir
1705 - 1712	DF007	Intracranial Dural Arterio Venous Fistulae - An Institutional Experience And Proposal Of A New Anatomico-Functional Classification System	Dr Leve Joseph Devarajan Sebastian
1730 - 1800	CLOSING CEREMONY		

TIME	TOPIC		SPEAKER
0700 - 1730	REGISTRATION COUNTER OPEN		
0800 - 1000	BREAKFAST SYMPOSIUM AND PLENARIES IN LECTURE HALL A, LEVEL 1		
1000 - 1030	TEA BREAK AND EXHIBIT VISIT		
1030 - 1200	AAFITN SYMPOSIUM - AVM / DURAL AVF IN LECTURE HALL A, LEVEL 1		
1200 - 1400	LUNCH BREAK AND EXHIBIT VISIT		
	NEURO STATE OF THE ART - AVM / DURAL AVF		
		Chairperson	Prof Dr Kim Byung-Moon
		Moderators	Prof Dr Shakir Husain Hakim Dr Nader Sourour
1400 - 1412	AF32	Radiosurgery In AVM & Dural AVF: Difficulties Post-Embolization	Prof Dr Shigeru Miyachi
1412 - 1424	AF33	Aggressive Cavernous Sinus Dural Arteriovenous Fistula: Angioarchitecture Analysis And Embolization By Various Approaches	Prof Dr Michael Teng Mu-Huo
1424 - 1436	AF34	Spinal Dural AVF: Surgery Or Endovascular	Prof Dr Suh Dae-Chul
1436 - 1448	AF35	Pros & Cons Of Liquid Embolizing Agents In AVM & DVF	Prof Dr Christophe Cognard
1448 - 1500		Q & A Session	All Speakers Above
1500 - 1530		Case Discussions	All Speakers Above Dr Nader Sourour
1530 - 1600	MICROVENTION TEA SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1600 - 1630	TEA BREAK AND EXHIBIT VISIT		
	AAFITN ORAL PRESENTATIONS 8		
		Chairperson	Prof Dr Pham Minh-Thong
		Moderators	Assoc Prof Dr Khairul Azmi Abd Kadir Dato' Dr Kantha Rasalingam
1630 - 1637	DF008	Analysis Of Diagnosis And Treatment Of Dural Arteriovenous Fistulas Involving The Superior Petrosal Veins	Dr Ma Yongjie
1637 - 1644	DF014	Diagnosis And Treatment Of Brain Stem Venous Hypertensive Congestion	Dr Ma Yongjie
1644 - 1651	DF010	Shunting Point Of Cranio-Cervical Junction Dural AVF And New Classification, Based On Preoperative Images, Intraoperative Findings Including ICG Video Angiography	Dr Shunji Matsubara
1651 - 1658	DF011	Transarterial Embolization Of Dural AVFs With NBCA	Dr Shushi Kominami
1658 - 1705	DF012	Hybrid Neurosurgical Technique For The Treatment Of The Complex Spinal Arteriovenous Fistulas	Dr Sun Liyong
1705 - 1712	DF013	Adjunctive Techniques To Enhance Safety Of Trans-Venous Embolization For Cranial Dural Arteriovenous Fistula	Dr Takenori Akiyama
1712 - 1719	DF015	Imaging Characteristics And Initial Results Of The Treatment Of Dural Arteriovenous Fistulas Outside Cavernous Sinus By Endovascular Intervention In Bach Mai Hospital	Dr Tran Anh-Tuan
1730 - 1800	CLOSING CEREMONY		

TIME	TOPIC		SPEAKER
0700 - 1730	REGISTRATION COUNTER OPEN		
0800 - 1000	BREAKFAST SYMPOSIUM AND PLENARIES IN LECTURE HALL A, LEVEL 1		
1000 - 1030	TEA BREAK AND EXHIBIT VISIT		
1030 - 1200	AAFITN SYMPOSIUM - AVM / DURAL AVF IN LECTURE HALL A, LEVEL 1		
1200 - 1400	LUNCH BREAK AND EXHIBIT VISIT		
1400 - 1530	NEURO STATE OF THE ART - ANEURYSMS		
		Chairperson	Assoc Prof Dr Ahmad Sobri Muda
		Moderators	Dr Md Yuzairif Md Yusof Prof Dato' Dr Jegan Thanabalan
1400 - 1412	AF44	Giant Aneurysms - Causes Of Recurrence Post Coiling	Assoc Prof Dr Luo Chao-Bao
1412 - 1424	AF45	Paradigm For Treatment Of Complex Bifurcation Aneurysms	Assoc Prof Dr Winston Chong W. K.
1424 - 1436	AF46	Management Of Wide Necked Acutely Ruptured Aneurysms	Dr Winston Lim Eng-Hoe
1436 - 1448	AF47	Use Of Flow Diverters In Acute SAH	Dr Gaurav Goel
1448 - 1500		Q & A Session	All Speakers Above
1500 - 1530		Case Discussions	All Speakers Above Prof Dato' Dr Jegan Thanabalan
1530 - 1600	MICROVENTION TEA SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1600 - 1630	TEA BREAK AND EXHIBIT VISIT		
	AAFITN ORAL PRESENTATIONS 9		
		Chairperson	Prof Dr Michihiro Tanaka
		Moderators	Prof Dr Hidenori Oishi Dr Sharon Casilda Theophilus
1630 - 1637	DF009	Cranial Neural Crest As The Risk Factor Of Dural AVFs	Prof Dr Michihiro Tanaka
1637 - 1644	DF004	Dural Arteriovenous Fistulas At The Petrous Apex: Therapeutic Strategies	Dr Li Jingwei
1644 - 1651	DF016	Angiographic And Clinical Characteristics Of Thoracolumbar Spinal Epidural And Dural Arteriovenous Fistulas	Prof Dr Yuji Matsumaru
1651 - 1658	AV001	Cerebrofacial Arteriovenous Metameric Syndrome (CAMS) Type II Presenting With Acute Life-Threatening Epistaxis: A Synergistic Endovascular And Surgical Approach To Treatment	Dr Arvin Rajadurai
1658 - 1705	AV002	Clinical Features And Outcomes Of Pediatric Spinal Cord Arteriovenous Malformations	Dr Li Jingwei
1705 - 1712	AV003	SQUID Co-Polymer Embolic Material For Embolisation Of Brain Arteriovenous Malformation: Our Initial Experience	Dr Ch'ng Li-Shyan
1712 - 1719	AV004	Initial Experience With 4D-DSA For Shunt Diseases	Assoc Prof Dr Takashi Izumi
1719 - 1726	AV005	Nation-Wide Survey Of Pediatric Brain Arterio-Venous Shunts In Japan: (Japanese Pediatric Arterio-Venous Shunts Study: JPAS)	Dr Masaki Komiyama

ANEURYSM	
Poster ID	Title
AN001P	Correlation Of Cerebral Catheter Angiogram Diagnosed Aneurysms With Pre-Angiogram Non-Contrast Enhanced Cranial CT Scans Cesar De Guzman, Jolly Jason Catibog <i>Department Of Radiology/ Philippine General Hospital/ Philippines</i>
AN002P	Endovascular Treatment For Ruptured Aneurysm In Coexistence Of Severe Vasospasm: Vascular Change And Technical Consideration Lee Cheol-Young, Kim Hyun-Woo, Sin Eui-Gyu, Song Jihye <i>Neurosurgery/ Konyang University Hospital/ Korea</i>
AN004P	Comparative Analysis In Patients With Poor-Grade Aneurysmal Subarachnoid Hemorrhage: Clipping With Simultaneous Decompression Versus Coil Embolization Followed By Decompression Kim Eui-Jong, Shin Hee-Sup, Koh Jun-Seok, Ryu Chang-Woo <i>Department Of Neuroradiology/ Kyung Hee University Hospital/ Korea</i>
AN005P	Treatment Of Ruptured Blood Blister-Like Aneurysm Of The Supraclinoid Internal Carotid Artery Pyun Haewook, Hong Daeyoung, Jin Seon-Tak, Kang Yeonkoo, Kang Donghun <i>Radiology/ Pohang Stoke And Spine Hospital/ Korea</i>
AN006P	Efficacy Of VasoCT And Highresolution Intracranial Stent CT As An Adjuvant Technology In The Assessment Of Procedural Success In Flow Diverter Stent Patients. Jagadeesan Dhanasekaran, Saikiran Gutta, Santhosh Joseph, Vinay Hegde, Saikanth Deepalam, Rajesh Poosarla <i>Neuroradiology/ Sri Ramachandra Medical College And Research Institute/ India</i>
AN007P	Brain Abscess Formation Following Stent Assisted Coil Embolization For Middle Cerebral Artery Aneurysm Ko Jung-Ho, Kim Young-Joon, Jung Hyun Ho <i>Department Of Neurosurgery/ Dankook University, Collage of Medicine/ Korea</i>
AN008P	Endovascular Treatment Of Kissing Aneurysms Kensaku Yoshida, Hidenori Oishi <i>Neurosurgery/ Tokyo Metropolitan Hiroo Hospital/ Japan</i>
AN009P	Management Of Giant Supraclinoid Aneurysms Utilising The Staged Diverter-In-Stent Technique – A Preliminary Experience In A Tertiary Center Khairul Azmi Abd Kadir, Fadhli Mohamed Sani, Sia Sheau-Fung, Kamilah Manan <i>Biomedical Imaging/ University Malaya Medical Centre/ Malaysia</i>
AN011P	Early Experience With Pipeline Flex Embolization Device For Complex And Tandem Internal Carotid Artery (ICA) Aneurysms Khairul Azmi Abd Kadir, Mohd Safarali Othman, Sia Sheau-Fung, Fadhli Mohamed Sani, Chan Kin-Wong, Mohd Salahuddin Kamaruddin <i>Biomedical Imaging/ University Malaya Medical Centre/ Malaysia</i>
AN012P	Unusual Case Of Basilar Artery Dissection As A Cause Of Subarachnoid Hemorrhage In A Patient Of Systemic Lupus Erythematosus Cha Kichul, Park Suhyun <i>Neurosurgery/ Pohang Saint's Mary Hospital/ Korea</i>
AN013P	Result And Experience Of Endovascular Treatment For Top Basilar Aneurysm In Bach Mai Hospital Le Hoang-Kien, Tran Anh-Tuan, Vu Dang-Luu <i>Radiology Department/ Bach Mai Hospital/ Vietnam</i>
AN014P	Stent Assisted Coil Embolization For Unruptured Middle Cerebral Artery Aneurysm Kohsuke Teranishi, Kenji Yatomi, Hideki Endo, Senshu Nonaka, Munetaka Yamamoto, Hidenori Oishi <i>Department of Neurosurgery/ Juntendo University/ Japan</i>

ANEURYSM	
Poster ID	Title
AN015P	Fusion Three-Dimensional Angiography Of Both Internal Carotid Arteries In The Evaluation Of Anterior Communicating Artery Aneurysms Yang Kuhyun <i>Neurosurgery/ Gangneung Asan Medical Center/ University Of Ulsan Medical College/ Korea</i>
AN016P	Endovascular Management Of Dissecting Aneurysms Of Great Arteries Of The Neck - An Institutional Experience Leve Joseph Devarajan Sebastian, Jeyaseelan Nadarajah, Nishchint Jain, Shailesh Gaikwad <i>Neuroimaging And Interventional Neuroradiology/ All India Institute Of Medical Sciences/ India</i>
AN017P	Stent Assisted Coil Embolization For Acutely Ruptured Cerebral Aneurysms Masayuki Ezura, Takahiro Morita, Shinya Haryu, Takashi Inoue, Hiroshi Uenohara <i>Neurosurgery/ NHO Sendai Medical Center/ Japan</i>
AN019P	Diagnostic Accuracy Of 128 MDCT Angiography For Evaluating Cerebral Aneurysm Using Digital Subtraction Angiography (DSA) As The Standard Of Reference Mohammad Mudzakir Zainal Alam, Lai Khin-Wee, Fadhli Mohamed Sani <i>Bio Medical Imaging/ University Malaya Medical Centre/ Malaysia</i>
AN020P	Flow Diversion Stent For Large And Giant Internal Carotid Artery Aneurysm: Initial Experience At A Single Centre Nur Setiawan Suroto, Fitra Fitra, Asra Al Fauzi <i>Department Of Neurosurgery/ Faculty Of Medicine, Universitas Airlangga, Dr. Soetomo General Hospital/ Indonesia</i>
AN023P	3D Vascular Model Is Valuable In Coil Embolization Of The Aneurysms Shigeru Nemoto <i>Endovascular Surgery/ Tokyo Medical And Dental University/ Japan</i>
AN025P	Local Experience On Treatment Of Posterior Circulation Cerebral Aneurysms With Flow Diverting Device Stephen Wong, Cheng Lik-Fai, Neeraj Mahboobani, Johnny KF Ma <i>Department Of Radiology/ Princess Margaret Hospital/ Hong Kong</i>
AN027P	Acute Subdural Hematoma Following Coil Embolization For Ruptured Distal Anterior Cerebral Artery Aneurysm Taro Yamashita, Fuminori Shimizu <i>Neurosurgery/ Seijinkai Shimizu Hospital/ Japan</i>
AN028P	Coil Embolization With A Dual-Microcatheter Technique For A Kidney Bean-Shaped Coil Frames To Treat Aneurysm With A Branch Incorporated Into The Sac Seung Won-Bae <i>Neurosurgery/ Dongguk University Gyeongju Hospital/ Korea</i>
AN029P	Intracranial Mirror Aneurysms: Anatomic Characteristics And Treatment Options Cho Young-Dae, Kang Hyun-Seung, Han Moon-Hee <i>Radiology/ Seoul National University Hospital/ Korea</i>
AN030P	Follow-Up Outcomes After Re-Embolization For Recanalized Aneurysms After Initial Coiling: Further Recurrence Rates And Related Risk Factors Cho Young-Dae, Kang Hyun-Seung, Han Moon-Hee <i>Radiology/ Seoul National University Hospital/ Korea</i>
AN031P	Growth Of Asymptomatic Intracranial Fusiform Aneurysms: Incidence And Risk Factors Cho Young-Dae, Kang Hyun-Seung, Han Moon-Hee <i>Radiology/ Seoul National University Hospital/ Korea</i>

ANY OTHER RELATED NEUROVASCULAR DISEASES	
Poster ID	Title
AO001P	Case Report: Transient Cortical Blindness Post Cerebral Angiography Abdul Fattah Abdul Hamid, Fadzil F, Yaacob Y, Thanabalan J <i>Unit of Neurosurgery, Department Of Surgery/ Universiti Kebangsaan Malaysia Medical Centre/ Malaysia</i>
AO002P	Unilateral Orbital Venous-Lymphatic Malformation Associated With Retroorbital Arteriovenous Fistula In Fluctuating Proptosis Patient Abhinant Awaiwanont, Chai Kobkitsuksakul <i>Division Of Interventional Neuroradiology, Department Of Diagnostic And Therapeutic Radiology/ Ramathibodi Hospital/ Thailand</i>
AO003P	Autoregulation Of The Intracranial Vascularization - Posterior Circulation Collaterals: A Case Report <i>Alphadenti Harlyjoy, Affan Priyambodo</i> <i>Department Of Neurosurgery/ Faculty Of Medicine, Universitas Indonesia/ Indonesia</i>
AO004P	Endovascular Therapy For Blunt Vertebral Arterial Injury In Our Institution, 5 Cases Series Gaku Matsumoto, Fumiaki Iwase, Junichi Inoue, Tatsuho Kobayashi, Yoshibumi Miyazaki, Yuta Kawashima <i>Emergency And Critical Care Medical Center/ Yamanashi Prefectural Central Hospital/ Japan</i>
AO005P	Vein Of Galen Malformation In An Infant: Case Report And Review Hadio Ali Khazatsin, Aryatama, Cuong Tran-Chi, Nguyen Ngoc Pi Doanh <i>Interventional Neuroradiology/ University Of Medicine And Pharmacy/ Vietnam</i>
AO006P	The Rupture Of A Balloon Guide Catheter (BGC) - Suggestions For The Safe Usage Of BGC - Hiroaki Sato, Naosuke Kanenaka, Hajime Abe, Keisuke Matsubara, Hirohito Uketa <i>Neuroendovascular Therapy/ Tokyo Metropolitan Police Hospital/ Japan</i>
AO008P	Isolated Non-Traumatic, Non-Aneurysmal Convexal Subarachnoid Hemorrhage In A Patient With Evans Syndrome Mohamad Syafeeq Faez Md Noh, Anna Misyail Abdul Rashid <i>Department of Imaging/ Faculty of Medicine and Health Sciences, Universiti Putra Malaysia/ Malaysia</i>
AO009P	Cerebral Venous Sinus Thrombosis Presenting As Atypical Subarachnoid Hemorrhage Norlia Omar, Shamina Mohd Shahabar, Ng Wei-Ling, Suzet Tan <i>Radiology Department/ Hospital Taiping/ Malaysia</i>
AO012P	Traumatic Pseudoaneurysm Of The Superficial Temporal Artery Treated By Endovascular Coil Embolization Ihn Yon-Kwon, Jung Won-Sang, Kim Bum-Soo <i>Radiology/ St.Vincent/ Korea</i>
AO013P	Traumatic Vertebral Arteriovenous Fistula With Giant Aneurysm Yukari Ogawa, Shunji Matsubara, Takaya Kitano, Kejiro Hara, Toshihiro Hotta, Masayuki Uno <i>Neurosurgery/ Kawasaki Medical School/ Japan</i>

AVM	
Poster ID	Title
AV001P	Regression Of Aneurysms Associated With Cerebral Arteriovenous Malformation Post Intranidal Embolization Of Arteriovenous Malformation: A Case Report Phuar Ai-Ping, Ch'ng Li-Shyan, Ahmad Sobri Muda, Zulkifli Zaki Abdul Ghani Radiology/ Hospital Sungai Buloh/ Malaysia
AV002P	Neglected And Complex Scalp Arteriovenous Malformation Affan Priyambodo, Kevin Gunawan , Parintosa Atmodiwirjo, Wismaji Sadewo, Hanif Gordang Tobing, Setyo Widi Nugroho Neurosurgery/ Faculty Of Medicine Universitas Indonesia, Cipto Mangunkusumo National General Hospital/ Indonesia
AV006P	Spinal Radicular Arteriovenous Fistula, With MRI Finding Mimicking Spinal Dural Arteriovenous Fistula (SDAVFs) Pakorn Jiarakongmun, Ekachat Chanthanaphak, Sirintara Pongpech Radiology, Ramathibodi Hospital Medical School, Mahidol University/ INR Division/ Thailand

CAROTICOCAVENOUS FISTULA	
Poster ID	Title
CF001P	Anatomical Variation Of Facial Vein In Carotid-Cavernous Fistula And Trans-Facial Vein Embolization Luo Chao-Bao, Chang Feng-Chi, Michael Teng Mu-Huo, Lin Chung-Jung, Guo Wan-You Department of Radiology/ Taipei Veterans General Hospital/ Taiwan
CF002P	Transient Ptosis Post Carotidocavernous Fistula Embolisation: A Case Report Gayathri Letchumanan, Khor Boon-Hock, Nor Azizah Ab Rahman, Ch'ng Li-Shyan, Zulkifli Zaki Abdul Ghani Department Of Radiology/ Hospital Selayang/ Malaysia
CF003P	PHIL (Precipitate Hydrophobic Injectable Liquid) As An Embolic Agent In The Treatment Of A Type D CCF (Carotico-Cavernous Fistula): A Preliminary Experience In A Tertiary Center Khairul Azmi Abd Kadir, Qairul Irwan Hamli, Sia Sheau-Fung, Fadhli Mohamed Sani Sanibiomedical Imaging/ University Malaya Medical Centre/ Malaysia
CF004P	A Rare Case Of Traumatic Carotid-Cavernous Sinus Fistula (CCF) With Persistence Primitive Trigeminal Artery Treated With Detachable Balloon Khairul Azmi Abd Kadir, Sia Sheau-Fung, Nur Azidawati Ab Halim, Soo Suet-Woon, Fadhli Mohamed Sani, Mohd Salahuddin Kamaruddin Biomedical Imaging/ University Malaya Medical Centre/ Malaysia

DURAL FISTULA	
Poster ID	Title
DF001P	TAE Of SSS-dAVF By Direct Puncture Of Transosseous Feeder Asuka Elisabeth Kropp, Takashi Izumi, Masahiro Nishihori, Yosuke Tamari, Toshihiko Wakabayashi Neurosurgery/ Nagoya University Graduate School of Medicine/ Japan
DF002P	Balloon-Assisted Onyx Embolization Of Intracranial Dural Arteriovenous Fistula Luo Chao-Bao, Chang Feng-Chi, Lin Chung-Jung, Guo Wan-Yuo, Michael Teng Mu-Huo Department Of Radiology/ Taipei Veterans General Hospital/ Taiwan
DF003P	A Case Of Dural Arteriovenous Fistula Draining Into Cortical Veins Presenting With Intracerebral Hemorrhage Hadio Ali Khazatsin, Aryatama, Cuong Tran-Chi Interventional Neuroradiology/ University of Medicine and Pharmacy/ Vietnam

DURAL FISTULA	
Poster ID	Title
DF004P	Intracranial Venous Hypertension Induced By Superior Vena Cava Syndrome Mimicking Dural Arteriovenous Fistula Lim Jeongwook Neurosurgery/ Chungnam National University Hospital/ Korea
DF005P	Proximal Coil-Protected Embolization For Cranial And Spinal Shunt Diseases With N-Butyl Cyanoacrylate Or Onyx Kim Jin-Woo, Kim Byung-Moon, Kim Dong-Joon, Park Keun-Young Radiology/ Inje University Ilsan Paik Hospital/ Korea
DF006P	Embolization Of Spinal Cord Arteriovenous Shunt (SCAVSs) With Histoacryl Khairul Azmi Abd Kadir, Fadhli Mohamed Sani, Mohd Salahuddin Kamaruddin, Sia Sheau-Fung Biomedical Imaging/ University Malaya Medical Centre/ Malaysia
DF010P	Experience Of Covered Coronary Stent Grafts As Treatment Option For Carotid Cavernous Fistulas With Follow-Up Results Chung Seung-Young, Chang Se-Hun, Park Moon-Sun Department Of Neurosurgery/ Eulji University Hospital/ Korea
DF011P	Radiation Dose Monitoring For Patients Undergoing Cerebral Angiography And Interventional Neuroradiology - Measurement Of Dose Distribution, Association With Air Kerma And Various Disorders Shunji Matsubara, Go Hitomi, Takashi Moritake, Hiroki Matsumoto, Toshiatsu Uchida, Masaaki Uno Neurosurgery/ Kawasaki Medical School / Japan
DF012P	Malignant Intracranial Dural Arteriovenous Fistula (DAVF) Mimicking Acute Ischemic Stroke Presentation Sutee Chaovorawinyoo Neurointerventional Radiology/ Ramathibodi Hospital/ Thailand

STROKE TREATMENT & IMAGING	
Poster ID	Title
ST002P	Intracranial Anterior Circulation Major Branch Artery Stenosis Choice Of Treatment: A Case Series Aryatama, Hadio Ali Khazatsin, Ha Minh-Duc, Tran Khanh, Nguyen Duy-Linh, Trang Mong Hai Yen, Nguyen Duc-Thanh, Cuong Tran-Chi Interventional Neuroradiology/ University Of Medicine And Pharmacy Ho Chi Minh City/ Vietnam
ST003P	Endarterectomy And Stent Extraction For The Treatment Of Vertebral Artery Ostium Occlusion With Stent Fracture Yang Bin, Ma Yan, Jiao Liqun Neurosurgery/ Xuanwu Hospital, Capital Medical University/ China
ST004P	Intracranial Angioplasty And Stenting For Cerebral Artherosclerosis: Results Of 106 Cases Hwang Daehyun, Lee Kijae, Shim Jaechan, Kim Hokyun, Suh Jeongho Radiology/ Seoul Paik Hospital/ Korea
ST007P	Clopidogrel Resistance Related Delayed Thrombosis Of Carotid Artery Stenting: A Case Report Kuo Kuei-Hong Division Of Medical Image/ Far Eastern Memorial Hospital/ Taiwan
ST008P	Intracranial Hemorrhage Is More Likely To Occur In Intracranial Metastatic Foci Comparing To Acute Infarct Region Following Intravenous rt-PA And Intra-Arterial Thrombectomy In A Patient With Acute Infarct And Intracranial Metastases Michael Teng Mu-Huo, Hsu Ho-Chuan, Yan Shangyi, Chen Wei-Teing Department Of Medical Imaging/ Cheng Hsin General Hospital/ Taiwan

STROKE TREATMENT & IMAGING	
Poster ID	Title
ST009P	Intravenous Eptifibatide As The Adjuvant Treatment In Immediately Re-Occlusion After Mechanical Thrombectomy – Single Center Experience And Review Of The Literature Mungkorn Apirakkan , Chai Kobkitsuksakul, Ekachat Chanthanaphak, Sirintara Pongpech <i>Radiology, Ramathibodi Hospital/ Division Of Interventional Neuroradiology/ Thailand</i>
ST010P	Mechanical Thrombectomy In Patients With Acute Vertebrobasilar Occlusion: 5 Year-Experiences In Siriraj Hospital Payothorn Decharin , Boonrerak Sangpetngam, Ekawut Chankaew, Thaweesak Aurboonyawat, Dittapong Songsaeng, Cesar De Guzman Jr, Tiplada Boonchai, Anchalee Churojana <i>Faculty of Medicine, Siriraj Hospital, Mahidol University/ Interventional Radiology Excellent Center/ Thailand</i>
ST011P	Angiographic And Clinical Factors Related With Good Functional Outcome After Mechanical Thrombectomy In Acute Cerebral Artery Occlusion Park Sang-Kyu <i>Neurosurgery/ Incheon St. Mary's Hospital/ Korea</i>
ST012P	The Value Of Perfusion CT As A Prognostic Factor After Mechanical Thrombectomy In Anterior Circulation Large Vessel Occlusion Patients Park Sang-Kyu , Moon Byeong-Hoo, Cho Byeong-Rae, Jang Dong-Kyu, Jang Kyeong-Sool <i>Neurosurgery/ Incheon St. Mary's Hospital/ Korea</i>
ST013P	Clinical Analysis Comparing Efficacy Between A Distal Filter Protection Device And Proximal Balloon Occlusion Device During Carotid Artery Stenting Chung Seung-Young , Chang Se-Hun, Park Moon-Sun <i>Department Of Neurosurgery/ Eulji University Hospital/ Korea</i>
ST015P	Correlation Of Risk Factors And Alberta Stroke Program Early CT Score (ASPECTS) In Patients With Middle Cerebral Artery Ischaemic Stroke In Hospital Universiti Sains Malaysia (HUSM) Teo Yin-Eie , Win Mar @ Salmah Jalaluddin <i>Department of Radiology/ Hospital Universiti Sains Malaysia/ Malaysia</i>

Co-organisers



Supported by



STRAITS COUNCIL



Endorsed by



Malaysian Society of Interventional Radiology (MYSIR) 2018

In conjunction with
13th Asian-Australasian Federation of Interventional & Therapeutic Neuroradiology (AAFITN) 2018

7th-9th March 2018



Supporting Organisations



MYSIR 2018 Faculty

Asst Prof Dr Antonio Rampoldi
Italy

Dr Naveen Rajadurai
Malaysia

Assoc Prof Dr Anushya Vijayanathan
Malaysia

Prof Dr Norimitsu Tanaka
Japan

Prof Dr Basri Johan Jeet Abdullah
Malaysia

Dr Ridzuan Abdul Rahim
Malaysia

Dr Mario Muto
Italy

Day 1 - 7th March 2018 (Wednesday)

MYSIR 2018

Lecture Hall D (Orchid Room)

TIME	TOPIC		SPEAKER
0700 - 1730	REGISTRATION COUNTER OPEN		
0800 - 1000	PLENARIES, KEYNOTE LECTURE AND OPENING CEREMONY IN LECTURE HALL A, LEVEL 1		
1000 - 1030	TEA BREAK AND EXHIBIT VISIT		
	MYSIR FREE PAPER ORAL PRESENTATIONS IN LECTURE HALL G (MEETING ROOM 10)		
		Chairperson	Dr Nur Adura Yaakup
1030 - 1037	MY001	The Correlation Of Arteriovenous Fistula Stenosis With Haemodialysis Parameters Before And After Angioplasty	Dr Ani Darwina Abd Halim
1037 - 1044	MY002	Extended Endovenous Laser Therapy Of The Long Saphenous Vein: A Safe Procedure That Reduces The Need For Additional Sclerotherapy	Dr Eric Chung
1044 - 1051	MY004	Selective Hepatic Arterial Embolisation Of Hepatic Arteriovenous Fistula Secondary To Lupus Vasculitis	Dr Tan Kia-Sing
1051 - 1058	MY005	Selective Salpingography And Fallopian Tube Recanalisation: The University Malaya Medical Centre Experience	Assoc Prof Dr Anushya Vijayanathan
1058 - 1105	MY006	Common Iliac Vein Stenting For The Treatment Of Chronic Lower Limb Swelling Due To Preferential Drainage Of The Lower Limb Vein Into Pelvic Arteriovenous Malformation	Dr Mohd Naim Mohd Yaakob
1105 - 1112	MY007	Prostatic Artery Embolisation For Acute Urinary Retention Secondary To Benign Prostate Hyperplasia	Dr Mohd Naim Mohd Yaakob
1112 - 1119	MY008	A Comparison Between Cone-Beam Computed Tomography (CBCT) With Multislice Computed Tomography (MSCT) In The Identification Of Common Periprocedural Intracranial Pathologies	Dr Izzatul Aini Mohamad Idris
1119 - 1126	MY009	Comparing Central Line-Associated Bloodstream Infection Rate Between Tunnelled And Cuffed Peripherally Inserted Central Catheter (PICC)	Dr Teoh Sze-Yong
1200 - 1230	MEDTRONIC LUNCH SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1230 - 1400	LUNCH BREAK AND EXHIBIT VISIT		
	MYSIR SYMPOSIUM (INTERVENTIONAL ONCOLOGY) 1		
		Chairperson	Dr Nik Azuan Nik Ismail
1400 - 1420	MS01	Palliation: What Can We Offer? An Extension Of IO	Prof Dr Basri Johan Jeet Abdullah
1420 - 1440	MS02	Vascular Access Options In A Cancer Patient	Assoc Prof Dr Anushya Vijayanathan
1440 - 1500	MS03	GI Palliation Therapy In The Terminally Ill	Prof Dr Basri Johan Jeet Abdullah
1500 - 1520		Q & A Session	All Speakers Above
1520 - 1530	VASCULAR ULTRASOUND WORKSHOP INTRODUCTION FOR MALAYSIAN TRAINEES		
	MS04	Vascular Ultrasound Workshop	Assoc Prof Dr Anushya Vijayanathan
1530 - 1600	BALT TEA SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1600 - 1630	TEA BREAK AND EXHIBIT VISIT		
1630 - 1730	VASCULAR ULTRASOUND WORKSHOP FOR MALAYSIAN TRAINEES		
		Vascular Ultrasound Workshop For Malaysian Trainees	Assoc Prof Dr Anushya Vijayanathan
	END OF DAY 1		
1930 until late	FACULTY DINNER (BY INVITATION ONLY)		

Day 2 - 8th March 2018 (Thursday)
MYSIR 2018

Lecture Hall D (Orchid Room)

TIME	TOPIC		SPEAKER
0700 - 1730	REGISTRATION COUNTER OPEN		
0800 - 1000	BREAKFAST SYMPOSIUM AND PLENARIES IN LECTURE HALL A, LEVEL 1		
1000 - 1030	TEA BREAK AND EXHIBIT VISIT		
1030 - 1200	AAFITN 2018 AND MCOR 2018 SESSIONS IN LECTURE HALL A AND LECTURE HALL E RESPECTIVELY		
1200 - 1230	STRYKER LUNCH SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1230 - 1400	LUNCH BREAK AND EXHIBIT VISIT		
	MYSIR SYMPOSIUM (INTERVENTIONAL ONCOLOGY) 2		
		Chairperson	Dr Ridzuan Abdul Rahim
1400 - 1420	MS05	HCC TACE: Milan Experience	Asst Prof Dr Antonio Rampoldi
1420 - 1440	MS06	Radioembolization: Malaysian Audit, Are We Doing It Right?	Dr Ridzuan Abdul Rahim
1440 - 1500	MS07	Gynaecological Malignancies: Chemoradiation	Assoc Prof Dr Anushya Vijayanathan
1500 - 1520	MS08	Head And Neck Tumours: The RADPLAT Regime	Prof Dr Norimitsu Tanaka
1520 - 1530		Q & A Session	All Speakers Above
1530 - 1600	WOMEN IN IR SESSION IN LECTURE HALL A, LEVEL 1		
1600 - 1630	TEA BREAK AND EXHIBIT VISIT		
1630 - 1730	MYSIR COMPLICATION MEETING		
	END OF DAY 2		
1930 until late	CONFERENCE DINNER - FOR ALL DELEGATES		

Day 3 - 9th March 2018 (Friday)
MYSIR 2018

Lecture Hall D (Orchid Room)

TIME	TOPIC		SPEAKER
0700 - 1730	REGISTRATION COUNTER OPEN		
0800 - 1000	BREAKFAST SYMPOSIUM AND PLENARIES IN LECTURE HALL A, LEVEL 1		
1000 - 1030	TEA BREAK AND EXHIBIT VISIT		
1030 - 1200	AAFITN 2018 AND MCOR 2018 SESSIONS IN LECTURE HALL A AND LECTURE HALL E RESPECTIVELY		
1200 - 1400	LUNCH BREAK AND EXHIBIT VISIT		
	MYSIR SYMPOSIUM (INTERVENTIONAL ONCOLOGY) 3		
		Chairperson	Dr Naveen Rajadurai
1400 - 1420	MS09	Prostate Artery Embolization (PAE)	Asst Prof Dr Antonio Rampoldi
1420 - 1440	MS10	Bone Tumour: Current Management Strategies	Dr Mario Muto
1440 - 1500	MS11	Soft Tissue Tumours: What Can We Offer?	Dr Muhammad Fadli Embong
1500 - 1520	MS12	Pain Management For The Terminally Ill	Dr Mario Muto
1520 - 1530		Q & A Session	All Speakers Above
1530 - 1600	MICROVENTION TEA SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1600 - 1630	TEA BREAK AND EXHIBIT VISIT		
1630 - 1730	MALAYSIAN RADIOLOGY TRAINEE TEACHING SESSION		
1730 - 1800	CLOSING CEREMONY		

Co-organisers



Supported by



STRAITS COUNCIL



Endorsed by



Malaysian Congress of Radiology (MCOR) 2018

In conjunction with
13th Asian-Australasian Federation of Interventional & Therapeutic Neuroradiology (AAFITN) 2018

7th-9th March 2018



Supporting Organisations



MCOR 2018 Faculty

Dr Aida Abdul Aziz
Malaysia

Dr Lingeswaran Kasilingam
Malaysia

Dr Sumithra Sannasey
Malaysia

Dr Anuradha P S Janardhanan
Malaysia

Asst Prof Dr Lynette Teo
Singapore

Dr Syazatul Syakirin Sirol Aflah
Malaysia

Assoc Prof Dr Anushya Vijayanathan
Malaysia

Dr Marlina Tanty Ramli Hamid
Malaysia

Dr Vicknesvaran Rajaratnam
Malaysia

Clinical Assoc Prof Dr Donna Blanche Taylor
Australia

Dr Mohammad Hanafiah
Malaysia

Prof Emeritus Dato' Dr Yip Cheng-Har
Malaysia

Dr Harjeet Singh
Malaysia

Dr Muhammad Fadli Embong
Malaysia

Dr Zuhanis Abdul Hamid
Malaysia

Prof Dr James F. Griffith
Hong Kong

Dr Naveen Rajadurai
Malaysia

Prof Dr Kartini Rahmat
Malaysia

Dr Shaleen Kaur
Malaysia

Day 1 - 7th March 2018 (Wednesday) MCOR 2018

Lecture Hall E (Rose Garden Room)

TIME	TOPIC		SPEAKER
0700 - 1730	REGISTRATION COUNTER OPEN		
0800 - 1000	PLENARIES, KEYNOTE LECTURE AND OPENING CEREMONY IN LECTURE HALL A, LEVEL 1		
1000 - 1030	TEA BREAK AND EXHIBIT VISIT		
	MCOR SYMPOSIUM (CHEST)		
		Chairperson	Dr Aida Abdul Aziz
1030 - 1050	MC01	Interstitial Lung Disease HRCT Reporting: Clinicians Perspective	Dr Syazatul Syakirin Sirol Aflah
1050 - 1110	MC02	Basic HRCT Pattern Of Lung Disease	Dr Mohammad Hanafiah
1110 - 1130	MC03	Idiopathic Interstitial Pneumonias: Imaging Features	Dr Mohammad Hanafiah
1130 - 1150	MC04	Radiopath Of The Lungs	Asst Prof Dr Lynette Teo
1150 - 1200		Q & A session	All Speakers Above
1200 - 1230	MEDTRONIC LUNCH SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1230 - 1400	LUNCH BREAK AND EXHIBIT VISIT		
	MCOR SYMPOSIUM (CHEST)		
		Chairperson	Dr Zuhanis Abdul Hamid
1400 - 1420	MC05	Essential In Chest Radiography	Dr Zuhanis Abdul Hamid
1420 - 1440	MC06	Imaging Of COPD And Asthma	Asst Prof Dr Lynette Teo
1440 - 1500	MC07	Approach To Cystic Lung Disease	Asst Prof Dr Lynette Teo
1500 - 1520	MC08	Pulmonary Infection In Immunocompromised Patients	Dr Aida Abdul Aziz
1520 - 1530		Q & A session	All Speakers Above
1530 - 1600	BALT TEA SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1600 - 1630	TEA BREAK AND EXHIBIT VISIT		
	MCOR SYMPOSIUM (CHEST)		
1630 - 1730		Chairperson	Dr Mohammad Hanafiah
	MC09	Mediastinal Lymphadenopathy: CT Station Followed By Case Discussion	Dr Aida Abdul Aziz
	END OF DAY 1		
1930 until late	FACULTY DINNER (BY INVITATION ONLY)		

TIME	TOPIC		SPEAKER
0700 - 1730	REGISTRATION COUNTER OPEN		
0800 - 1000	BREAKFAST SYMPOSIUM AND PLENARIES IN LECTURE HALL A, LEVEL 1		
1000 - 1030	TEA BREAK AND EXHIBIT VISIT		
	MCOR SYMPOSIUM (MUSCULOSKELETAL)		
		Chairperson	Dr Anuradha P S Janardhanan
1030 - 1110	MC10	Diagnostic Dilemmas In MSK Sports Imaging - Imaging Vs Operative Findings	Dr Harjeet Singh
	MC11		Dr Vicknesvaran Rajaratnam
1110 - 1130	MC12	Approach To Ultrasound Of The Shoulder And Ankle	Prof Dr James F. Griffith
1130 - 1150	MC13	Live Demo Ultrasound Shoulder And Ankle	Prof Dr James F. Griffith
1150 - 1200		Q & A Session	All Speakers Above
1200 - 1230	STRYKER LUNCH SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1230 - 1400	LUNCH BREAK AND EXHIBIT VISIT		
	MCOR SYMPOSIUM (MUSCULOSKELETAL)		
		Chairperson	Dr Vicknesvaran Rajaratnam
1400 - 1420	MC14	Imaging Characteristics In Rheumatological Disorders	Dr Sumithra Sannasey
1420 - 1440	MC15	Role Of Nuclear Medicine In Musculoskeletal Disorders	Dr Lingeswaran Kasilingam
1440 - 1500	MC16	Essential Reporting In Shoulder MRI	Dr Anuradha P S Janardhanan
1500 - 1520	MC17	What A Surgeon Wants To Know In A Shoulder MRI Report	Dr Harjeet Singh
1520 - 1530		Q & A Session	All Speakers Above
1530 - 1600	WOMEN IN IR SESSION IN LECTURE HALL A, LEVEL 1		
1600 - 1630	TEA BREAK AND EXHIBIT VISIT		
	MCOR SYMPOSIUM (MUSCULOSKELETAL)		
		Chairperson	Dr Sumithra Sannasey
1630 - 1636	BD001	Apparent Diffusion Coefficient Quantification To Differentiate Hepatocellular Carcinoma And Liver Hemangioma In Diffusion MR Imaging	Dr Andrew Cheng
1636 - 1642	NR002	CT And MRI Imaging Of The Brain In MELAS Syndrome - A Case Report	Dr Andrew Cheng
1642 - 1730		Ultrasound MSK Hands-On Session (Shoulder And Ankle)	Prof Dr James F. Griffith Dr Anuradha P S Janardhanan Dr Sumithra Sannasey Dr Vicknesvaran Rajaratnam Dr Muhammad Fadli Embong Dr Naveen Rajadurai
	END OF DAY 2		
1930 until late	CONFERENCE DINNER - FOR ALL DELEGATES		

TIME	TOPIC		SPEAKER
0700 - 1730	REGISTRATION COUNTER OPEN		
0800 - 1000	BREAKFAST SYMPOSIUM AND PLENARIES IN LECTURE HALL A, LEVEL 1		
1000 - 1030	TEA BREAK AND EXHIBIT VISIT		
	MCOR SYMPOSIUM (BREAST)		
		Chairperson	Dr Marlina Tanty Ramli Hamid
1030 - 1050	MC18	Breast MRI: Latest Indications	Dr Shaleen Kaur
1050 - 1110	MC19	Breast MRI Reporting: BI-RADS Lexicon And Image Interpretation	Prof Dr Kartini Rahmat
1110 - 1130	MC20	MRI Guided Interventional Procedures, Principals And Clinical Perspective	Clinical Assoc Prof Dr Donna Blanche Taylor
1130 - 1150	MC21	Oncoplastic Surgery - What The Radiologist Needs To Know	Prof Emeritus Dato' Dr Yip Cheng-Har
1150 - 1200		Q & A Session	All Speakers Above
1200 - 1400	LUNCH BREAK AND EXHIBIT VISIT		
	MCOR SYMPOSIUM (BREAST)		
		Chairperson	Dr Marlina Tanty Ramli Hamid
1400 - 1420	MC22	Vacuum Assisted Breast Biopsy Under Stereotactic And US Guidance - The Essentials	Prof Dr Kartini Rahmat
1420 - 1440	MC23	Updates Of Breast Cancer Surgery In In-Situ Carcinoma (DCIS And LCIS)	Prof Emeritus Dato' Dr Yip Cheng-Har
1440 - 1500	MC24	Breast US Updates - Elastography And When Should You Do It	Assoc Prof Dr Anushya Vijayanathan
1500 - 1520	MC25	Contrast Enhanced Spectral Mammography, Current Indications And Future Prospects	Clinical Assoc Prof Dr Donna Blanche Taylor
1520 - 1530		Q & A Session	All Speakers Above
1530 - 1600	MICROVENTION TEA SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1600 - 1630	TEA BREAK AND EXHIBIT VISIT		
	MCOR SYMPOSIUM (BREAST)		
		Chairperson	Dr Marlina Tanty Ramli Hamid
1630 - 1730		Multimodality Interesting Case Discussion By Panel	Clinical Assoc Prof Dr Donna Blanche Taylor Prof Dr Kartini Rahmat Prof Emeritus Dato' Dr Yip Cheng-Har
	END OF DAY 3		
1730 - 1800	CLOSING CEREMONY		

TIME	TOPIC	SPEAKER
0700 - 1730	REGISTRATION COUNTER OPEN	
0800 - 1000	PLENARIES, KEYNOTE LECTURE AND OPENING CEREMONY IN LECTURE HALL A, LEVEL 1	
1000 - 1030	TEA BREAK AND EXHIBIT VISIT	
	MYSIR & MCOR FREE PAPER ORAL PRESENTATIONS 1	
	Chairperson	Dr Marlina Tanty Ramli Hamid Dr Vicknesvaran Rajaratnam
1030 - 1037	BD002	Tongue Cavernous Haemangioma Dr Hairuddin Achmad Sankala
1037 - 1044	BD003	Hughes-Stovin Syndrome: A Case Report Dr Isa Azzaki Zainal
1044 - 1051	BD004	Troubleshooting The Implementation Of Dual-Energy Computed Tomography Pulmonary Angiography For The Diagnosis Of Pulmonary Emboli At A Large Level 1 Trauma Centre Dr James Ling
1051 - 1058	BD005	The Effect Of A Modified Alternate-Day Calorie Restriction Programme On Nonalcoholic Fatty Liver Disease Dr Khairiah Mat Yusoff
1058 - 1105	BD006	Undescended Testes - Not The End Of Story, But The Beginning Dr Khor Foo-Kiang
1105 - 1112	BD007	Focal Chronic Pyelonephritis Mimicking A Renal Cell Carcinoma: A Case Report Dr Manju T Raja
1112 - 1119	BD008	A Cross-Sectional Study To Assess The Agreement Between Doppler Ultrasonography And Nonenhanced Magnetic Resonance Angiography In Diagnosing Significant Main Renal Artery Stenosis And Its Influencing Factors Dr Mazeda Murad
1119 - 1126	BD009	Vanek's Tumor Causing Ileocecal Intussusception In An Adult Lady: A Case Report Dr Norain Talib
1126 - 1133	BD010	The Association Of Findings From Thoracic Computed Tomography With Galactomannan And Aspergillus-Specific Polymerase Chain Reaction For The Diagnosis Of Invasive Aspergillosis In Patients With Febrile Neutropenia Dr Juhara Haron
1133 - 1140	BD011	Pancreatic Head Mass: Now You See It, Now You Don't Dr Phyllis Ho Wan-Chun
1140 - 1147	BD012	Erosive Juvenile Polyarticular Tophaceous Gout With Hyoid Bone Involvement Dr Chuah Teik-Beng
1147 - 1154	BD013	Measurement Of Middle-Ear Volume In Adults Using Three-Dimensional Reconstruction Multidetector Computed Tomography Dr Siti Khairunnisaak Abdul Rahman
1200 - 1230	MEDTRONIC LUNCH SYMPOSIUM IN LECTURE HALL A, LEVEL 1	
1230 - 1400	LUNCH BREAK AND EXHIBIT VISIT	
	MYSIR & MCOR FREE PAPER ORAL PRESENTATIONS 2	
	Chairperson	Dr Mohammad Hanafiah Dr Shaleen Kaur
1400 - 1407	BD014	Comparison Of HepaFat - Scan And Fibroscan Controlled Attenuation Parameter For The Estimation Of Hepatic Steatosis In Patients With Non-Alcoholic Fatty Liver Using Histology As The Reference Standard Dr Syaman Harry
1407 - 1414	BD015	A Rare Case Of Biopsied Proven Renal Synovial Sarcoma In A Young Adult Patient: A Case Report And Literature Review Dr Wong Sheau-Ning
1414 - 1421	MI001	Effect Of Reduction In Administered Dosage Of Radiopharmaceutical Activity On Contemporary Nuclear Cardiology Practices And Services In Hospital Kuala Lumpur Dr Ahmad Zaid Zainal
1421 - 1428	MS001	The Unique "Dot-In-Circle" Sign On Magnetic Resonance Imaging In A Case Of Madura Foot Dr Apsara Panicker
1428 - 1435	MS002	Multiple Enchondromatosis (Ollier Disease): A Rare Case In The Philippines Dr Ernie Bautista II
1435 - 1442	MS003	An Uncommon Presentation Of A Giant Cell Tumour Dr Alex Fook-Seng Lee
1442 - 1449	MS004	A Correlation Between Ultrasonographic Dynamic Evaluation And Clinical Laxity Grading Of Anterior Talofibular Ligament And Calcaneofibular Ligament Tears Among Athletes Dr Indar Rahini Hairi
1449 - 1456	MS005	A Case Of Osteogenesis Imperfecta Dr Jerik Yumol
1456 - 1503	MS006	Multidetector Computed Tomography Arthrography Of The Shoulder Is A Better Cost-Saving Imaging Modality In Suburban Hospitals: A Pictorial Essay Dr Cheng Ming-Huan
1503 - 1510	MS007	Thrower's Fracture – A Rare Injury From A Rare Sport In Malaysia Dr Mohd Shukry Mohd Khalid
1510 - 1517	MS008	Cadaveric Stature Estimation (Using Postmortem Computed Tomography (PMCT)) In The Malaysian Population Dr Sabrilhakim Sidek
1517 - 1524	MS009	Morphologic Changes Of Rotator Cuff Muscles Following Fast Isokinetic Training In State-Level Weightlifters Dr Siti Salwa Mohamad Zaini
1530 - 1600	BALT TEA SYMPOSIUM IN LECTURE HALL A, LEVEL 1	
1600 - 1630	TEA BREAK AND EXHIBIT VISIT	
	END OF DAY 1	
1930 until late	FACULTY DINNER (BY INVITATION ONLY)	

TIME	TOPIC		SPEAKER
0700 - 1730	REGISTRATION COUNTER OPEN		
0800 - 1000	PLENARIES, KEYNOTE LECTURE AND OPENING CEREMONY IN LECTURE HALL A, LEVEL 1		
1000 - 1030	TEA BREAK AND EXHIBIT VISIT		
	MYSIR & MCOR FREE PAPER ORAL PRESENTATIONS 3		
		Chairperson	Dr Nur Adura Yaakup
1030 - 1037	MY001	The Correlation Of Arteriovenous Fistula Stenosis With Haemodialysis Parameters Before And After Angioplasty	Dr Ani Darwina Abd Halim
1037 - 1044	MY002	Extended Endovenous Laser Therapy Of The Long Saphenous Vein: A Safe Procedure That Reduces The Need For Additional Sclerotherapy	Dr Eric Chung
1044 - 1051	MY004	Selective Hepatic Arterial Embolisation Of Hepatic Arteriovenous Fistula Secondary To Lupus Vasculitis	Dr Tan Kia-Sing
1051 - 1058	MY005	Selective Salpingography And Fallopian Tube Recanalisation: The University Malaya Medical Centre Experience	Assoc Prof Dr Anushya Vijayanathan
1058 - 1105	MY006	Common Iliac Vein Stenting For The Treatment Of Chronic Lower Limb Swelling Due To Preferential Drainage Of The Lower Limb Vein Into Pelvic Arteriovenous Malformation	Dr Mohd Naim Mohd Yaakob
1105 - 1112	MY007	Prostatic Artery Embolisation For Acute Urinary Retention Secondary To Benign Prostate Hyperplasia	Dr Mohd Naim Mohd Yaakob
1112 - 1119	MY008	A Comparison Between Cone-Beam Computed Tomography (CBCT) With Multislice Computed Tomography (MSCT) In The Identification Of Common Periprocedural Intracranial Pathologies	Dr Izzatul Aini Mohamad Idris
1119 - 1126	MY009	Comparing Central Line-Associated Bloodstream Infection Rate Between Tunnelled And Cuffed Peripherally Inserted Central Catheter (PICC)	Dr Teoh Sze-Yong
1126 - 1133	PD001	Establishing Reference Value For Normal Liver Stiffness Among Healthy Children Assessed By Point ShearWave Elastography Imaging	Dr Sim Kuan-Siong
1133 - 1140	PD002	Orbital Manifestations Of Langerhans Cell Histiocytosis - A Case Report	Dr Nur Asma Sapiai
1140 - 1147	PD003	Biliary Rhabdomyosarcoma: A Diagnostic Challenge	Dr Sim See-Khim
1200 - 1230	MEDTRONIC LUNCH SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1230 - 1400	LUNCH BREAK AND EXHIBIT VISIT		
	MYSIR & MCOR FREE PAPER ORAL PRESENTATIONS 4		
		Chairperson	Dr Muhammad Fadli Embong Dr Sumithra Sannasey
1400 - 1407	NR001	Neuroimaging Abnormalities In Anti-NMDA Receptor Encephalitis	Dr Alan Basil Peter
1407 - 1414	NR004	Regional Diffusion Tensor Imaging-Derived Tensor Metrics From White Matter Tracts For The Characterisation Of Gliomas	Ms Seow Pohchoo
1414 - 1421	NR005	Malignant Melanoma Of The Nasal Cavity	Dr Rofiah Ali
1421 - 1428	NR006	Microstructural Integrity Of The Peripheral Nerves In Charcot-Marie-Tooth (CMT) Disease; An MRI Evaluation Study	Dr Thiagu Krisnan
1428 - 1435	NR007	Vein Of Galen Aneurysmal Malformation (VGAM): A Case Of An Uncommon Intracranial Vascular Malformation And Literature Review	Dr Yiaw Yeong-Huei
1435 - 1442	NR008	A Rare Case Of Tectal Plate Glioma But With Typical Presentation Of Obstructive Hydrocephalus	Dr Leong Yuh-Yang
1442 - 1449	BR001	Spectrum Of Papillary Breast Lesions In Malaysian Population: Radiopathological Considerations	Dr Farhana Fadzli
1449 - 1456	BR002	Diagnostic Accuracy And Clinical Feasibility Of Vacuum-Assisted Breast Biopsy (VAB) Of Non-Palpable Breast Lesions - A Single Centre Experience	Prof Dr Kartini Rahmat
1456 - 1503	BR003	Usefulness And Diagnostic Accuracy Of Tomosynthesis In Characterising Mammographic Abnormality	Dr Marlina Tanty Ramli Hamid
1503 - 1510	BR004	The Impact Of Multimodality Imaging In Clinical Decision-Making In Breast Cancer Patients Selected For Intraoperative Radiotherapy (IORT)	Dr Chan Wai-Yee
1530 - 1600	BALT TEA SYMPOSIUM IN LECTURE HALL A, LEVEL 1		
1600 - 1630	TEA BREAK AND EXHIBIT VISIT		
	END OF DAY 1		
1930 until late	FACULTY DINNER (BY INVITATION ONLY)		

MYSIR 2018	
Poster ID	Title
MY001P	<p>Percutaneous Gastrocystomy Stent Removal As A Viable Alternative To Conventional Endoscopic And Surgical Removal: A Case Report Of An Intra-Abdominal Stent Migration Eric Chung, Nur Adura Yaakup, Norshazriman Sulaiman Bio-Medical Imaging/ University Malaya/ Malaysia</p>
MY002P	<p>The Brain Don't Know The Eyes Don't See - Incidental Findings Of Right Subclavian Arterio-Venous Fistula (AVF) Khor Foo-Kiang, Ooi Xi-Yi, Constance Liew Sat-Lin, Fairrul Kadir Department Of Medicine Based Discipline/ Faculty Of Medicine And Health Sciences, Universiti Malaysia Sabah/ Malaysia</p>
MY003P	<p>An Atypical Cause Of Extensive Lower Extremity DVT: May-Thurner Syndrome Melissa Ting Sok-Lin, Phyllis Ho Wan-Chun Radiology Department/ Hospital Bintulu/ Malaysia</p>
MY004P	<p>Case Report: Prostate Artery Embolization Using Embosphere On A 75 Year Old Man With Bleeding Benign Prostate Hyperplasia Complicated With Long Standing Indwelling Bladder Catheter Mohd Naim Mohd Yaakob, Ridzuan Abdul Rahim Radiology/ National University Of Malaysia/ Malaysia</p>
MY005P	<p>Staged Embolization Of Vein Of Galen Aneurysmal Malformation: A Case Report Mohd Shafie Abdullah, Farouk Haji Jalil Radiology/ Universiti Sains Malaysia/ Malaysia</p>
MY006P	<p>Incidence Of Cement Leakage In Vertebroplasty Of Metastatic Spine Disease Using High Viscosity PMMA Muhammad Fadli Embong, Mario Muto Department of Radiology/ Hospital Sungai Buloh/ Malaysia</p>
MY007P	<p>Association Between Ankle-Brachial Index, Pulse Oximetry Gradient Index And CT Angiogram Of Lower Limb Among Diabetic Type 2 Patient For Detecting Peripheral Arterial Disease Norain Talib, Mohd Shafie Abdullah, Wan Mohd Izani Wan Mohamed Radiology Department/ Universiti Sains Malaysia / Malaysia</p>
MY008P	<p>Systemic Air Embolism Post Transthoracic Lung Biopsy Shaleene Subramaniam, Ganeshwara Durai Raja Lingam Radiology/ Hospital Selayang/ Malaysia</p>

MCOR 2018: BODY IMAGING	
Poster ID	Title
BD002P	<p>Rare Case: Right Pulmonary Agenesis With Isolated Dextrocardia In Late Adulthood Chong Chia-Yin, Tristan Hilary Thomas Department of Radiology/ Hospital Ampang/ Malaysia</p>
BD003P	<p>Left Portal Vein Aneurysm - A Rare Entity Gayathri Letchumanan, Muhammad Arif Basiran, Farah Naz Saleem Department Of Radiology/ Hospital Selayang/ Malaysia</p>
BD004P	<p>Septic Azygous Vein Thrombosis: A Case Report Hairuddin Achmad Sankala, Mohammad Ihab Ismail Radiology/ Hospital Tawau/ Malaysia</p>
BD005P	<p>A Rare Case Of Double Inferior Vena Cava With Duplicated Right Inferior Vena Cava Hairuddin Achmad Sankala, Siti Salihah Mohd Safian Radiology/ Hospital Tawau/ Malaysia</p>
BD006P	<p>Retropharyngeal Abscess With Extension To The Mediastinum Hairuddin Achmad Sankala, Jayarubany Kodiappan Radiology/ Hospital Tawau/ Malaysia</p>

MCOR 2018: BODY IMAGING	
Poster ID	Title
BD008P	Traumatic Abdominal Hernia Post Motor Vehicle Accident <i>Aileen Teo, Hanim Mohd Taha</i> <i>Radiology/ Hospital Bintulu/ Malaysia</i>
BD009P	Lingual Thyroid: Incidental Find In A Patient Presenting With Right Submandibular Abscess Of Dental Origin. A Case Report <i>Jeremiah Sunderaj Peter, Fatimah Hussin</i> <i>Radiology/ Queen Elizabeth Hospital/ Malaysia</i>
BD010P	A Case Of Small Bowel Obstruction Secondary To Santol (Sandoricum koetjape) Seed In Kuala Krai, Kelantan <i>Wee Koon-Suan, Norhaizam Md Nor</i> <i>Radiology/ Hospital Kuala Krai/ Malaysia</i>
BD011P	Atypical Appearance Of Invasive Lung Adenocarcinoma With 'Crazy Paving' At The Periphery Of A Solid Mass <i>Mohammad Hanafiah, Bushra Johari, Lily Diana Zainudin, Diana Katiman</i> <i>Medical Imaging Unit/ Faculty Of Medicine, Universiti Teknologi MARA/ Malaysia</i>
BD012P	Non-Confluent Micronodules In Peribronchovascular Distribution: Atypical Radiologic Appearance Of Pulmonary Tuberculosis In An Immunocompetent Patient <i>Mohammad Hanafiah, Bushra Johari, Roqiah Fatmawati Abdul Kadir, Lily Diana Zainudin</i> <i>Medical Imaging Unit/ Faculty Of Medicine, Universiti Teknologi MARA/ Malaysia</i>
BD013P	Pulmonary Langerhans Cell Histiocytosis With Recurrent Inguinal Abscess <i>Mohammad Hanafiah, Kamarul Naim Mohd Hirmizi, Nurul Yaqeen Mohd Esa, Mardiana Abdul Aziz, Nor Salmah Bakar Bakar</i> <i>Medical Imaging Unit/ Faculty Of Medicine, Universiti Teknologi MARA/ Malaysia</i>
BD014P	Incarcerated Bochdalek Hernia: A Rare Case Report In Adult Age <i>Mohd Anuar Awang, Dahlia Mohamed, Khatrulnada Md Saad, Ruben Gregory Xavier</i> <i>Radiology/ Hospital Sultan Haji Ahmad Shah/ Malaysia</i>
BD015P	Spontaneous Internal Hernia And What To Look For In CT Imaging. A Case Report Of Rare Cause Of Small Bowel Obstruction In Adults And Literature Reviews <i>Mohd Farid Bolhi, Yiau Yeong-Huei, Aida Mastura Mustapha</i> <i>Diagnostic Radiology/ Sarawak General Hospital/ Malaysia</i>
BD017P	Leiomyomatosis Peritonealis Disseminata: A Rare Smooth Muscle Tumor <i>Siti Salwa Mohamad Zaini, Mohd Ezane Aziz</i> <i>Radiology/ Universiti Sains Malaysia/ Malaysia</i>
BD018P	Capsule Endoscope Retention In Duodenal Metastasis Secondary To Sigmoid Adenocarcinoma – A Rare Complication <i>Chan Wai-Yee, Gnana Kumar</i> <i>Biomedical Imaging/ University Malaya Research Imaging Centre, University Of Malaya/ Malaysia</i>

MCOR 2018: BREAST RADIOLOGY	
Poster ID	Title
BR001P	Atypical Breast Lump Gayathri Letchumanan , Wong See-Peng, Premila Kanagasabai Department Of Radiology/ Hospital Selayang/ Malaysia
BR002P	MRI Of Breast Lymphoma: A Report Of Two Cases With Emphasis On Diffusion Weighted Imaging (DWI) And Apparent Diffusion Coefficient (ADC) Value Marlina Tanty Ramli Hamid, Shamsiah Abdul Hamid , Kartini Rahmat, Noor Laily Syakimah Saidi, Fatimah Kamila Abu Bakar, Sharon Tan Ling-Ling, Vijayalakshmi Krishnapillai Medical Imaging Unit, Fakulti Perubatan UiTM/ UiTM/ Malaysia
BR003P	Desmoid-Type Fibromatosis Of Both Breasts Teoh Sze-Yong , Anushya Vijayanathan, Kartini Rahmat, Shaleen Kaur Kirat Singh Biomedical and Diagnostic Imaging/ University Malaya (UMMC)/ Malaysia
BR004P	Spindle Cell Metaplastic Carcinoma Of The Breast In An Elderly Female Vithya Visalatchi Sanmugasiva, Shaleen Kaur , Marlina Tanty Ramli Hamid, Farhana Fadzli, Kartini Rahmat Department Of Bio-Medical Imaging/ University Of Malaya/ Malaysia
BR005P	Myofibroblastoma Of The Breast In An Elderly Male Vithya Visalatchi Sanmugasiva, Shaleen Kaur , Marlina Tanty Ramli Hamid, Farhana Fadzli, Kartini Rahmat Department Of Bio-Medical Imaging/ University Of Malaya/ Malaysia

MCOR 2018: MOLECULAR IMAGING / NUCLEAR MEDICINE	
Poster ID	Title
MI001P	Finding Of Suspicious Lesion On DMSA (V) Scintigraphy Supplemented With SPECT-CT In A Rare Case Of Recurrent Medullary Thyroid Cancer Ahmad Zaid Zainal , Siti Zarina Amir Hassan Nuclear Medicine Department/ Kuala Lumpur General Hospital/ Malaysia
MI002P	Combined Radionuclide Imaging Techniques Versus Standard Posterior Acquisition Dynamic Renal Scintigraphy In A Patient With Hydronephrotic Right Pelvic Kidney: A Case Report Ahmad Zaid Zainal , Fatin Hayyani Mohamad Najib, Siti Zarina Amir Hassan Nuclear Medicine Department/ Kuala Lumpur General Hospital/ Malaysia
MI003P	Scintigraphic Evaluation Of Chronic Lower Limb Swelling And Features Of Lymphoedema: Early Experience From HKL Ahmad Zaid Zainal , Noor Azilah Ahmad Tajudin, Siti Zarina Amir Hassan Nuclear Medicine Department/ Kuala Lumpur General Hospital/ Malaysia

MCOR 2018: PAEDIATRIC RADIOLOGY	
Poster ID	Title
PD001P	A Case Report Of Partial Anomalous Left Pulmonary Artery Sling Nurul Akhmar Omar , Lim Wooi-Kok, Mazeda Murad, Haniza Wahed, Mohammad Tamim Jamil Radiology/ Hospital Seberang Jaya/ Malaysia
PD003P	Superior Mesenteric Artery Syndrome: A Rare Cause Of Upper Gastrointestinal Obstruction Siti Salwa Mohamad Zaini , Khairil Amir Sayuti, Ahmad Tarmizi Musa Radiology/ Universiti Sains Malaysia/ Malaysia
PD004P	Osteopetrorickets – A Rare Phenotype In Paediatrics Not To Be Missed Chan Wai-Yee Biomedical Imaging/ University Malaya Research Imaging Centre, University Of Malaya/ Malaysia

MCOR 2018: MUSCULOSKELETAL

Poster ID	Title
MS001P	A Case Report Of Symmetrical Bilateral Parietal Bone Thinning Erik Tan Yew-Hock, Chuah Teik-Beng <i>Radiology Department/ Hospital Bintulu/ Malaysia</i>
MS002P	Possibility Of Acoustic Radiation Force Impulse For Assessment Of Hardness In Lymphedema; A Case Report Cho Hee-Kyung <i>Department Of Rehabilitation Medicine/ Catholic University Of Daegu School Of Medicine/ Korea</i>
MS003P	Inferior Vena Cava - Right Heart Chambers Thrombus In A Malignant Pelvic Bone Tumor. A Case Report Indar Rahini Hairi, Anushya Vijayanathan <i>Biomedical Imaging/ University of Malaya Medical Center/ Malaysia</i>
MS004P	Does Radiographically Determined Femur And Tibia Length Correlate With Forearm Length? James Ling, Simon Journeaux, Rino Olivotto <i>Radiology/ Mater Hospital/ Australia</i>
MS005P	Correlation Of Plasma Glycosylated Hemoglobin Level And Resistive Index Of Central Retinal Artery Through Color Flow Doppler Imaging Technique In Type 2 Diabetes Mellitus Patients, With And Without Retinopathy Jerik Yumol <i>Radiology/ Quezon City General Hospital/ Philippines</i>
MS006P	Hirayama Disease: A Rare Neurological Disorder Natasha Mohd Nasran, Siti Salwa Mohamad Zaini <i>Radiology/ Hospital Queen Elizabeth/ Malaysia</i>
MS008P	A Case Of Paget's Disease Of Spine And Pelvis With MRI, CT And Plain Radiograph Appearances: A Rare Entity In Asia Chan Wai-Yee, Vikneswary Paniandi, Cheah Wai-Keong, Gnana Kumar Gnanasuntharam <i>Department Of Biomedical Imaging/ University Of Malaya/ Malaysia</i>

MCOR 2018: NEURORADIOLOGY

Poster ID	Title
NR002P	MR Imaging In Acute Anterior Spinal Artery Syndrome, A Case Report Mohd Nadzri Misni, Sarina Salim, Baizura Kadir, Taranjit Kaur <i>Radiology/ Hospital Sultanah Nora Ismail/ Malaysia</i>
NR003P	Pituitary Haemorrhage: A Rare Complication Of Cavernous Sinus Thrombosis Farah Sofia Tarmizi Thayaparan, Alan Basil Peter, Hilwati Hashim <i>Radiology/ Selayang Hospital/ Malaysia</i>
NR004P	A Rare Cause Of Tinnitus That Can Be Confirmed By Imaging: Cerebellopontine Lipoma Ng Wei-Lin, Suzet Tan <i>Radiology/ Hospital Taiping/ Malaysia</i>
NR005P	Brain Abscess Following Traumatic Intracerebral Haematoma: A Case Report Lim Xiao-Yi <i>Department Of Neurosurgery/ Queen Elizabeth Hospital/ Malaysia</i>
NR006P	Correlation Between MR Volumetry And ADC Value Of Hippocampal Formation In Medically Intractable Temporal Lobe Epilepsy Patients Mohd Hanif Amran, Mohd Shafie Abdullah, Salmah@Win Mar Jalaluddin <i>Radiology/ Universiti Sains Malaysia/ Malaysia</i>

PL01

THIS ABSTRACT IS NOT AVAILABLE

Imaging In Stroke: Acute Stroke, ASPECT Score & Collateral Assessment

CC TCHOYOSON LIM¹

¹*NATIONAL NEUROSCIENCE INSTITUTE, RADIOLOGICAL/NEUROSCIENCE ACP, DUKE-NATIONAL UNIVERSITY OF SINGAPORE/ Singapore*

The role of radiologists in acute stroke imaging can be broken down into a few questions. These include:

1. What is the diagnosis (ischemic, hemorrhagic, or mimic)?
2. What is the topography and mechanism of the stroke?
3. How much brain is dead?
4. How much brain is at risk that we should salvage?
5. What method / how long a window do we have?
6. Will it make any difference to the patient's outcome?

Over the past few years, improved interventional techniques and better clinical trial data have opened new frontiers for treatment. Hence, although many of the questions have remained the same, the answers diagnostic imaging can provide, needs to change to catch up.

This presentation will give an overview of basic (such as ASPECTS score) and advanced (such as perfusion and collateral) techniques of imaging the brain parenchymal, pipes, and penumbra. Physiological imaging using new CT and MR methods can potentially quantify and stratify risk and plan treatment.

The questions haven't changed, our answers have. Future improvements, including deep learning, may help radiologists innovate and help save our patients' lives.

KL01

THIS ABSTRACT IS NOT AVAILABLE

AF01

THIS ABSTRACT IS NOT AVAILABLE

AF02

THIS ABSTRACT IS NOT AVAILABLE

AF03

THIS ABSTRACT IS NOT AVAILABLE

AF04

THIS ABSTRACT IS NOT AVAILABLE

How Much Imaging Is Enough – (Before Treatment?)

WINSTON LIM¹

¹DEPARTMENT OF DIAGNOSTIC RADIOLOGY/ SINGAPORE GENERAL HOSPITAL/ Singapore

With the Positive Endovascular Stroke Trials of 2015, we have indeed entered a new age in stroke treatment. However, for the best outcomes, patient selection is the key.

We will review current practice in the imaging work up and explore what is truly essential for managing patients who are deemed eligible for intravenous and endovascular therapy within current guidelines.

In my practice, we have the following approach:

Step 1:

At the most fundamental level, treatment should only be considered if there is

1. Significant Neurological deficit
2. Insignificant Radiological abnormality

CLINICAL – RADIOLOGICAL MISMATCH

This is easily established after appropriate clinical examination and an unenhanced CT scan brain that excludes the presence of intracranial haemorrhage and an established area of infarction > 1/3 of the cerebral hemisphere. Intravenous treatment can then be started if other exclusion criteria are absent.

Step 2:

For endovascular therapy, the added requirement to establish Large Vessel Occlusion (LVO) will require some form of vascular imaging. Currently, this is most easily acquired as the 2nd phase of the CT room visit when a CT Angiogram is obtained after the plain CT Head study. We routinely scan from the aortic arch into the cerebrum to evaluate access and proximal stenosis as well as circumvent the issues of delayed inflow masquerading as extracranial occlusion.

Step 3:

Imaging of collateral support and thus prognosticating response to therapy and outcomes is the next consideration. We currently acquire 3 phases, but this practice is not uniform across Singapore

What about MRI and Advanced Imaging (AI) ?

Currently, we reserve MRI when there is significant clinical change, especially in patients who have been transferred in and in posterior fossa infarcts.

With the impending adoption of the extended guidelines after DAWN and Diffuse 3, we expect increased use of AI in patient selection.

Intracranial Artery Dissection

HONG-QI ZHANG¹

¹*DEPARTMENT OF NEUROSURGERY/ XUANWU HOSPITAL, CAPITAL MEDICAL UNIVERSITY, CHINA INTERNATIONAL NEUROSCIENCE INSTITUTE, BEIJING/ China*

IAD (Intracranial Artery Dissection) are relatively rare but are an important cause of stroke, nowadays more often diagnosed because of increased familiarity with the clinical entity and particularly because of advances in imaging techniques. Patients can present with headache, ischemic stroke, subarachnoid hemorrhage, or symptoms associated with mass effect. Diagnosis is based on clinical presentation and specific features seen on multimodal neuroimaging. The management of IAD depends on the clinical presentation. Patients with IAD with subarachnoid hemorrhage are usually treated with surgical or endovascular procedures. Most patients with IAD without subarachnoid hemorrhage have been treated medically, and offered acute stroke treatment and long-term prevention of ischemic stroke. Endovascular treatment is undertaken only in patients with recurrent ischemic symptoms despite receiving optimum medical treatment. All treatment methods aim to reduce blood flow in the dissected region. Deconstructive techniques sacrifice the parent artery, whereas reconstructive techniques aim to maintain a parent artery. But optimum treatment for patients with IAD is unknown. Besides, the natural history of IAD is not clear. Multicenter prospective studies and trials with standardized protocols for diagnosis, imaging, and follow-up of intracranial artery dissection are needed. Overall, IAD has a more severe course than cervical artery dissection, with a more ominous outcome in patients with subarachnoid hemorrhage than in those without subarachnoid hemorrhage. Mortality outcome in patients without subarachnoid hemorrhage is low and similar to that in patients with cervical artery dissection.

Intracranial Stenting Balloon Expandable (BES) Versus Self-Expandable Stent (SES)

DAE CHUL SUH¹; JOONG-GOO KIM¹
¹ASAN MEDICAL CENTER/SEOUL/Korea

Intracranial atherosclerosis against optimal medical treatment requires reperfusion therapy to improve the clinical outcome. With comparison of outcomes between SES and/or BES of symptomatic severe intracranial stenosis against optimal medical treatment by using BES alone vs. BES or SES, BES or SES groups had a significantly lower AE rate (2.3%) than BES only group (14%) (P = 0.049) revealing mRS of ≤ 2 in all patients at six months compared to 93% of the patients in BES group.¹ BES was associated with less residual stenosis after stenting than SES (18 vs. 32%; P < 0.001). Both SES and BES can improve the clinical outcome of intracranial stenting especially with a selective choice of SES or BES.¹ The present study revealed that SES or BES had a better outcome (aE rate of 2.3%) than when the only choice available was BES (AE rate of 14%).² Despite the fact that patients with higher initial NIHSS were included in the resent series (24% of the patients had initial NIHSS ≥ 4), AE rate of our BES only group (14%) was similar to AE rate of the SAMMPRIS (14.7%), in which only the Wingspan stent was used. Because an AE rate of only 2.3% in the SES or BES group is lower than AE rate of aggressive medical treatment (5.8%)⁶, SES or BES stenting could improve the outcome of intracranial stenting and reduce the rate of recurrent ipsilateral stroke in patients with ipsilateral ischaemic events in high-grade stenosis (70%-99%) so that perioperative stroke and/or death can be reduced to less than 4% to warrant intracranial stenting.³

ST001

New DAFT (Dual Aspiration With Push And Fluff Technique) For Stent Retrievers In Acute Stroke With Large Vessel Occlusion – Increasing The Success Rate Of Recanalization

BIPLAB DAS¹; GAURAV GOEL¹; ANSHU MAHAJAN¹
¹NEUROINTREVENTION SURGERY/ MEDANTA, THE MEDICITY/ India

Purpose

We aimed to investigate the efficacy of new DAFT technique in the treatment of acute stroke

Materials and Methods

We retrospectively reviewed the 23 patients with acute large vessel occlusion using a new DAFT technique. Here, we used aspiration at the 5 MAX ACE catheter and Neuron MAX 088 6F catheter along with stent retriever assisted technique. Detail analysis of medical records were done to obtain patient age, gender, clinical history, NIHSS score, window period, site of occlusion, pass required, puncture to recanalisation time, reperfusion grade and mRS at discharge. Informed consent was taken in all the patients.

Results

First-pass mTICI 3 reperfusion was achieved in 18 out of 23 patients (78%) with a mean groin puncture to reperfusion time of 39.0 min \pm 12 and mTICI 3 was accomplished in 19 out of 23 cases (82%) with a maximum of 3 attempts. Successful reperfusion (mTICI \geq 2b) was achieved in all patients (100%) with a mean time from groin puncture to reperfusion of 45 min \pm 20.3. At presentation, the median National Institutes of Health Stroke Scale (NIHSS) score was 12 and favorable neurological outcome by the modified Rankin score (mRS \leq 2) was achieved in 14 out of 23 patients (61%).

Conclusion

DAFT is newer and very effective technique in terms of first-pass complete reperfusion in patients with LVO

ST002

Collateral Status Affects The Onset-To-Reperfusion Time Window For Good Outcome

BYUNG MOON KIM¹; ON BEHALF OF COSETS-RETROSPECTIVE INVESTIGATORS ON BEHALF OF COSETS-RETROSPECTIVE INVESTIGATORS²

¹INTERVENTIONAL NEURORADIOLOGY/ SEVERANCE HOSPITAL STROKE CENTER, YONSEI UNIVERSITY COLLEGE OF MEDICINE/ Korea, ²RADIOLOGY, NEUROLOGY, AND NEUROSURGERY/ 16 PARTICIPATING HOSPITALS/ Korea

Purpose

To characterize the time window in which endovascular thrombectomy (EVT) is associated with good outcome, and to test the differential relationship between functional outcome and onset-to-reperfusion time (ORT), depending on collateral status.

Materials and Methods

This is a retrospective analysis of clinical and imaging data of 554 consecutive patients who had recanalization success by EVT for anterior circulation large artery occlusion from the prospectively maintained registries of 16 comprehensive stroke centers between September 2010 and December 2015. The patients were dichotomized into good and poor collateral groups based on computed tomographic angiography. We tested whether the likelihood of good outcome (modified Rankin scale, 0–2) by ORT is different between two groups.

Results

ORT was 298 minutes \pm 113 minutes (range, 81 to 665 minutes), and 84.5% of patients had good collaterals. Age, diabetes mellitus, previous infarction, National Institute of Health Stroke Scale, good collaterals (OR, 40.766; 95%CI, 10.668-155.78; $p<0.001$), and ORT (OR, 0.926 every 30-minute delay; 95%CI, 0.862-0.995; $p=0.037$) were independently associated with good outcome. The drop of the likelihood of good outcome associated with longer ORT was significantly faster in the poor collateral group (OR, 0.305 for every 30-minute; 95%CI, 0.113-0.822) than in the good collateral group (OR, 0.926 for every 30-minute; 95%CI, 0.875-0.980).

Conclusion

Earlier successful recanalization was strongly associated with the good outcome in poor collateral group, but this association was weak during the tested time window in good collateral group. This suggests that the ORT window for good outcome can be adjusted based on collateral status.

ST003

Siriraj Manual Thrombectomy Outcomes In Relation To Age: A 7 Year Retrospective Analysis (Siriraj ManTRA Study)

CESAR DE GUZMAN¹; PAYOTHORN DECHARIN¹; ANCHALEE CHUROJANA¹; EKAWUT CHANKAEW¹; BOONRERK SANGPETNGAM¹; THAWEESAK AURBOONYAWAT¹; DITTAPONG SONGSAENG; TIPLADA BOONCHAI; KANNACAHOD CHANVANITKULCHAI

¹SECTION OF INTERVENTIONAL NEURORADIOLOGY, DEPARTMENT OF RADIOLOGY/ SIRIRAJ HOSPITAL/ Thailand

Purpose

Manual thrombectomy has become the standard of care for acute stroke patients with large vessel occlusions. It has revolutionized the therapeutic management of stroke, with Neurologists being afforded a larger time window for management of such cases. The goal of this paper is to identify the effect of age on the outcome of post-thrombectomy patients in Siriraj Hospital.

Materials and Methods

All patients who underwent manual thrombectomy in Siriraj Hospital from 2010 to 2017 were included in the study. Patients lacking the 3 month mRS score and those who did not achieve successful recanalization were excluded. A total of 148 patients were included.

Results

ANOVA showed baseline NIHSS scores to be significant between the groups, but no significance in terms of onset to recanalization time, onset to puncture time, and puncture to recanalization times. Chi-square test showed no significance in the post-thrombectomy TICI scores of all groups. Statistical analysis using chi-square test showed significant 3 month outcome of all groups, and among anterior circulation strokes. Posterior circulation stroke outcomes was not significant. No significance was likewise demonstrated in the mortality and complication rates, as well as in their respective anterior and posterior circulation stroke subanalysis

Conclusion

There is a significant inverse correlation between increasing age and good 3 month outcome post-thrombectomy for all patients and for anterior circulation strokes. Baseline NIHSS scores likewise showed significant correlation with increasing age.

Phase Map: New MR Collateral Imaging Derived From Time-Resolved Contrast-Enhanced MR Angiography In Acute Ischemic Stroke

HYUN JEONG KIM¹; HONG GEE ROH²; MINA PARK²; EUNG YEOP KIM³; SANG UK KIM⁴; SEON-YOUNG RYU⁵; HYUNG JIN LEE⁴; JEONG JIN PARK⁶; YOU SUNG JEON; WON-JIN MOON²; JIN WOO CHOI²; TAEK-JUN LEE³
¹RADIOLOGY/ DAEJEON ST. MARY'S HOSPITAL, THE CATHOLIC UNIVERSITY OF KOREA/ Korea, ²RADIOLOGY/ KONKUK UNIVERSITY MEDICAL CENTER/ Korea, ³RADIOLOGY/ GACHON UNIVERSITY GIL MEDICAL CENTER/ Korea, ⁴NEUROSURGERY/ DAEJEON ST. MARY'S HOSPITAL, THE CATHOLIC UNIVERSITY OF KOREA/ Korea, ⁵NEUROLOGY/ DAEJEON ST. MARY'S HOSPITAL, THE CATHOLIC UNIVERSITY OF KOREA/ Korea, ⁶NEUROLOGY/ KONKUK UNIVERSITY MEDICAL CENTER/ Korea

Purpose

We developed a new MR collateral imaging technique by using dynamic signals from time-resolved contrast-enhanced MR angiography (TR-MRA) named "Phase Map" and evaluated its ability to predict neurological outcome in patients with AIS due to occlusion of the internal carotid artery and/or M1 segment middle cerebral artery.

Materials and Methods

100 patients were finally included in this study. Endovascular therapy (EVT) was performed in 54 cases in 53 patients. Based on MAC (Magnetic resonance Acute ischemic stroke Collateral) scoring system, Phase Map was graded by two experienced interventional neuroradiologists in consensus. The baseline NIHSS score, stroke risk factors, parameters of EVT, and Phase Map were assessed. Their association with good outcome was analyzed.

Results

52 in 100 patients had a good outcome at 3-month. In univariate analysis, younger age, lower initial NIHSS score, absence of hypertension, better collateral on Phase Map were associated with a good outcome. In multivariate analysis, only better collateral on Phase Map was an independent predictor of a good outcome on MAC scoring systems (OR, 2.65; 95% CI, 1.64–4.70). 30 (56.6%) in 53 cases treated with EVT had a good outcome. In univariate analysis, lower initial NIHSS score, atrial fibrillation, better collateral score based on 3-point scale scoring system were associated with a good outcome. In multivariate analysis, only better collateral on Phase Map was an independent predictor of a good outcome (OR, 3.59; 95% CI, 1.39–11.25).

Conclusion

Better collateral on Phase Map derived from TR-MRA is a robust predictor of good outcome in patients with AIS.

ST006

The Number Of Stent Retriever Passes Associated With Futile Recanalization In Acute Intracranial Large Artery Occlusion

IANG-HYUN BAEK¹; BYUNG MOON KIM²

¹NEUROLOGY/ NATIONAL MEDICAL CENTER/ Korea, ²RADIOLOGY/ YONSEI UNIVERSITY COLLEGE OF MEDICINE, SEVERANCE HOSPITAL/ Korea

Purpose

To evaluate whether the specific number of stent retriever pass can be determined for futile recanalization.

Materials and Methods

Patients, who were treated with stent retriever as the first endovascular modality for their intracranial large artery occlusion in anterior circulation, were included. Recanalization rate by each stent retriever pass were calculated. The association between the number of stent retriever pass and patient's functional outcome was analyzed.

Results

A total of 467 patients were included. Successful recanalization (mTICI 2b or 3) was achieved in 384 patients (82.2%) by stent retriever alone. Recanalization rates were sequentially lowered as the number of pass increased, and the recanalization rate achievable by 5 or more passes of stent retriever was 5.5%. On multivariable analysis, functional outcome was more favorable (mRS ≤ 2) in patients with 1–4 pass(es) of stent retriever than patients without recanalization (odds ratio[OR] was 8.05 for 1 pass; OR 7.12 for 2 passes; OR 7.10 for 3 passes; OR 6.76 for 4 passes; all p-values were <0.001). However, the functional outcome of patients with 5 or more passes of stent retriever was not more favorable significantly (OR 2.02 with 95% confidence interval 0.51–8.06 for 5 passes, $p=0.318$; OR 0.34 with 0.02–5.22, $p=0.441$ for 6 or more passes) than patients without recanalization.

Conclusion

The likelihood of successful recanalization by each additional stent retriever pass was lowered as the number of pass increased. Five or more passes of stent retriever could be futile in views of recanalization rate and functional outcome.

Conscious Sedation Versus Non-Sedation For Endovascular Treatment Of Acute Ischemic Stroke

JUNG HWA SEO¹; HAE WOONG JEONG²; EUNG-GYU KIM¹

¹NEUROLOGY/ BUSAN PAIK HOSPITAL, INJE UNIVERSITY COLLEGE OF MEDICINE/ Korea, ²DIAGNOSTIC RADIOLOGY/ BUSAN PAIK HOSPITAL, INJE UNIVERSITY COLLEGE OF MEDICINE/ Korea

Purpose

Although there is a controversy, several studies have reported that conscious sedation for endovascular treatment in acute ischemic stroke(AIS) have better neurological outcome compared with general anesthesia. However, conscious sedation in endovascular treatments can be related to complications such as hypotension and respiratory distress. In this single-center study, we investigated the impact of conscious sedation on neurological outcome in AIS patients.

Materials and Methods

243 patients receiving endovascular treatment for AIS in January 2012 to May 2017 were included. All procedures were started without sedation, and the conscious sedation was applied if necessary. Depending on whether sedation was applied, all patients were divided into sedation group and non-sedation group. Age, sex, comorbidities, admission NIHSS score, modified Thrombolysis in Cerebral Ischemia score, time intervals from puncture to recanalization and 3 months modified Rankin Scale score were analyzed.

Results

In the non-sedation group 64 of 144 patients (44.4%) and in the sedation group 42 of 99 patients (42.8%) achieved a modified Rankin Scale score ≤ 2 ($P=0.81$) at 3 months, with no differences in sex, comorbidities, admission NIHSS score, and mTICI $\geq 2b$ (77.8% versus 70.1%). Sedation group were older, more likely to use of IV-tPA, and took more time to recanalization (73 versus 93 minutes).

Conclusion

Because the initiation of conscious sedation after starting endovascular treatment, the time interval from the puncture to the recanalization was longer in sedation group. In endovascular treatment for AIS, no difference was found between conscious sedation and non-sedation in neurological outcome 3 months after stroke.

Endovascular Recanalization For Chronic Symptomatic Intracranial Vertebral Artery Total Occlusion: Experience Of A Single Center And Review Of Literature

PENG GAO¹; YABING WANG¹; YAN MA¹; QI YANG²; HAIQING SONG³; LIQUN JIAO¹; ADNAN QURESHI⁴

¹DEPARTMENT OF NEUROSURGERY/ XUANWU HOSPITAL, CAPITAL MEDICAL UNIVERSITY/ China, ²DEPARTMENT OF RADIOLOGY/ XUANWU HOSPITAL, CAPITAL MEDICAL UNIVERSITY/ China, ³DEPARTMENT OF NEUROLOGY/ XUANWU HOSPITAL, CAPITAL MEDICAL UNIVERSITY/ China, ⁴DEPARTMENT OF NEUROLOGY/ ZEENAT QURESHI STROKE INSTITUTE/ United States

Purpose

The optimal treatment of chronic symptomatic total occlusion of the intracranial vertebral artery (ICVA) remains undefined. We report a single-center experience of endovascular recanalization for patients with chronic symptomatic ICVA occlusion who were refractory to medical therapy.

Materials and Methods

From Jan 2009 to Jan 2017, we retrospectively reviewed 14 consecutive patients presenting with recurrent symptoms attributed to the chronic ICVA occlusion. We searched previous literature using PubMed databases during the same period as comparison.

Results

Eleven patients out of 14 presented initial symptoms to intervention less than 90 days. The occlusion course was extrapolated on simultaneous two-vessel injection angiography or high-resolution MR imaging in 13 cases. 9 patients had occlusion beyond PICA origin and 5 had occlusion proximal to PICA origin. The technical success rate was 85.7% (12/14). Two patients (14.3%) had peri-procedural complications: 1 developed TIA and 1 presented with perforator occlusion. Using the keyword-based search, we identified 6 studies at the same period. A total of 34 patients underwent recanalization with the successful recanalization rate at 94.1%, peri-procedural complication rate at 17.6% and mortality at 2.9%, respectively.

Conclusion

Our single-center study illustrated feasibility and safety of ICVA recanalization. Great care should be taken as revascularization is of high risk. When patient selection, occlusion course/stage and neuroimaging evaluation are considered, endovascular recanalization may be a useful therapeutic modality.

AF24

THIS ABSTRACT IS NOT AVAILABLE

Brain Arteriovenous Malformations Natural History And Risk Of Bleeding

KAREL TER BRUGGE¹

¹*UNIVERSITY OF TORONTO/ TORONTO/ Canada*

Several, small retrospective natural history studies were published in the eighties. Graf et al (1983), Crawford et al (1986) as well as Brown et al (1988) published their population data. They stood out because of their long term follow-ups and mostly consisted of patients with mixed hemorrhagic and non-hemorrhagic presentations. They did demonstrate increased risk if patients whom had previously presented with hemorrhage.

Subsequently 3 prospectively collected AVM natural history studies were reported by Ondra (1990), Hernesniemi (2008) and Da Costa (2009).

Ondra et al demonstrated in all comers having an annual risk of bleeding of 4%, mortality to be 1 % and major morbidity annual risk of 2.7%.

Hernesniemi et al demonstrated an overall annual bleeding risk of 2.4%, while previous bleed or associated aneurysms as well as deep venous drainage to be independent risk factors for future hemorrhage.

Da Costa et al published a large series of 678 patients, again with a mixed background presentation, demonstrating an annual risk of all comers to be 4.6%, 7.5% if they had a previous bleed and 6.9%, if they has associated aneurysms and 5.4% if they had deep venous drainage.

Both Hernesniemi and Da Costa noted a decreasing risk of hemorrhage in time after the original presentation with hemorrhage.

Gross et al (2013) performed a meta-analysis of 9 BAVM natural history studies and concluded the annual bleeding risk for all comers to be 3%, while patients without a history of previous hemorrhage demonstrated a bleeding risk of 2.2% and those that did bleed previously had a 4.5% annual risk for recurrent hemorrhage. Presentation with hemorrhage, the presence of associated aneurysms and deep venous drainage were independent risk factors for future hemorrhage from brain AVMs.

The natural history of BAVMs in the HHT population (Kim et al 2015) appears to be more favorable with a reported annual risk for hemorrhage of 0.9% but also higher (6.7%) in those patients that previously bled.

Brain Arteriovenous Malformations; Angiogenesis

KAREL TER BRUGGE¹

¹*UNIVERSITY OF TORONTO/ TORONTO/ Canada*

More than 95% of BAVMs are sporadic, while about 3-5% are having a family history of AVMs suggesting a hereditary origin. These familial type of Vascular Malformations are diagnosed about 10 years earlier than the sporadic types of BAVMs. Most of these familial type have HHT disorder with gene mutations of Endoglin (HHT 1), Alk1 (HHT 2) and Smad4 (HHT 3) while more recently families with RASA1 mutations have been identified to be associated with slow flow Capillary and high flow AVMs. It is known that all BAVM tissues contain high levels of angiogenetic factors such as MMP9 and VEGF and the Homeobox gene HoxD3 has been demonstrated to upregulate pro-angiogenic molecules such as Integrin and Urokinase plasminogen activator substance which are associated with BAVM development. Angiogenetic factors and inflammatory cytokines are also observed to be higher in sporadic BAVM tissue compared to the adjacent brain.

Recently the team in Toronto published the results of Human exome DNA sequencing of BAVM tissue and blood sampling. They detected in the majority of BAVM tissues but not in the accompanying blood samples of patients with sporadic BAVMs, somatic activating KRAS mutations. These KRAS mutants resulted in an increasing the number of endothelial cells and extracellular signal regulated kinase activity. This was further associated with increased expression of genes related to angiogenesis, increased notch signaling and increased cell migration leading to BAVM development. KRAS mutations are specific to endothelial cells and cause dysregulation of the biology of the endothelial cells through activation of the MAPK-ERK signaling pathway, resulting in BAVM formation. In vitro studies have demonstrated that KRAS activation results in increased expression of angiogenic genes such as VEGF and encoding proteins in the notch signaling pathway resulting in an increased migratory behavior of endothelial cells and disassembly of their adherence junctions. It is suggested that focal KRAS mutations within regional endothelial cells represent the primary event in the pathogenesis of sporadic BAVMs.

be affected through a 'second hit' resulting in a focal somatic mutation of the copy of the inherited mutant gene.

AF27

THIS ABSTRACT IS NOT AVAILABLE

Comparison Of Safety And Efficacy Of Stenting For Symptomatic Intracranial Arterial Stenosis Between The East And The West- A Systematic Review

TAO WANG¹; JICHANG LUO¹; LONG LI¹; YIRAN LIU¹; PENG GAO¹; YAN MA¹; LIQUN JIAO¹
¹DEPARTMENT OF NEUROSURGERY/ XUANWU HOSPITAL, CAPITAL MEDICAL UNIVERSITY/ China

Purpose

Intracranial atherosclerosis (ICAS) is one of most common causes of intracranial arterial stenosis and stroke. Two studies in Western countries showed better prognosis of medicine treatment versus stenting. However, both trials received criticisms on their study designs. In fact, the prevalence ICAS is significantly higher in the Eastern than Western population. Several studies in Asia have showed positive results of stenting versus medical treatment. Therefore, we aim to ascertain the difference of short-term safety as well as long-term efficacy of stenting in treating symptomatic intracranial stenosis between the Eastern and Western countries.

Materials and Methods

We searched PubMed, the Cochrane Library, EMBASE, and CNKI with the following keywords: intracranial artery stenosis, angioplasty, and stenting. Subgroup analysis between European countries and the US has been conducted.

Results

5 RCTs, 12 case-control studies, 32 cohort studies and 79 case series reports with a total of 11765 patients were included. Pooled analysis of 30-day mortality of ICAS patients after PTAS showed a significantly lower rate in Asia (1.7%), compared to Europe (2.6%) and the US (4.8%). 30-day stroke rate was 6.1%, 6.3% and 18.0% in Asia, Europe and the US, respectively. Results for 1-year mortality and 1-year stroke rate were similar. As for the 1-year restenosis rate, studies in Asia (7.8%) still showed better results than Western countries (18.6%).

Conclusion

The overall evidence we obtained shows better safety and efficacy of PTAS in Asia than that in the Western countries. More well-designed RCTs in Asian countries are needed to clarify the efficacy of PTAS in treating ICAS.

ST012

The Usefulness Of TCD With A Transorbital Approach In CAS Perioperative Period

YOHEI TANAKA¹; HIROKI TAKANO¹; TOMOAKI SUZUKI²; NOBUYUKI GENKAI²; HIROSHI ABE²

¹NEUROLOGY/ TACHIKAWA GENERAL HOSPITAL/ Japan, ²NEUROSURGERY/ TACHIKAWA GENERAL HOSPITAL/ Japan

Purpose

Although TCD is useful for predicting hyperperfusion syndrome(HS) after CAS, Asian people are often difficult to undergo a transtemporal approach. This study evaluated the usefulness of TCD with a transorbital approach in the CAS perioperative period.

Materials and Methods

196 patients underwent CAS from January 2011 to September 2017 in our hospital. Included for analysis were 150 patients who underwent brain SPECT and TCD with a transtemporal approach and a transorbital approach before and after CAS. Mean flow velocity (MFV) of MCA was measured with the transtemporal approach and MFV of carotid siphon was measured with the transorbital approach. MFV ratio was defined as the ratio of MFV before CAS to after CAS. Cerebral blood flow (CBF) and cerebrovascular reactivity (CVR) in MCA area were measured by brain SPECT. We examined whether the values of MFV obtained with two methods are correlated with each other. Furthermore, we divided the cases into two groups whether MFV ratio is over 1.5 and investigated the relation between MFV ratio and HS or CVR.

Results

There was a moderate correlation between MFV of MCA and carotid siphon both before and after CAS($r=0.42$, $r=0.49$). This study had only one case of HS, and his MFV ratio of carotid siphon increased to 1.56. There are 8 cases that CVR was less than 10%, and in these cases, there were significantly more cases that MFV ratio was over 1.5($p=0.044$).

Conclusion

Performing a transorbital approach for the cases that cannot undergo a transtemporal approach is useful for predicting HS after CAS.

Early Mechanical Thrombectomy In Patients With A Large Hyperacute Ischemic Stroke

YOO SUNG IEON¹; HONG GEE ROH²; HAHN YOUNG KIM³; JEONG JIN PARK³; MINA PARK²; YOUNG IL CHUN¹; JIN WOO CHOI²; WON-JIN MOON²

¹NEUROSURGERY/ KONKUK UNIVERSITY MEDICAL CENTER/ Korea, ²RADIOLOGY/ KONKUK UNIVERSITY MEDICAL CENTER/ Korea, ³NEUROLOGY/ KONKUK UNIVERSITY MEDICAL CENTER/ Korea

Purpose

Whether to perform or withhold endovascular treatment is unsettled when the diffusion-weight imaging lesion exceeds a given volume. Our aim is to evaluate the effect of EVT and successful recanalization on clinical outcome in patients with a large hyperacute ischemic stroke

Materials and Methods

We retrospectively reviewed 25 patients (10female, 67.5±14.9 years) with a large hyperacute ischemic stroke (DWI-ASPECTS ≤ 4) within 2.5 hours after stroke symptom onset. 16 patients (7female, 67.6±15.6 years) were treated with EVT, and 9 patients (3female, 68.8±13.8 years) had medical treatment only. We assessed baseline characteristics, initial stroke CT and/or MRI, follow-up imaging, and clinical outcome. The Modified Rankin Scale Score 0, 1 and 2 at 6-month were defined as good outcome. The association of clinical outcome with EVT, successful recanalization (mTICI≥2b), and recanalization time was evaluated.

Results

Overall, 5 (20%) patients of 25 patients had good outcome at 6-month, and all of 5 patients were treated with EVT. Mortality (6%vs22%) and severe brain swelling requiring decompressive surgery (25%vs67%) were less frequent in patient treated with EVT than patients with medical treatment. Among 16 patients treated with EVT, 9 patients with successful recanalization were more likely to have a good outcome than patients with partial or no recanalization (44%vs14%). In addition, shorter time to recanalization from onset was associated with a good outcome

Conclusion

Patients with a large hyperacute ischemic stroke can benefit, but not always, from EVT, and earlier recanalization was associated with a good outcome.

Tips And Techniques For Optimal Stentriever Placement In Mechanical Thrombectomy: Is Longer Better?

YOUNGSOO KIM¹; SEUNG KUG BAIK¹

¹NEUROSURGERY/ PUSAN NATIONAL UNIVERSITY YANGSAN HOSPITAL/ Korea

Purpose

We analyzed expected and real thrombus locations after first stentriever deployment using high-resolution flat panel computed tomography and angiography.

Materials and Methods

This study included 72 patients with acute large artery occlusion (LAO) occlusion of the M1 segment of the middle cerebral artery (MCA) who underwent stentriever-based mechanical thrombectomy within six hours of symptom onset. Using DynaCT images and ImageJ program, the distance between stentriever proximal marker and thrombus, total stentriever length, total thrombus length, angiographic gap of pre-post stent deployment were measured.

Results

Mean patient age was 65 years and mean initial National Institute of Health Stroke Scale score was 16.2. Thrombolysis in Cerebral Infarction (TICI) scale score 2b/3 reperfusion was obtained in 52.8% and 80.6% of patients after the first pass and final attempt. Patients were divided into two groups according to recanalization results after the first pass thrombectomy: success recanalization (31 patients) and failure (31 patients). The thrombus was shorter in patients with successful recanalization (7.72 ± 4.85 vs. 12.37 ± 7.67) ($P < 0.05$). An approximately 2 mm post-stent gap was found in both groups. The odds ratio for successful recanalization was 3.3 in patients with thrombus length < 10 mm compared to those with thrombus length ≥ 10 mm ($P < 0.05$).

Conclusion

Recanalization after the first stentriever attempt is difficult when thrombus size exceeds 10 mm. To achieve a TICI score 2b or higher, full thrombus catch is important. Therefore, longer stentriever may help successful recanalization with fewer attempts.

Use Of Angioscopy For Intravascular Assessment Of Plaque Protrusion After Carotid Artery Stenting

YUKIKO ENOMOTO¹; KEITA YAMAUCHI¹; YUSUKE EGASHIRA¹; TORU IWAMA¹
¹NEUROSURGERY/GIFU UNIVERSITY GRADUATE SCHOOL OF MEDICINE/ Japan

Purpose

Thromboembolic complications caused by a distal embolism after carotid artery stenting (CAS) remain an unsolved problem. Several intravascular imaging tools have been proposed for assessment of these events. Among them, angioscopy provides a dynamic and clear intravascular imaging method. We report a CAS case series with evaluation of the post-procedural intravascular findings obtained by angioscopy.

Materials and Methods

Between April 2016 and September 2017, twenty-one patients with carotid artery stenosis were treated at our institution using CAS under flow reversal system. After stent placement, an angioscope (VISIBLE, iHeart Medical, Tokyo, Japan) was introduced via a guiding catheter and used to assess the intravascular condition under continuous irrigation with saline. Six patients were excluded from this study because of incomplete imaging of entire wall.

Results

Plaque protrusion beyond the stent struts was observed in 14 / 15 (93%) patients, and 4 out of 14 were prominent. One of the patients, who was initially treated with an open-cell stent, developed prominent plaque protrusion and mobile fragments. Owing to the risk of distal embolism, another closed-cell stent was placed overlapping with the previous stent. Finally, fixation of the ruptured plaque fragment was confirmed by angioscopy.

Conclusion

Angioscopy played a crucial role in the assessment of plaque protrusion after CAS. Further, it could be used to determine the need for additional rescue treatment.

Histopathological Evaluation Of The Radio Frequency (rf)-Thrombectomy Device Treated Vessel In Rabbit Model

CHRIS CHI HANG CHON^{*1}; ZHEN QIN¹; DAVID CHUEN CHUN LAM¹; JOHN CHING KWONG KWOK^{2,3}

¹DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING/ THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY/ Hong Kong, ²DEPARTMENT OF CHEMICAL & BIOLOGICAL ENGINEERING/ THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY/ Hong Kong, ³DEPARTMENT OF NEUROSURGERY/ KWONG WAH HOSPITAL/ Hong Kong

Purpose

The stentriever pulling along the blood vessel is shown to cause vessel stenosis. The stentriever engages the thrombus by exerting radial stenting force onto thrombus against the vessel wall. The vessel wall is damaged when the stentriever is pulling retrieved. A stenting force-free radio frequency (rf) thrombectomy device using rf-binding for the thrombus engagement has been developed. The effects of the stenting force-free rf-thrombectomy on vessel wall damage are examined in rabbit models in this study.

Materials and Methods

The rf-thrombectomy device and a commercial stentriever were tested in ten New Zealand White rabbits (3-5 kg). The selected device was deployed in the common carotid artery (CCA). The device was pulled for a distance of 10mm towards the catheter to examine the effects of pulling on vessel wall damage. The rabbit's conditions were monitored during surgery for signs of complications. After euthanization of the animal, the vessel surface and intima of the CCA samples with and without device passage were histopathologically examined for damage.

Results

Signs of complications were not observed before the euthanization of the rabbit. Histopathological results showed that there were no differences between control and rf-thrombectomy device treated samples. However, 30% (2 out of 6 CCA samples) of the samples treated with the commercial stentriever showed damage.

Conclusion

Histopathological analyses showed that all vessels treated with stenting force-free rf-thrombectomy device were free from damage. rf-thrombectomy can help reduce the vessel stenosis and potentially enhance clinical outcomes in stroke treatment.

Impact Of Balloon Guide Catheter Catheterization Location On Mechanical Thrombectomy In Acute Stroke Patients

DONG IOON KIM¹; DA-EUN JEONG¹; BYUNG MOON KIM¹; JOON HWI KIM¹
¹RADIOLOGY/ YONSEI UNIVERSITY COLLEGE OF MEDICINE/ Korea

Purpose

Mechanical thrombectomy (MT) with proximal flow control and negative aspiration may improve the outcome of endovascular revascularization therapy (ERT) for acute stroke patients. The purpose of this study is to compare the impact of balloon guide catheter (BGC) catheterization location in patients treated for anterior circulation acute ischemic stroke using mechanical thrombectomy.

Materials and Methods

The influences of the BGC catheterization location (proximal; placement and inflation of BGC proximal to the atlas (C2,C3,C4) , distal; placement and inflation of BGC distal to the atlas) was analyzed in acute stroke patients with large anterior circulation occlusion. The baseline clinical characteristics, procedural variables, recanalization rate (TICI 2b,3) and clinical outcomes were compared.

Results

The clinical analysis included 90 patients. The locations of the BGC inflations were distal (n=43) and proximal (n=47). The recanalization rate was significantly higher in the distal BGC group (98% versus 64%; $P<0.001$). Needle to recanalization time was shorter in the distal balloon group than the proximal balloon group (50.1 ± 26.2 VS 70.3 ± 47.6 P = 0.002). Mean number of passes was smaller for the distal BGC catheterization group (2.4 ± 1.4 vs 2.8 ± 2.3 , $p=0.04$).

Conclusion

Catheterization location of the BGC may have impact on the recanalization of occluded anterior circulation arteries in acute stroke patients. The BGC should be catheterized as distally as possible in the cervical ICA for maximally effective thrombectomy.

Shaping and Navigation Of Microcatheters In Aneurysmal Coiling

MOON HEE HAN¹

¹SEOUL NATIONAL UNIVERSITY HOSPITAL/ SEOUL/ Korea

Success for intra-aneurysmal microcatheter positioning, regardless of the shape and navigating method, cannot guarantee microcatheter stability during coil placement. Thus, choosing or making an appropriate microcatheter shape for a targeted aneurysm is crucial for procedural success. Some aneurysms at specific locations are difficult to access and occlude successfully with the use of microcatheters. A variety of aneurysmal directions in combination with the tortuous proximal artery must have been the major cause of difficult in endovascular treatment of aneurysms. We have three platforms in selecting microcatheters; 1) pre-shaped tips, 2) steam shaped S, and 3) steam shaped pigtail. And there will be some modifications between 2) and 3) which is loose pigtail or twisted S shaped.

A simple understanding of the 2-dimensional course for reaching an aneurysm is not sufficient for microcatheters to follow the complicated track into an aneurysm. The points of consideration for shaped microcatheter are, 1) course of proximal artery, 2) relative direction of the sac from the parent artery, 3) direction of the dome from the neck, and 4) the specific role of the microcatheter.

Being aware of the characteristics of different microcatheters is important to achieve successful access and stable coil placement. However, shapability and shape retention of different microcatheters are different. In more shapeable microcatheter (i.e. Headway) it needs to steam with wider angle and bigger curve.

In this presentation, proper tip shaping in different anatomical conditions and technical tips for navigating microcatheters will be presented.

Aneurysmal Coiling Using Multiple Microcatheters: Technical Variety

MOON HEE HAN¹

¹*SEOUL NATIONAL UNIVERSITY HOSPITAL/ SEOUL/ Korea*

Improved protective devices and advanced coiling techniques, such as balloon remodeling and stenting, have enabled coil embolization of aneurysms with complex configurations. Using multiple microcatheters for coil embolization compared with stenting or balloon protection is advantageous in terms of procedural complications and post-procedural antiplatelet maintenance. This technique is considered safer for ruptured aneurysms, based on its relatively low complication rate. Dual microcatheters may be applied as follows: (1) both microcatheters dedicated to intrasaccular delivery of the coil or (2) one microcatheter placed within aneurysmal sac and the other advanced into a branching artery to prevent coil protrusion. Because this strategy may be technically limited for some lesions with complex configurations, an additional microcatheter may be required to improve coil stability, to promote compact coil packing, or to enhance the protective effect.

In microcatheter protective technique, the protective microcatheter can be placed in a parent artery to prevent protrusion of the coil loops or can be positioned in a small side branch to protect the lumen by the microcatheter dimension itself.

The microcatheter protective technique has several advantages over the multiple-microcatheter or balloon- or stent assisted techniques. First, this method is technically simple. No additional femoral puncture is required, and use of one 6F guiding catheter is conventional. Protection of branch or parent artery by using a coil or microguidewire is a technical modification in cases the microcatheter cannot be used.

In this presentation variety of protective techniques using different devices in different anatomical conditions will be presented.

The Evolution Of Endovascular Treatment For Intracranial Aneurysms

HIDENORI OISHI¹

¹DEPARTMENT OF NEUROSURGERY AND NEUROENDOVASCULAR THERAPY/ JUNTENDO UNIVERSITY FACULTY OF MEDICINE/ Japan

Endosaccular coil embolization for intracranial aneurysms has become an alternative treatment instead of surgical clipping. However, a limitation of endosaccular coil embolization is recanalization in the follow-up period. Particularly large or giant intracranial aneurysms have a high risk of posttreatment recanalization and rupture. Although an embolization ratio volume of more than 20%, i.e., tight packing, had been considered effective to lower the risk of recanalization in the short- or mid-term follow-up periods, its anatomical durability proved to be unstable in the long term. Recently, due to the development of endovascular devices and physicians' broadening range of experiences, adjunctive techniques using balloons and multiple catheters are now also available for aneurysms that were previously considered to have anatomical characteristics unsuitable to be treated with endosaccular coil embolization. As a case in point, intracranial stents, including flow diverters, can be effectively used to achieve complete anatomical cures in long-term follow-up periods. This report presents our experiences at Juntendo University with stent-assisted coil embolization and flow diverter treatment for intracranial aneurysms.

Aneurysm Surgery Post Coiling: Difficulties

ALLAN TAYLOR¹

¹*UNIVERSITY OF CAPE TOWN/ South Africa*

The need to operate on cerebral aneurysms has significantly reduced in the past 2 decades as endovascular techniques have evolved. This is true for the primary treatment choice and when re-treatment is required. There are however still situations where surgery is necessary after an aneurysm has been coiled. Four of these are:-

1. Clipping after regrowth or rebleeding of an aneurysm
2. Surgery after planned partial coiling
3. Clipping a second aneurysm close to a previously coiled aneurysm
4. Clipping after a failed coiling attempt.

The difficulties of each are discussed with reference to case reports.

Ten Years Experience Of Endovascular Management In Indian Patients With Acute Basilar Artery Occlusion

KAMALDEEP CHAWLA¹; SANJEEV KUMAR BHATIA¹; POKHRAJ SUTHAR²; HEMEN VITHLANI²; KEYUR BUCH³; GAURAV PARMAR⁴; TYRONE FERNANDES⁵; MANOJ MEHTA⁵; SHUBHI JAIN⁶

¹CARDIOLOGY/ STERLING HOSPITAL/ India, ²RADIOLOGY AND IMAGING SCIENCES / STERLING HOSPITAL/ India, ³NEUROLOGY/ STERLING HOSPITAL/ India, ⁴RADIOLOGY / PARAMOUNT DIAGNOSTIC AND RESEARCH INSTITUTE / India, ⁵MEDICINE / STERLING HOSPITAL / India, ⁶MEDICINE/ GMERS MEDICAL COLLEGE/ India

Purpose

To assess the efficacy and feasibility of endovascular treatment in acute basilar artery occlusion.

Materials and Methods

Total 90 patients who underwent treatment with low-dose Intraarterial alteplase combined with mechanical clot disruption for basilar artery occlusion. Bolus of alteplase was infused followed by mechanical clot disruption. Additional dose used as needed basis. PCA or/and stent insertion performed in patients who were not achieved the complete recanalization. Recanalization status was classified according to the TIC1 scale. Clinical outcome measures were assessed on admission and at discharge of NIHSS score, at 3 months after treatment modified Rankin Score(mRS).

Results

90 patients median NIHSS score was 14.4(range,2-33) on admission and median time from symptom onset to intraarterial therapy was 320 minute(range,160-820), median intraarterial treatment duration was 20 minute(range,10-25) and the alteplase dose was 20- 50 mg(median, 35).

Recanalization was achieved in 85 patients(94.44%). TIC1 grade III in 43 patients(47.78%), and TIC1 grade II in 42 patients(46.67%). Five patients(5.55%) was failed the recanalization. Eight patients(8.89%) died. At discharge, the median NIHSS score was 7.2(range, 0-27). The NIHSS score of 55 patients was improved. In 30 patients, the NIHSS score was increased. At the 3-month follow-up, the functional outcome was favorable(mRS, 0-2) in 50(55.56%) and unfavorable(mRS, 3-6) in 40(44.44%) patients.

Conclusion

Low-dose intraarterial thrombolytics with mechanical clot disruption is feasible, safe and effective treatment for the acute basilar artery occlusion. A high rate of recanalization, high rate of survival rate and good functional outcome can be achieved.

Utility And Problem Of Metal Artifact Reduction Technique In CBCT Imaging

MASAHIRO NISHIHORI¹; TAKASHI IZUMI¹; ASUKA ELISABETH KROPP¹; CHIHEB DAHMANI²; IWAO KOJIMA³; TOSHIHIKO WAKABAYASHI¹

¹NEUROSURGERY/ NAGOYA UNIVERSITY GRADUATE SCHOOL OF MEDICINE/ JAPAN, ²AT INNOVATION DEPARTMENT/ SIEMENS HEALTHCARE PTE LTD/ SINGAPORE, ³AT INNOVATION DEPARTMENT/ SIEMENS HEALTHCARE K.K./ Japan

Purpose

In neuroendovascular therapy, cone beam CT (CBCT) images are affected by streak artifacts caused by implanted coils and clips, which makes intracranial evaluation difficult. Since May 2017, we have been applying a new metal artifact reduction (MAR) technique on our angiosuite and cautiously evaluated its utility on routine clinical cases as well as in-vitro experimental models.

Materials and Methods

In the in-vitro models, objects with various shapes and signal values were placed in the center of a phantom and CBCT was obtained. Differences in metal artifacts depending on the shape of the material were confirmed, and the reproducibility of the low contrast part was evaluated after applying the MAR technique. In 60 routine clinical cases, images obtained from different metal shapes and combinations were examined.

Results

In the in-vitro experiment, the visibility of the low contrast part was enhanced after applying MAR technique, and the closer the metal shape was to a spherical shape, the more artifacts were reduced. Lowering the window center before reconstruction made it possible to obtain a higher MAR effect. In the clinical cases, new artifacts were generated from the titanium clip away from the coil, and the shape of the stent close to the coil mass was obscured.

Conclusion

Although new MAR technique is useful in most cases performing reconstruction under optimal conditions, it is important to interpret the pre-processing image together when there are irregular coil shapes or separate stents or clips.

ST021

Reperfusion Using ADAPT Technique With ACE68 In The Treatment Of Acute Ischemic Stroke: An Initial Experience

SANTHOSH RAI^{1,2}; **ENG HOE WINSTON LIM**^{1,2}

¹DIAGNOSTIC RADIOLOGY/ SINGAPORE GENERAL HOSPITAL/ Singapore, ²NEURORADIOLOGY/ NATIONAL NEUROSCIENCE INSTITUTE/ Singapore

Purpose

Safe and fast revascularization is important to reduce clot burden and determines functional prognosis of patients with large vessel occlusions (LVO) acute ischemic stroke. The aim of this study is to evaluate safety and effectiveness of the ACE68 Penumbra Aspiration System in a real-world population with acute ischemic stroke from anterior circulation (LVO), treated with the ADAPT technique in routine clinical practice.

Results

We report 7 cases of acute ischemic stroke from large vessel occlusion. At presentation, 85.7% (6/7) were male, and the median age was 66 [IQR 54-81]. The median baseline CT ASPECT score was 8 [IQR 7-9].

The mean time (min ± SD) of stroke onset to imaging, to puncture and to reperfusion were 77.6 ± 46.1, 215.4 ± 78.3 and 279.6 ± 73.7 respectively. The mean time (min ± SD) of puncture to reperfusion was 64.1 ± 33.8. The mean of number of passes were 2.7(SD ± 1.7). Primary occlusion vessels observed were 14.3% (1/7) of patients with ICA; 42.9% (3/7) with M1; and 42.9% (3/7) with M2 occlusion. Final revascularization mTICI 2b-3 was achieved in 100% (7/7).

Intracranial hemorrhage (ICH) <24h of intervention was reported in 14.3% (1/7) patient. No patient reported procedural device-related SAE and/or new ischemic stroke in a different vascular territory.

Conclusion

Aspiration thrombectomy using the ACE68 Penumbra Aspiration System and ADAPT technique is safe and fast for effective revascularization.

Results Of The Thrombectomy In Patients With Acute Ischemic Stroke In Bach Mai Hospital (Experiences From 180 Cases)

THONG MINH PHAM¹; VU, D.L.¹; NGUYEN, Q.A.¹; TRAN A.T.¹
¹RADIOLOGY/ BACH MAI UNIVERSITY HOSPITAL/ Vietnam

Purpose

Objective: Evaluating the results of the thrombectomy procedure in 180 patients with acute ischemic stroke in Bach Mai hospital.

Materials and Methods

Patients who suffered of acute ischemic stroke (AIS) with large vessel occlusion received endovascular thrombectomy during the period from 2012 to 10/2017 at Department of Radiology of Bach Mai University Hospital Hanoi. Factors related to favorable outcome, defined as modified Rankin scale 0-2 at 90 days after stroke, were analyzed.

Results

The mean age was 59.9 ±14.5 with 78% patients' women. The NIHSS and ASPECTS baseline were 15.8 and 6.2 with the distribution of occlusion sites were 55% ICA, 40% MCA, and 5% BA. The ratio of good revascularization (TICI 2b-3) was 72% after usage of 75% Stent retriever, 16.7% Aspiration and 8.3% Solumbra. 3 months after treatment, patients with good clinical recovery (mRS ≤ 2) accounted for 48.4% while intracranial symptomatic hemorrhage rate was 7.2%. In addition, there was a significant difference between bridging therapy group (75 patients treated with rt-PA before endovascular treatment) and mechanical thrombectomy group (105 patients treated without rt-PA) in median time from hospital admission to the groin puncture (90 vs 68 mins, p=0.001) while no difference in revascularization rate (69% vs 75%) and mRS ≤ 2 rate (45.9% vs 49.4%) after 3 months (p=0.05)

Conclusion

Thrombectomy treatment for acute ischemic stroke patients due to large vessel occlusion was very effective with high rate of revascularization and clinical recovery. Bridging therapy with prior rt-PA before endovascular treatment delayed time without higher rate of revascularization and outcome.

Current Status Of Acute Thrombectomy In Tokyo Based Upon A Questionnaire Survey Conducted By Bureau Of Social Welfare And Public Health, Tokyo Metropolitan Government

TOSHIAKI UENO¹

¹DEPARTMENT OF NEUROSURGERY/ TOKYO METROPOLITAN GERIATRIC HOSPITAL/ Japan

Purpose

Tokyo Metropolitan Government, Bureau of Social Welfare and Public Health, organized an ischemic stroke medical cooperation council to reveal current status related to acute thrombectomy in Tokyo. For that purpose, a questionnaire survey to regional stroke care hospitals was conducted two years ago and its results were made public last year. The purpose of this paper is to show potential problems related to acute thrombectomy in Tokyo Metropolitan area.

Materials and Methods

The results of the questionnaire survey were analyzed from the author's perspective as follows.

Results

On the average, iv tPA treatments were performed by 8.0 cases per 100,000 population a year, and endovascular thrombectomy procedures were conducted by 5.6 cases per 100,000 a year. In other words, iv tPA and endovascular thrombectomy were conducted by 2.95 and 2.04 cases per day, respectively. It may be reasonable that a ratio of thrombectomy case number to iv tPA case number is related to prevalence index of acute thrombectomy in a region. In the results, the average ratio was 0.69 in all areas and there exists an apparent regional difference in this number (0.05 to 1.05).

Conclusion

Although more in detail will be discussed in the presentation, number of stroke case hospitals with capability of acute thrombectomy is still limited even in Tokyo Metropolitan area.

***In Vivo* Testing Of Thrombolytic Patch For Ischemic Stroke Treatment On Swine Model**

ZHEN QIN¹; CHI HANG CHON¹; JOHN CHING-KWONG KWOK^{2,3}; DAVID CHUEN-CHUN LAM¹

¹DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING/ THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY/ Hong Kong, ²DEPARTMENT OF CHEMICAL AND BIOLOGICAL ENGINEERING/ THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY/ Hong Kong, ³DEPARTMENT OF NEUROSURGERY/ KWONG WAH HOSPITAL/ Hong Kong

Purpose

Experimental study showed a thrombolytic patch loaded with low-dosage drug can recanalize a blocked vessel and completely dissolve a flattened thrombus within 30 minutes. The purpose of this study is to test the thrombolytic patch on swine model *in vivo*. The rate of clot dissolution and degree of recanalization are examined.

Materials and Methods

10 swine models were used. A 10-mm-long blood clot loaded with radiopaque agent was injected into the subclavian artery of a 70-kg swine. 1000 International Units of urokinase plasminogen activator (uPA) (conventional dosage: 600,000 – 1,200,000 IU) loaded onto a bio-absorbable substrate was molded into a 100-mm-thick patch and mounted on a stent. The patch was inserted inside a French-7 catheter and further inserted into the clot. Unsheathing of the catheter released the stented patch to compress the clot against the vessel wall for a direct contact dissolution for 30 minutes. The clot dissolution and recanalization behaviors were examined *in situ* using X-ray. The swine were sacrificed after the experiment for further study.

Results

All blocked vessels were successfully recanalized. >90% of the clots were dissolved within 30 minutes. No hemorrhage was observed during and after the experiment.

Conclusion

The feasibility of the thrombolytic patch to dissolve clot using ultra-low uPA dosage is verified *in vivo* in swine models. The degree of recanalization and rate of clot dissolution are both higher than those in conventional thrombolysis treatment. The ultra-low dosage used in the new thrombolytic patch treatment may help reduce the risk of hemorrhage.

State Of The Art Imaging For Diagnosis And Treatment Of Aneurysms

KAREL G TER BRUGGE¹

¹*UNIVERSITY OF TORONTO/ TORONTO/ Canada*

Luminal vessel imaging has represented the mainstay of vascular imaging for the past decades.

The earliest examples of the feasibility of vessel wall imaging occurred in patient with acute dissection where blood could be demonstrated in the affected vessel wall. Hemorrhage within the vessel wall of intracranial large partially or fully thrombosed aneurysms became easy to be demonstrated on 3T MRI. The possibility of demonstrating inflammatory processes with the vessel wall that may precede clinical symptomatology, help us to understand why clinical symptoms are developing or changing or demonstrate the result of various management strategies. These changes can be visualized in recently ruptured but previously unruptured berry aneurysms and be distinguished by the lack of such changes (demonstrated by abnormal aneurysm wall enhancement) in co-incidentally discovered additional berry aneurysms in the same patient. This will help us to pinpoint the aneurysm that bled in case of multiple aneurysms and nonspecific distribution of SAH.

Examination of the aneurysmal vessel wall after endovascular treatment of unruptured intracranial aneurysms revealed persistent abnormal enhancement in a subgroup of patients often associated with peri-aneurysmal edema involving the adjacent brain.

Pediatric Aneurysms, Causes And Imaging

KAREL TER BRUGGE¹

¹*UNIVERSITY OF TORONTO/ TORONTO/ Canada*

Paediatric aneurysms differ in many of their features when compared to adult aneurysms such as their gender prevalence, aetiology, anatomical distribution, configuration, size and multiplicity.

Presentation with subarachnoid hemorrhage occurs overall in about 70% but diminishes as the child gets older. Symptoms related to mass effect occur in about 20% of all children as the initial presenting symptom of an intracranial aneurysm

Etiology. A clear underlying cause for a childhood aneurysm is found in less than 50% of cases. Although still often regarded as congenital as far as being present at birth, neither adult nor pediatric aneurysms are truly congenital in nature. The incidence of each type of aneurysm must be adjusted to the patient's age at presentation. While dissections are dominant during the first 5 years of life, berry aneurysms are more common in children older than 6 years.

Traumatic aneurysms account for about 5%–15% of pediatric aneurysms. A mortality rate of 31% has been reported in children with traumatic intracranial aneurysms that were not treated.

Infectious aneurysms account for 5%–15% of pediatric aneurysms. While they can be caused by fungal infections, they are most often of bacterial origin and often complicate bacterial endocarditis in infants with congenital or rheumatic heart disease.

The frequency of dissecting aneurysms in the pediatric age group is four times that of in adults. This type of aneurysm tend to be located at the posterior circulation especially P1 and P2 segments of the posterior cerebral artery (PCA), supraclinoid internal carotid artery (ICA) and at the middle cerebral artery (MCA).

Giant aneurysms are known to be of increased incidence in children and are about four times more common than in adults. The bifurcation of the internal carotid artery is by far the commonest site location for aneurysms in children with a fivefold increased incidence of carotid artery termination aneurysms location as compared to adults.

Management

Open surgery and endovascular approach both offer reconstructive and deconstructive options meaning excluding the aneurysm from the blood stream while preserving the parent vessel versus occlusion of the aneurysm and the parent vessel. Thus, both open surgery and endovascular treatment are appropriate for saccular, fusiform and giant aneurysms. Over the last years there has been a gradual shift from traditional surgical approaches towards endovascular treatment of paediatric aneurysms. This trend towards favouring endovascular treatment is noted in our group. Excluding the conservatively treated aneurysms 87.5% of aneurysms were treated by endovascular means and only 15% by surgery. Outcome following endovascular treatment was significantly better than in the surgically treated group.

Conclusion: Whenever possible, endovascular treatment for paediatric aneurysms is the recommended approach, since it offers both constructive and deconstructive techniques and a better clinical outcome.

Anticoagulation: Types, Efficacy And Reversal.

JAMEELA SATHAR¹

¹*HAEMATOLOGIST DEPARTMENT/ HOSPITAL AMPANG/ Malaysia*

Clinicians now have an armamentarium of anticoagulants to choose from to manage their patients that require them. All are efficacious in the prevention and treatment of venous thromboembolism. To avoid or reduce complications with the use of these blood thinners, clinicians must understand their mode of action, route of elimination, half-lives and drug-drug/ drug-food interactions.

Anticoagulants can be given parenterally or orally. Among the parenteral anticoagulants, unfractionated heparin is the oldest but its use has been superseded by low molecular weight heparin and the synthetic pentasaccharide, fondaparinux, as these are easier to use, predictable and do not require blood monitoring. Unfractionated heparin is still used in certain circumstances like bridging because of its shorter half-life and in patients with renal failure as it is mainly eliminated through the reticulo-endothelial system.

The direct oral anticoagulants (DOACs), dabigatran, rivaroxaban, apixaban and edoxaban are now gaining popularity over warfarin because of its rapid onset of action and require no monitoring. The PT and APTT tests are not reliable in determining the presence or over-anticoagulation with DOAC except for dabigatran where the APTT and TT will be prolonged. Despite its many idiosyncrasies, warfarin still has a place in patients with recurrent VTEs, mechanical heart valves and renal failure.

Antidotes are available to reverse the effects of specific anticoagulants such as vitamin K for warfarin, protamine sulphate for heparins and idarucixumab for dabigatran. Antidotes are in the pipeline for the anti-Xa anticoagulants, rivaroxaban and fondaparinux. Four-factor prothrombin complex concentrate (PCC) is used to replace the clotting factors that are inactivated in warfarin therapy if the patient has a life-threatening bleed or the INR >6.

AF08

THIS ABSTRACT IS NOT AVAILABLE

AF09

THIS ABSTRACT IS NOT AVAILABLE

Aneurysms: Surgical Vascular Anatomy Relevant To Endovascular Coiling

ALLAN TAYLOR¹

¹*UNIVERSITY OF CAPE TOWN/ South Africa*

Specialisation in one technique of aneurysm treatment be it microsurgical or endovascular is the norm and may allow for operators to develop a high level of expertise. An alternative is the hybrid approach of one practitioner offering both treatments. The advantage of this is that there is no conflict in selecting the best treatment for a particular case. Furthermore there is experience that can be gained from microsurgery that can help an endovascular approach and vice versa.

Personal experience is discussed with reference to :-

1. Aneurysm fragility
2. Selection of cases for endovascular treatment
3. Anatomical tips relevant to common aneurysm locations

AF11

THIS ABSTRACT IS NOT AVAILABLE

AF12

THIS ABSTRACT IS NOT AVAILABLE

AF13

THIS ABSTRACT IS NOT AVAILABLE

AF14

THIS ABSTRACT IS NOT AVAILABLE

AF15

THIS ABSTRACT IS NOT AVAILABLE

AF16

THIS ABSTRACT IS NOT AVAILABLE

AN001

Surpass Flow Diverter In The Treatment Of Acutely Ruptured Aneurysms – Indian Multicenter Experience

GAURAV GOEL¹

¹NEUROINTERVENTION SURGERY/ MEDANTA HOSPITAL GURGAON/ India

Purpose

We retrospectively evaluated the data on the safety and efficacy of Surpass flow diverter (FD) in the treatment of acutely ruptured aneurysm from four participating Indian centers.

Materials and Methods

We retrospectively reviewed 15 patients with subarachnoid hemorrhage who were treated by Surpass FD placement at four centers between June 2016 and September 2017.

Results

Our search identified 15 patients (8 women and 7 men) with ages varied from 35-74 years with a mean age of 52 years. 9 patients (60%) presented with Hunt and Hess (HH) grade 1, 4 patients presented with HH grade 2 (20%) and 1 patient presented with Hunt and Hess (HH) grade 4 (1%). Twelve aneurysms were in the anterior circulation (paraophthalmic 6, paraclinoidal 2, communicating segment 2, ICA bifurcation 1 and right MCA) and three in the posterior circulation (SCA 1, VA 1 and distal basilar). . Only one Surpass FD was used in each patient with size ranging from 3x25mm to 4x50mm. Only one patient had intraprocedural thromboembolic complication which was resolved by increasing the ACT levels. Two patient developed transient neurological deficit due to vasospasm which recovered completely on 3 month clinical follow up. Good clinical outcome (mRS) was noted in 13 patients (86.7%). One patient died due to fungal infection. Angiographic follow up was done in 12 patients (80 %) at 3-6 months.

Conclusion

Single Surpass FD can be safely utilized for treatment of ruptured intracranial aneurysm which are difficult to treat by conventional clipping and coiling, however larger studies are needed to confirm our findings.

AN002

Endovascular Treatment Of Posterior Inferior Cerebellar Artery Aneurysms: Technical Challenges

GAURAV GOEL¹; ANSHU MAHAJAN¹; BIPLAB DAS¹; AJAYA NAND JHA¹; HARSH SAPRA¹
¹NEUROINTERVENTION SURGERY/ MEDANTA HOSPITAL GURGAON/ India

Purpose

We review our experience in management of difficult and challenging PICA aneurysms.

Materials and Methods

We performed a retrospective search of our neurointervention data base in the period 2011—September 2017. Total number of 17 ruptured PICA aneurysm were analysed in terms of their clinical, angiographic, treatment details and modified rankin scale. Six (37.5%) aneurysm were occluded with coil, ten aneurysm treated with parent vessel occlusion and 1 aneurysm was treated with overlapping stenting.

Results

The immediate angiographic results were total occlusion in all 17 (100%) cases. Four patient developed cerebellar infarction after the PICA occlusion. Angiographic follow up was done in 13 patients. Post treatment recanalization occurred in one patient which was treated with flow diverter placement. No hemorrhage occurred during clinical follow up. Good clinical outcome (mRS) was achieved in 13/17(76.4%) cases

Conclusion

In our experience, proximal and distal PICA aneurysms are technically difficult to treat by endovascular route however with the availability of distal access catheters, low profile microcatheters, and increasing understanding, nano coils and microstent we were able to successfully treat all the PICA aneurysms

Balloon Test Occlusion In Complex Intracranial Aneurysms

GURUPRASADH CHANDRASHEKHAR¹; UDAY LIMAYE¹; SUNANDA ANAND¹
¹INTERVENTIONAL NEURORADIOLOGY/ HINDUJA HOSPITAL/ India

Purpose

To demonstrate the importance of balloon test occlusion in various scenarios of complex intracranial aneurysms

Materials and Methods

We present four cases of complex intracranial aneurysms [Three posterior circulation and one anterior circulation] in which a balloon test occlusion was carried out to decide about the approach to the endovascular treatment

Results

The complex posterior circulation aneurysms included a ruptured large proximal basilar artery aneurysm in a eleven year old child in which test occlusion with balloon revealed excellent flow reversal via posterior communicating arteries. Parent vessel sacrifice was performed with good outcome. Similar balloon test occlusion in large vertebrobasilar junction aneurysm with excellent flow reversal in a middle aged gentleman had a flow diversion with coils and occlusion of contralateral distal intradural vertebral artery. Two years follow up revealed a large regrowth of the wall of the aneurysm. Small dissecting P1 segment aneurysm was not feasible for sacrifice and hence flow diversion was done with side branch occlusion which was managed medically. Test occlusion in giant MCA aneurysm with incorporation of trifurcation was done with balloon in proximal M2 segment branch crossing the aneurysm was done to see the retrograde filling. Good pial network reformed the stem vessel in a retrograde fashion. Flow diversion from M1 extending to the superior M2 branch coupled with parent vessel sacrifice of the other stem vessel was done to prevent aneurysm filling.

Conclusion

Balloon test occlusion with deconstructive approach is a feasible option in favourable anatomical situations in this era of flow diverters for complex aneurysms

Progress After Coil Embolization In Regrowth Cerebral Aneurysm Previously Underwent Surgical Clipping

HAE WOONG JEONG¹; JIN WOOK BAEK¹; BYUNG JIN KIM²; SUNG TAE KIM²; JUNG HWA SEO³; SUNG-CHUL JIN⁴
¹DEPARTMENT OF RADIOLOGY/ INJE UNIVERSITY BUSAN PAIK HOSPITAL/ Korea, ²DEPARTMENT OF NEUROSURGERY/ INJE UNIVERSITY BUSAN PAIK HOSPITAL/ Korea, ³DEPARTMENT OF NEUROLOGY/ INJE UNIVERSITY BUSAN PAIK HOSPITAL/ Korea, ⁴DEPARTMENT OF NEUROSURGERY/ INJE UNIVERSITY HAEUNDAE PAIK HOSPITAL/ Korea

Purpose

The aim of this study was to review and analyse the clinical and angiographic outcome after coil embolization in regrowth cerebral aneurysm previously underwent surgical clipping.

Materials and Methods

Between May 1999 and November 2014, 16 consecutive patients (4 men and 12 women; mean age, 60.6 years) with 16 regrowth aneurysms previously underwent surgical clipping were treated using coil embolization. Clinical presentation, coiling technique, angiographic and clinical outcome, complication and related factors with treatment result were evaluated retrospectively.

Results

15 aneurysms initially presented with subarachnoid haemorrhage (SAH), when performing surgical clipping. When performing coil embolization, 9 aneurysms presented with SAH. The interval between clipping and coil embolization was 134.6 ± 61.2 months, and ranged from 43 to 228 months. Coil embolization was performed using single or double catheter in 14 cases. Balloon and stent were used to assist coil embolization in each one case. In immediate radiological finding, complete occlusion of the aneurysm was achieved in 10 cases and remnant neck was seen in 6 cases. Procedure related complication occurred in 2 cases (12.5%). The mean clinical follow-up period after coil embolization was 64.0 ± 39.7 months. SAH presentation at coil embolization was the only factor related with poor clinical outcome (modified Rankin Scale ≥ 3) in the patients ($p < 0.05$). Major recurrence was detected in 5 patients (31.3%), and rebleeding event occurred in 2 patients (12.5%). All recurred aneurysms after coil embolization had tendency of aneurysm regrowth.

Conclusion

Coil embolization for regrowth aneurysm after surgical clipping seems to be an effective retreatment option.

AN005

Clinical And Angiographic Outcomes Of Treatment Of The Very Large And Giant Cerebral Aneurysms: A Study Of Siriraj Hospital Experience

ITTICHAI SAKARUNCHAI¹; THAWEESAK AURBOONYAWAT¹; EKAWUT CHANKAEW¹; DITTAPONG SONGSAENG¹;
BOONRERK SANGPETNGAM¹; ANCHALEE CHUROJANA¹

¹RADIOLOGY/ FACULTY OF MEDICINE SIRIRAJ HOSPITAL, MAHIDOL UNIVERSITY / Thailand

Purpose

To evaluate the clinical and angiographic outcomes after treatment of the very large and giant cerebral aneurysms.

Materials and Methods

A retrospective study of 25 patients of the very large and giant (diameter ³15 mm) cerebral aneurysms were included between July 2005 and 2017. The good and poor clinical outcome was assessed by using modified Rankin score (mRS) 0-2 and 3-6 during 90-days follow-up, respectively. The angiographic outcomes after treatment were categorized as complete or partial obliteration, stable and progression. Fisher's exact test was used for univariate analysis for the associated factors of the clinical and angiographic outcomes.

Results

Most of clinical presentations were headache (40%), cranial nerve palsy (24%) and subarachnoid hemorrhage (16%). The common aneurysm locations were cavernous internal carotid artery (ICA) (36%) and supraclinoid ICA (48%). The treatment modalities were microsurgical clipping (28%), surgical aneurysm trapping with high-flow bypass (20%), flow diverter stenting (12%), coiling (16%), sacrifice (8%) and conservative treatment (16%). The mean-time follow-up was 23 months. The total and partial angiographic occlusion was observed for 44% and 36%. The good outcome was shown in 22 patients (88%) and poor outcome in 3 patients (12%). All patient who treated with the parent artery sacrifice were achieved a good outcome with complete angiographic obliteration. There were no statistical significant for the associated factors between the treatment and angiographic outcomes.

Conclusion

Multimodality of treatments of very large and giant cerebral aneurysms could be optional consideration for an individual patient. A very simple technique of parent artery sacrifice in a selected patient can provide an effective treatment, particularly, when cost-benefit has to be considered.

Development Of Support Robot For Neuroendovascular Intervention

REO KAWAGUCHI¹; SHIGERU MIYACHI¹; YOSHITAKA NAGANO²; NAOKI MATSUO¹; TOMOTAKA OHSHIMA¹; MASAKAZU TAKAYASU¹

¹NEUROSURGERY AND NEUROENDOVASCULAR THERAPY/ AICHI MEDICAL UNIVERSITY/ Japan, ²ELECTRONIC CONTROL AND ROBOT ENGINEERING/ AICHI UNIVERSITY OF TECHNOLOGY/ Japan

Purpose

The robotic technology is rapidly developing in the medical field particularly contributing to support endoscopic surgery using da Vinci. Robotics also enables the telesurgery with remote control. In our neuroendovascular intervention robot surgery has been strongly desired to reduce the radiation of surgeons. We developed a prototype of support robot for neuroendovascular therapy.

Materials and Methods

Our robot has two independent slaves manipulating catheter and guidewire connected with the remote master driver with two joysticks. This design can realize the usual catheterization with both hands. Slave manipulator has the sufficient output power more than 1 newton to reproduce the exact master intervention without slip and delay. This machine has a unique function to indicate the reaction force of the resistance on wire stuck using the sensor system. This system is useful to prevent over-action of the machine.

Results

We checked the controllability, safety and reproducibility of our machine on the in-vivo silicone vascular model. Although the operator's motion could be well reproduced in the simple model, it was difficult to realize the exact correspondence against the rapid action or in the acutely curved vessel. This machine was also available to delivery coils.

Conclusion

The endovascular support machine on the market is applied for clinical use of coronary intervention. It is available only for monorail device and has no feedback alarm system for the resistance on maneuver. Neuroendovascular intervention requires the delicate power adjustment with fine finger control. Our robot may realize neurointerventions without human operators in the angiosuite.

Non- Invasive Intravenous Conebeam CT Angiography For Follow Up Assessment Of Pipeline Embolization Device Upon Aneurysm Obliteration, In-Stent Stenosis And Vessel Wall Apposition

RONALD LI¹; KAI SING ALAIN WONG¹; KWONG YAU CHAN¹; CHING KWONG JOHN KWOK¹; YUNG WOON DEYOND SIU²
¹NEUROSURGERY/ KWONG WAH HOSPITAL/ Hong Kong, ²DEPARTMENT OF IMAGING AND INTERVENTIONAL RADIOLOGY/
KWONG WAH HOSPITAL/ Hong Kong

Purpose

Digital subtraction angiography (DSA) was the gold standard in assessing aneurysm obliteration after embolization. However, despite the low complication rate, it can still result in permanent neurological deficit. Intravenous conebeam CT angiogram (IvCBCTA) allows us to have assessments with much less artefacts. We would like to compare the accuracy using IvCBCTA in assessing pipeline embolization device upon aneurysm obliteration rate, instent stenosis and vessel wall apposition and its possibility as an alternative imaging compared to DSA.

Materials and Methods

This is an ongoing prospective study recruiting patients undergoing pipeline embolization device for both ruptured and non-ruptured intracranial aneurysms. All patients were scheduled to have a follow up DSA and IVCBCTA at 6 months interval simultaneously. Outcomes like aneurysm obliteration, instent stenosis and wall apposition were gathered from both DSA and IVCBCTA and compared.

Results

There were total of 10 patients with 10 pipeline stents deployed. Metal artefacts were encountered in one patient with one pipeline stent due to coil masses. Only one patient was found to have residual aneurysm while others were all obliterated. All patients do not have any instent stenosis except one having mild distal instent stenosis, which does not require further intervention. All stents have good wall apposition.

Conclusion

Intravenous conebeam CT angiography has shown non inferior accuracy in assessing the obliteration rate of intracranial aneurysm as well as in-stent stenosis. It provides the additional information of vessel wall apposition of the pipeline embolization device. Longer follow up is warranted for assessment of the flow diverter by the IvCBCTA.

Use Of Flow Divertors For Treatment Of Posterior Circulation Aneurysms

SATISH LAHOTI¹; ANAND ALURKAR¹; DEEP PILLAI¹

¹INTERVENTIONAL NEURORADIOLOGY/ KING EDWARD MEMORIAL HOSPITAL AND RESEARCH CENTRE/ India

Purpose

To explore feasibility of flow-divertor(FD) stents for treatment of posterior circulation aneurysms, ruptured and unruptured; as currently, they are approved only for untreatable unruptured ICA aneurysms.

Materials and Methods

Patients with posterior circulation aneurysms, untreatable either by coiling or clipping, ruptured and unruptured, were selected for flow-divertor stenting with predesigned antiplatelet protocol. Detailed neurological examination was done at baseline, post-procedure, 1, 3 and 6 month follow-up. Follow-up DSA was done at 6 months.

Results

14 posterior circulation aneurysms in 11 patients (8 of V4 segment of vertebral artery, 3 of basilar artery, 1 of superior cerebellar artery and 2 of P1 segment of PCA) were treated- 7 ruptured and 7 unruptured; 8 fusiform and 6 saccular. All 14 aneurysms showed immediate contrast stasis after deployment of FD. None of the vessels covered by the stents were occluded. No patient had intra-procedural complication. No patient showed any angiographic evidence of distal thromboembolism or leak from any distal vessel. 2 patients (with 3 aneurysms) developed peri-procedural complications (1 in-stent thrombosis and 1 rupture after 5 days) and both expired [Mortality – 2/11 (18%)]. None of the other patients had any transient or permanent neurological deficits during the 6 month follow-up period. At 6 month follow-up, all of the remaining 11 aneurysms had total occlusion (occlusion rate–100%); none of the them had any in-stent stenosis or covered branch occlusion.

Conclusion

Flow-divertor treatment can be a reasonable treatment option in posterior circulation aneurysms including ruptured aneurysms; careful case selection remains the key for successful outcome.

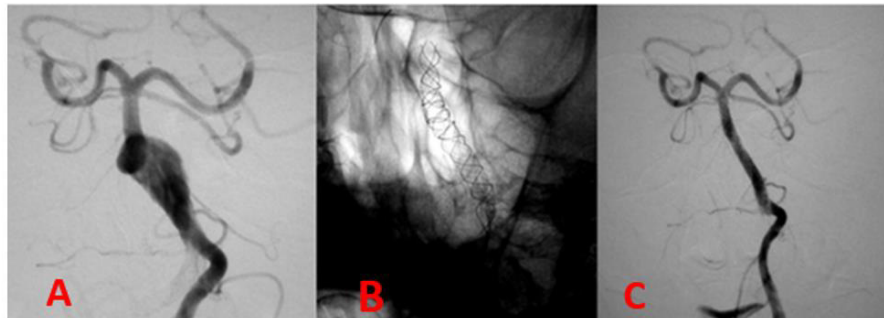


Fig 1 – A – Giant fusiform basilar artery aneurysm . B – Flow diverter deployed.
C – 6 Month follow-up DSA showing complete occlusion of the aneurysm with normal vertebro-basilar artery and branches.

Dural AVF: Is There A Role In Closing Arterial Feeders?SHIGERU MIYACHI¹¹*NEUROENDOVASCULAR CENTER/ AICHI MEDICAL UNIVERSITY/ NAGAKUTE/ Japan*

Dural arteriovenous fistula (DAVF) has two different types, sinus and non-sinus type. According to the classification by Lasjaunias non-sinus type corresponds with lateral epidural shunt group, and sinus type is divided to ventral and dorsal group. Non-sinus type including ethmoidal, tentorial, cranio-cervical and spinal DAVF is usually treated with transarterial embolization (TAE) with liquid materials. While sinus type of DAVF is basically treated with transvenous embolization (TVE) using coils. Particularly TVE is essential for the ventral group including cavernous sinus and anterior condylar confluence DAVF. In the very peculiar situation TVE with glue is useful for complete occlusion of remaining shunt in spite of high risk of chemical injuries of cranial nerve in the affected sinus. Although dorsal group including lateral(transvers)-sigmoid, superior sagittal sinus DAVF is also embolized with transvenous sinus packing with coils, aggressive one with isolated sinus showing reflux to cortical veins and no antegrade drainage is treated with radical TAE using liquid materials. This TAE should be performed based on the meticulous strategy. First, feeders from the meningeal branches of external carotid system except for middle meningeal artery (MMA) are occluded, then very diluted glue or Onyx is injected from a finishing branch of MMA very slowly to penetrate into the isolated sinus. While palliative non-selective TAE with particles may be temporarily effective to reduce the clinical symptoms, but the shunt will soon recanalize and recruit other branches with strong angiogenesis. Therefore it is important to understand the exact angioarchitecture and to make proper strategy, methods and materials for the most effective embolization of DAVF.

AF29

THIS ABSTRACT IS NOT AVAILABLE

Liquid Embolic Agents: Types ,Pro And Cons.

KHAIRUL AZMI ABD KADIR¹

¹*UNIVERSITY OF MALAYA, KUALA LUMPUR/ Malaysia*

Endovascular embolization has become the first-line treatment for a wide range of dural arteriovenous fistulas (dAVFs) and cerebral arteriovenous malformations (AVMs). Embolic agents greatly influence the result of treatment and are considered a key factor in developing the embolization technique.

A wide variety of agents have been used to embolize AVMs and dAVFs. Up until a few years ago NBCA was the most frequently employed liquid embolic agent. NBCA polymerizes almost immediately upon contact with ionic fluid, consequently resulting in a high risk of microcatheter entrapment within the artery.

Onyx is a nonadhesive liquid embolic agent composed of ethylene-vinyl alcohol copolymer and tantalum dissolved in dimethyl sulfoxide (DMSO). Onyx is thought to be a more manageable agent than NBCA as it solidifies slowly while the DMSO solvent diffuses, reducing the risk of microcatheter entrapment. Prolonged and repeated Onyx injections within the same AVM pedicle are possible and allow it to be pushed more distally toward and within the nidus. Like NBCA, Onyx is also considered a permanent embolic agent although recanalization is possible as well.

Recently, a new DMSO-based embolic agent, precipitating hydrophobic injectable liquid (PHIL) (Microvention) has been introduced for endovascular use. PHIL is a nonadhesive co-polymer (polylactide-co-glycolide and polyhydroxyethylmethacrylate)-based liquid embolic material suspended in DMSO. An iodine (triiodophenol) component is bound to co-polymer for radiopacity. Possible advantages of PHIL are its ease of use, faster plug formation, and less computed tomography (CT) and magnetic resonance imaging (MRI) artifact during imaging follow up.

Both PHIL and Onyx are liquid embolics on the basis of ethylene-vinyl alcohol copolymer. Ultimately, as rapidly as INR is growing, further research and development of more sophisticated devices and ideal permanent embolic agents is warranted and obligatory for continued progress in the field.

Liquid Embolic Agents: Effects On Vessel Wall

ALLAN TAYLOR¹

¹*UNIVERSITY OF CAPE TOWN/ South Africa*

Sclerosing agents are typically liquid and when injected result in tissue injury and fibrosis. When injected intraluminally they cause vessel thrombosis and if they are highly sclerotic result in vessel wall and surrounding tissue injury. If they are not sclerosing the result may only be vessel occlusion.

The effects on the vessel wall of 3 liquid embolic agents are reviewed:-

1. Alcohol which is highly sclerosing but not adherent.
2. NBCA which is adherent and non sclerosing.
3. EVOH which is non-adherent and occlusive.

Vessel wall physiological response and histological changes are reviewed with the use of these agents

AN011

Stent Placement For Ruptured Intracranial Dissecting Aneurysms: A Possible Treatment Option For Inevitable Condition

TOSHIO HIGASHI¹; HIRONORI FUKUMOTO¹; NAOKI WAKUTA¹; TAKAAKI AMAMOTO¹; MITSUTOSHI IWAASA¹; TOORU INOUE¹

¹NEUROSURGERY/ FUKUOKA UNIVERSITY HOSPITAL/ Japan

Purpose

Recently, stenting or stent-assist coiling is a possible treatment option for intracranial dissecting aneurysm, when sparing the parent vessel patency is necessary. However, anti-platelet or -coagulation therapy makes it difficult to apply this treatment for ruptured intracranial dissection. We reviewed our experiences and studied the appropriate timing, the anti-thrombotic treatment, and the follow-up results.

Materials and Methods

We reviewed angiographic images and prospectively collected database. Among recent 224 subarachnoid hemorrhage patients who received surgical intervention, 46 cases were due to ruptured dissecting aneurysms. Eight cases were treated with stent-assisted coil embolization.

Results

Average age was 51.9 years (38-65 years, 3 females and 5 males). Anatomical locations were 3 basilar trunk, 2 vertebral and 2 internal carotid arteries. Average aneurysm size at the dilated part was 6.5mm (3.5-8.3mm). Initial five cases were treated at subacute phase (average 15.2 days), and one case (5th case) was treated when the aneurysm was re-ruptured. Other three cases were treated at acute phase (average 1.0 day). Anti-coagulation treatment was performed during endovascular treatment in every case. Anti-platelet treatment was started before embolization in 5 cases and during embolization in 2 cases. There was no rupture after the treatment. During follow-up periods (average 1097 days), average mRS was 0.8 (0-2). Two cases were re-treated (coil embolization or additional stent).

Conclusion

Reconstructive stent-assisted coil embolization for ruptured dissecting aneurysm is useful, when sparing the parent vessel patency is necessary. Appropriate timing and anti-thrombotic therapy is mandatory for successful treatment.

Prevalence Of Recurrence And Retreatment Of Intracranial Saccular Aneurysms Treated With Coil Embolization: Single Center Experience During Past 10 Years.

IAE IL LEE¹; TAE HONG LEE¹

¹NEUROSURGERY/ PUSAN NATIONAL UNIVERSITY HOSPITAL/ Korea

Purpose

Endovascular coiling is an effective treatment for intracranial aneurysms. However, compared to surgical clipping, recanalization of embolized aneurysms is still a concern due to their delayed rebleeding. The purpose of our study was to evaluate the rate of recurrence and retreatment of intracranial saccular aneurysms with previous coiling in a single institute.

Materials and Methods

We reviewed the medical records of patients treated with coil embolization for intracranial saccular aneurysms. Between Jan 2005 and Dec 2015, 878 aneurysms cases (809 patients) were treated by coiling. Follow-up DSA performed at more than 6 months were available in 490 cases. Recurrences were categorized into three types (Minor, Major and Regrowth). Statistic analysis was done.

Results

A total of 59/490 (12.0%) aneurysms were recurred (35 (7.1%); minor recanalization, 17 (3.5%); major recanalization, 7 (1.4%); regrowth) and 22/490 (4.5%) aneurysms were underwent retreatment. Most (43/59 (72.9%) of the recurred aneurysm necks were wide or unfavorable neck . The sites of aneurysms were ACOM artery in 20 cases (33.9%), PCOM artery in 13 cases (22.0%), ICA in 12 cases (20.3%), and posterior circulation in 6 (10.2%). We retreated 22 recurred cases (4.5%) and successful retreatment was achieved in 19 cases (86.4%). Mean interval from initial treatment and retreatment was 18.8 months. The angiographic result of all retreatment cases was complete occlusion.

Conclusion

Long-term angiographic follow-up is required for aneurysm treated by coiling and in some subgroups such as large aneurysm (p=0.023), aneurysms arising from ICA (p=0.011) or ACOM (p=0.068), follow-up angiography is mandatory because of their easy recurrence.

AN013

Assessment Of MAFA Ratio As A Prognostic Marker Of Intra Cranial Aneurysm Occlusion After Flow Diverter Treatment Using 3DRA.

JAGADEESAN DHANASEKARAN¹; SANTHOSH JOSEPH¹; VINAY HEGDE¹; SAIKANTH DEEPALAM¹; SAIKIRAN GUTTA¹; RAJESH POOSARLA¹

¹NEURORADIOLOGY/ SRI RAMACHANDRA MEDICAL COLLEGE AND RESEARCH INSTITUTE/ India

Purpose

AIMS & OBJECTIVE:

1. To study the intra cranial aneurysmal flow changes induced by flow diverters (FDS) using contrast motion estimation of mean aneurysmal flow amplitude ratio (MAFA-R) in 3DRA (3Dimension rotational angiography).
2. To predict the FDS efficacy based on perioperative aneurysmal flow quantification.

Materials and Methods

15 patients who had complex intracranial aneurysms in whom FDS placement was judged as a feasible treatment option were included in the study. Endovascular treatment was performed by using a biplane flat panel angiographic system (Allura Xper FD 20/20; Philips Healthcare). Flow reduction was assessed using dedicated software based on optical flow principles (Aneurysm Flow, Philips Healthcare).

Results

In our study on 15 patients, it was observed that average MAFA-R ranged between (0.42-2.40). Average pre aneurysmal blood flow was 2.8ml/sec, and post aneurysmal blood flow was 2.0ml/sec. For the large (>10mm) aneurysm subgroup, the results at 3 months follow-up, 2 out of 6 aneurysms partially thrombosed (13.3%), MAFA-R threshold was found to be 1.2.

For the Small (<10mm) aneurysm subgroup, the results at 3 months follow-up, 5 out of 8 aneurysms completely thrombosed (33.3%), MAFA-R threshold was found to be 0.5.

Follow-up imaging for rest of the patients is not available.

Conclusion

MAFA-R is a potential marker of complete aneurysm occlusion in FDS treatment. This functional assessment may potentially help the clinician to adapt the treatment during the procedure. The findings of this study data influence on table management decisions, which will eventually predict procedural success and outcome of the aneurysms being treated.

Treated Aneurysms: When To Order Each Test.

MARLISE PERUZZO DOS SANTOS¹

¹DEPARTMENT OF MEDICAL IMAGING/ UNIVERSITY OF OTTAWA/ Canada

Purpose

Qualitative summary of the scientific evidence on the imaging modalities available to monitor the status of intracranial aneurysms after microsurgery or endovascular treatment.

Materials and Methods

A comparison of the main vascular imaging modalities available for treated aneurysms. Key practical, clinical and radiologic scenarios related to treated intracranial aneurysms that may impact on the selection of follow-up imaging will be reviewed using both, real-life and previously published cases and quantitative data.

Results

There are no guidelines on when to order a test for the follow-up of treated intracranial aneurysms. Physicians must focus on the main goals of preventing recurrence of hemorrhage and aneurysm rupture and detecting *de novo* aneurysms, while being cost-effective. There is benefit in increasing the frequency of imaging during the first year after treatment. The literature supports the combined use of time-of-flight and contrast-enhanced MR angiography for the follow-up of most treated intracranial aneurysms. Diagnostic Subtraction Angiography has a role post endovascular treatment after microsurgery, in partially thrombosed aneurysms, in parent artery occlusion, and prior to changing any antiplatelet/anticoagulation regimen. The literature supports follow-up imaging for the entire lifetime of a patient. There is paucity of quality assurance and safety data on the follow-up of treated intracranial aneurysms which precludes protocol optimization.

Conclusion

Establishing a schedule for the follow-up imaging of treated intracranial aneurysms and tracking multi-modality imaging performance in a database while recovering those lost to follow-up and tracking deaths will help define optimal strategies to monitor our patients.

Endovascular Coil Embolization Of Internal Carotid Artery Anterior Wall Aneurysms

MASARU HIROHATA¹; YASUYUKI TAKEUCHI¹; KUMIHIKO ORITO¹; SOUSHOU KAJIHARA¹; MOTIHIRO MORIOKA¹
¹NEUROSURGERY/ KURUME UNIVERSITY HOSPITAL/ Japan

Purpose

Aneurysms arising from the non-branching sites in the internal carotid artery (ICA), or so-called anterior wall (AW) aneurysms, have been reported. The surgical management of these aneurysms poses technical challenges, and such patients are frequently referred for endovascular coil embolization(CE). The purpose of this study was to report the clinical presentation, endovascular treatment and outcome of ICA AW aneurysms.

Materials and Methods

From 2003 to 2016, we treated 65 patients M:F=15:50, age, 37-72 years, mean 62.6) with ICA AW aneurysms. Eight patients presented with subarachnoid haemorrhage, nine patients presented with visual disturbance and the remaining 48 patients were asymptomatic.

Results

Although 63 of the 65 patients were treated with an adjunctive (Balloon remodelling: BR, Double catheter: DC, Stent assist: SA) technique, all aneurysms could be treated with aneurysmal CE. Combination of adjunctive techniques are BR: 39, SA + DC: 9, SA in 4, DC + BR in 4, SA+ BR:3, DC: 3 and DC + BR + SA: 1. Angiographic results were complete in 35, neck remnant in 25 and dome filling in 5 patients. We experienced neurological deterioration in 2 patients including embolic cerebral infarction within 24 hrs & deterioration of ipsilateral visual acuity . Although none of the patients showed rupture or re-rupture of the treated aneurysm in the follow-up period, 4 patients with a ruptured ICA AW aneurysm who showed aneurysmal recanalization underwent re -CE.

Conclusion

The results of this study indicate that endovascular CE is a safe and effective therapeutic alternative for ruptured and unruptured ICA AW aneurysms.

Clinical Application of Insertion Force Sensor System for Coil Embolization of Intracranial Aneurysms.

NORIAKI MATSUBARA^{1,2}; SHIGERU MIYACHI^{1,2,3}; HIROYUKI YAMADA⁴; NAOKI MARUI⁴; TAKASHI IZUMI¹; TOSHIHIKO WAKABAYASHI¹; HIROYUKI OHNISHI²; RYO HIRAMATSU²; RYOKICHI YAGI²; TOSHIHIKO KUROIWA²

¹DEPARTMENT OF NEUROSURGERY/ NAGOYA UNIVERSITY GRADUATE SCHOOL OF MEDICINE/ Japan, ²DEPARTMENT OF NEUROSURGERY AND NEUROENDOVASCULAR THERAPY/ OSAKA MEDICAL COLLEGE/ Japan, ³DEPARTMENT OF NEUROSURGERY/ AICHI MEDICAL UNIVERSITY/ Japan, ⁴NEW PRODUCT DEVELOPMENT R&D CENTER/ NTN CORPORATION/ Japan

Purpose

In endovascular embolization for intracranial aneurysms, it is important to properly control the coil insertion force. However, the force can only be subjectively detected by the subtle feedback experienced by neurointerventionists at their fingertips. The authors envisioned a system that would objectively sense and quantify that force. In this article, coil insertion force was measured in cases of intracranial aneurysm using this sensor, and its actual clinical application was investigated.

Materials and Methods

The sensor consists of a hemostatic valve (Y-connector). A little flexure was intentionally added in the device, and it creates a bend in the delivery wire. The sensor measures the change in the position of the bent wire depending on the insertion force and translates it into a force value. Using this, embolization was performed for 10 unruptured intracranial aneurysms.

Results

The sensor adequately recorded the force, and it reflected the operators' usual clinical experience. The presence of the sensor did not affect the procedures. The sensor enabled the operators to objectively note and evaluate the insertion force and better cooperative handling was possible. Additionally, other members of the intervention team shared the information. Force records demonstrated the characteristic patterns according to every stage of coiling (framing, filling, and finishing).

Conclusion

The force sensor system adequately measured coil insertion force in intracranial aneurysm coil embolization procedures. The safety of this sensor was demonstrated in clinical application for the limited number of patients. This system is useful adjunct for assisting during coil embolization for an intracranial aneurysm.

Blister Aneurysms - Should We Treat Them In Acute Phase?

VIJAY JAYAKRISHNAN¹; ANIL GHOLKAR¹; DIP MITRA¹
¹*INTERVENTIONAL NEURORADIOLOGY/ ASTER MEDCITY/ India*

Purpose

To present treatment strategy of delayed, sub acute treatment in blister aneurysms, based on a retrospective case series

Materials and Methods

We retrospectively analysed our experience with treating blister aneurysms of the ICA. We analysed the outcomes between types of treatment . We also analysed the time to treat and the rebleed rate while waiting for treatment and the outcomes.

Results

7 patients with ICA blister aneurysms were treated. 3 underwent surgery and 4 endovascular treatment. Endovascular methods included double stenting, coiling and stent assisted coiling. Flow diverters were not used. Most endovascular treatments were undertaken in the sub acute phase after watchful waiting of the aneurysm. we encountered no rebleeds. In some patients the aneurysm morphology changed during waiting period and made them more amenable to standard endovascular treatment or surgery. Good outcomes were obtained in the endovascular cohort.

Conclusion

There are several challenges in treating blood blister aneurysms. Although Flow Diverter stents are used more and more for this entity, there are several disadvantages in using them in the acute phase. Also the cost factor could be prohibitive for some patients. Our experience shows that a delayed endovascular treatment approach could be a useful alternative to aggressive treatment using Flow Diverters in the acute phase.

A Single-Centre Review Of Management And Outcomes Of Ruptured Dissecting Vertebral Artery Aneurysms In Hong Kong

WING KIU JOANNA HO¹; PING HONG DEREK WONG¹; SHEUNG MAN SHERMAN LO²; WAI LUN POON²; KAM FUK FOK¹; HOK MING CHIU¹

¹DEPARTMENT OF NEUROSURGERY/ QUEEN ELIZABETH HOSPITAL/ Hong Kong, ²DEPARTMENT OF DIAGNOSTIC RADIOLOGY/ QUEEN ELIZABETH HOSPITAL/ Hong Kong

Purpose

Treatment of ruptured dissecting aneurysms within the posterior circulation remains a controversy, as the conventional trapping carries up to a quoted risk of 50% risk of medullary infarct, a complication for which risk factors are poorly understood. Endovascular treatment strategies have emerged as alternatives in managing these aneurysms. Hence a review of the management and outcomes of dissecting vertebral artery (VA) aneurysms treated in our centre was conducted.

Materials and Methods

Retrospective review of consecutively treated ruptured vertebral aneurysms from January 1 2012 to August 31 2017 in Queen Elizabeth Hospital was conducted. Baseline characteristics concerning patient demographics, dimensions of the aneurysm, location of aneurysm in relationship to the posterior inferior cerebellar artery, modes of treatment, and haemorrhage grading were collected. Primary outcomes were defined as death and functional independence as charted by modified Rankin Score (mRS) at 6 months. Secondary outcomes studied include immediate and late complications, residual/ recurrence, and states associated with poor functional outcome. Univariate and multivariate analyses were performed to identify associations with good outcome or death.

Results

A total of 736 cases over the study period were collected, yielding 23 cases of ruptured dissecting VA aneurysms.

Conclusion

In our single-centre review with small sample size, no definite risk factors were identified to be associated with good functional outcome or death. Stent-assisted coiling is a promising strategy with good radiological outcome, although further follow-up and evidence is required to observe outcomes of various reconstructive strategies.

ELAPSS Score For Prediction Of Risk Of Growth Of Unruptured Intracranial Aneurysms

GEORGE WONG¹

¹PRINCE OF WALES HOSPITAL/ THE CHINESE UNIVERSITY OF HONG KONG/ HONG KONG/ China

Approximately 3% of the adult population has an unruptured intracranial aneurysm. With increasing availability and improved quality of noninvasive imaging, an increasing number of unruptured aneurysms are being detected. Small aneurysms are often left untreated because the risk of aneurysm rupture does not outweigh the risk of morbidity and mortality from treatment complications for these aneurysms. Follow-up imaging of untreated intracranial aneurysms is recommended because a proportion of these aneurysms grow over time and several studies suggested that growing aneurysms have an increased risk of aneurysm rupture. However, guidelines from the American Heart Association and European Stroke Organisation lack recommendations for which patients and at what time interval follow-up imaging should be considered. Our hospital is one of the center participated in the study leading to the development of a scoring system for prediction of risk of growth of unruptured intracranial aneurysms. We here present the findings of the multi-center study in the meeting.

AF41

THIS ABSTRACT IS NOT AVAILABLE

AF42

THIS ABSTRACT IS NOT AVAILABLE

AF43

THIS ABSTRACT IS NOT AVAILABLE

Intravascular Ultrasound Guide For Intracranial And Extracranial Venous Stenosis

FENG YAN¹; XUNMING JI¹; YANG HUA; LIQUN JIAO¹; HONGQI ZHANG¹; FENG LING¹

¹DEPARTMENT OF NEUROSURGERY/ XUANWU HOSPITAL, CAPITAL MEDICAL UNIVERSITY/ China

Purpose

Recently, we used intravascular ultrasound (IVUS) as an adjunct to conventional neurointerventions for a wide range of intra-and extracranial venous stenosis in our center. IVUS could generate high-resolution cross-sectional images and reconstruct sagittal images of vessel wall and lumen. For this character, the imaging modality can accurately measure the degree of vessel stenosis, confirm the ostium of the drainage venous branches, identify the intra- or extraluminal lesions, analyze the etiologic mechanism, thrombus composition and guide intravascular therapy, etc.

Materials and Methods

IVUS was performed in 15 patients (7 non-thrombotic CVSS, 3 combined with CVST and 5 symptomatic internal jugular vein stenosis) during venoplasty through vein access. IVUS was performed before and after stenting.

Results

Different stenosis types were clearly visualized with IVUS such as: intraluminal thrombus (3 of 15, 20%), arachnoidal granulations (5 of 15, 33.33%), exogenous compression (3 of 15, 20%) and vessel wall thickening (5 of 15, 33.33%). Arachnoidal granulations and vessel wall thickening were more frequently observed in intraluminal lesions caused by stenosis ($P < 0.001$). Moreover, by the guidance of IVUS, stent implantation can be avoided to cover the opening of the drainage vein or stray in the compartments of the cerebral venous sinus. No technical or neurologic complications were encountered during research.

Conclusion

IVUS is a promising tool that has potential to improve diagnostic accuracy and to guide the angioplasty of several cerebral venous system diseases. IVUS adjunct venous precise stenting is an effective treatment for intra- and extracranial venous disease patients.

A0002

Radiological Evaluation And Treatment Strategies Of Craniofacial High Flow Vascular Malformations With Cavernous Sinus Drainage

I-CHANG SU¹; JAIN-JR LEE²; MING-TING CHEN²

¹DIVISION OF NEUROSURGERY, DEPARTMENT OF SURGERY/ TAIPEI CATHAY GENERAL HOSPITAL/ Taiwan, ²DIVISION OF PLASTIC SURGERY, DEPARTMENT OF SURGERY/ TAIPEI CATHAY GENERAL HOSPITAL/ Taiwan

Purpose

Craniofacial high flow vascular malformation (C-HFVM) is a rare hypervascular lesion. Occasionally, the high shunting flow may also drain intracranially into the cavernous sinus (CS), which in turn may interfere the normal intracranial venous drainage. The objective of this study was to describe the characteristics and treatment strategy of this specific group of C-HFVM.

Materials and Methods

We retrospectively examined the records of C-HFVM patients who had been treated in our hospital between 2016 and 2017, and we included only C-HFVM with CS drainage in this study. Clinical presentation, angioarchitecture, and the treatment methods of each case were recorded.

Results

14 C-HFVM with CS drainage were identified. All the lesions were located around the orbit, and lesions with higher flow resulted in severe facial dysconfiguration, repeated bleeding, and/or skin ulceration. Those severe lesions tend to drain much more blood into the CS and resulted in intracranial cortical venous refluxes in 3 cases (21.4%). For those severe cases, we occluded the ophthalmic vein trans-venously by coil embolization first, in order to prevent cortical venous reflux. Otherwise, the C-HFVM was treated by trans-arterial embolization and sclerotherapy.

Conclusion

Detailed analysis of the venous drainage pattern of C-HFVM is important. One should especially pay attention to C-HFVM with CS drainage because they have a higher potential to cause cortical venous reflux and threaten the normal venous drainage of the brain. Treatment strategy of this specific category of C-HFVM, therefore should be based on the presence or absence of the cortical venous reflux.

A0003

Management Of Intraorbital Extraocular Lymphatic And Venous Malformation With Bleomycin.

IDRIES HUSSIN¹; THAWEESAK AURBOONYAWAT¹; ANCHALEE CHUROJANA¹; EKAWUT CHANKEAW¹; BOONRERK SANGPETNGAM¹; TIPLADA BOONCHAI¹

¹RADIOLOGY/ SIRIRAJ HOSPITAL/ Thailand

Purpose

To report the role of intralesional bleomycin injection as sole therapy in the management of intraorbital extraocular venous and lymphatic malformation.

Materials and Methods

Retrospective chart analysis of 6 patients who had venous and lymphatic malformation of intraorbital extraocular venous and lymphatic malformation. Demographic details of the patient, anatomic affected site, symptoms and signs and types of treatment in Siriraj Hospital by percutaneous sclerosing therapy using Bleomycin.

Results

Patient age ranged from 8-84 years, all of them were female with complaint of pain, swelling, and proptosis. One patient complained of diplopia which was not associated with trauma or visual loss on clinical examination, diagnosed with intraorbital extraocular venous & lymphatic malformation. Bleomycin injection was performed on all patients. Preorbital swelling was observed on all patients the following day. Symptomatic improvement in all patients was noted, without complications, and one patient required cosmetic surgery. CT scan or MRI was used for further imaging of the patients.

Conclusion

Bleomycin injection in intraorbital extraocular venous and lymphatic malformation may be the effective treatment of choice given the relative success in our institution.

A0004

Intralesional Bleomycin Injection Treatment For Venous Malformations In Head And Neck Region: 9-Year Experience In Siriraj Hospital

KEERATI CHAROONTAMWONG¹; BOONRERK SANGPETNGAM¹; THAWEESAK AURBOONYAWAT¹; EKAWUT CHANKAEW¹; DITTAPONG SONGSAENG¹; ANCHALEE CHUROJANA¹

¹DIVISION OF INTERVENTIONAL NEURORADIOLOGY, DEPARTMENT OF RADIOLOGY/ FACULTY OF MEDICINE SIRIRAJ HOSPITAL / MAHIDOL UNIVERSITY / Thailand

Purpose

Intralesional bleomycin injection treatment is an effective treatment for venous malformations with the aim of treatment being shrinkage of lesion. The purpose of this study is to document the clinical results for head and neck venous malformation treatment in Siriraj Hospital.

Materials and Methods

The records of 74 patients were retrospective reviewed, between July 2008 and June 2017. Demographics, lesion characteristics, imaging findings, treatment course, clinical response to treatment, and complications were recorded. Clinical results were assessed by physical examination, pre- and post-color photographs to objectively show progressive result of treatment, and patient interview to evaluate subjective satisfaction from treatment.

Results

Of all the patients, malformations were located in the cheek and buccal region, upper and lower lips, tongue and sublingual region, intraorbital region, neck region, submandibular region, pharyngeal region, eyelids, and scalp. Each patient received between 1-13 injections (mean, 3.52 times); total cumulative dose of bleomycin was 1-199.5 mg (mean, 43.63 mg); duration of follow-up ranged from 1-108 months (mean, 25.08 months).

Physical examination and color photographs results showed improvement in all patients, marked improvement in 59 (79.73%) and mild improvement in 15 (20.27%). Subjectively, 67 patients (90.54%) were satisfied with the results. Complications were hyperpigmentation, pain in area of injection, retrobulbar hemorrhage, and difficult extubation due to marked pharyngeal mucosal swelling. No toxic hematological effects or signs of pulmonary fibrosis were reported.

Conclusion

Intralesional bleomycin injection treatment for venous malformations is an effective and safe method to objectively decrease size and symptoms of head and neck venous malformations.

A0005

Feasibility Of Ultra-Low Dose Cerebral Angiography: Digital Subtraction Head Angiography Phantom Study

DEOK HEE LEE¹; JUN YOUNG MAENG²; YUNSUN SONG¹; YOUNG EUN KIM¹; YOUNGRAK CHOI³; TAE-IL KIM¹; JOON HO CHOI¹; JAE JON SHEEN¹; YU SUB SUNG⁴

¹RADIOLOGY/ ASAN MEDICAL CENTER/ Korea, ²COLLEGE OF MEDICINE/ UNIVERSITY OF ULSAN/ Korea, ³CUSTOMER SERVICE/ SIEMENS HEALTHCARE LTD./ Korea, ⁴BIOMEDICAL IMAGING INFRASTRUCTURE, DEPT OF RADIOLOGY/ ASAN MEDICAL CENTER/ Korea

Purpose

A cerebral DSA phantom study was performed to see how low we could reduce the frame dose by applying image improvement post-processing algorithms (PPAs) for DSA.

Materials and Methods

A phantom was created with a silicone vascular tube enclosed in a polyurethane housing for DSA. We obtained a series of DSA images with gradual reduction of the doses per frame from 1.82 to 0.08 microGy/frame with standard reconstruction (standard), with PPA (PPA), with copper filtration and PPA (CUF). The SNR was compared. Image quality assessment was done by 5 readers. 5-point scoring was done for the image sharpness, vessel contrast, and noise. Acceptability for initial diagnostic purpose and for follow-up imaging purpose was asked. Kappa statistics for intra-reader agreement was calculated. We regarded an image quality was acceptable when more than 3 of the readers responded positively.

Results

The SNR gradually dropped with reduction of the dose per frame. However, it could be compensated by applying PPA even with the images obtained with copper filtration. Intra-reader kappa value ranges for image quality analyses and acceptability were 0.28-0.49 and 0.56-0.79, respectively. For More than 3 readers were responded images obtained with 0.24 microGy/frame was acceptable for initial diagnostic purpose and 0.17 microGy/frame with copper filtration for follow-up imaging purpose.

Conclusion

Lowering the dose lowered image quality, which could be compensated by post-processing algorithms. We thought images with 0.54 microGy/frame would be acceptable for clinical imaging Since the factory-set dose per frame in current practice is 3.6 microGy/frame, the dose means only 15% of current dose expense.

A0006

Transcervical Access Via Direct Neck Exposure For Neuro-Interventional Procedures At The Hybrid Angiosuite

HONG JUN JEON¹; JONG YOUNG LEE¹

¹DEPARTMENT OF NEUROSURGERY/ KANGDONG SACRED HEART HOSPITAL, HALLYM UNIVERSITY COLLEGE OF MEDICINE/ Korea

Purpose

If the common femoral route for neuro-intervention is complicated course, it often makes a trouble to approach on the target. We speculate transcervical access via neck exposure at the hybrid angiosuite.

Materials and Methods

From January 2014 to March 2017, seventeen (3.75%) out of 453 cases were indicated into the approach. Eleven cases of cerebral aneurysms (ruptured: 4 and unruptured: 7 cases), 4 of acute occlusion of large cerebral artery, 1 of proximal internal carotid artery (ICA) stenosis and 1 of direct carotid cavernous fistula (CCF) were practiced it.

Results

All patients were older (mean 78.1 ages). The main cause was influenced by severe tortuosity from supra- or combined with infra-aortic course (8 and 5 cases) and orifice disturbance (4 cases). Under an exposure of neck vessels, 6~8Fr guiding catheters were entered through a subcutaneous tunneling. It provided stability and enhanced device's support from a straight course. All cerebral aneurysms were favorably embolized to 8 complete and 3 neck remnants by a combination of several additional devices for complex shape. Mechanical stent retrieval under 8Fr balloon guide catheter was successfully achieved by a few runtime (mean 2 times: 1~3) within a proper time window (skin to puncture: mean 17±4 min and puncture to recanalization: mean 25±4 min). Each stenting of proximal ICA and direct CCF was satisfactory deployed without catheter's kick-back. All puncture sites were closed by direct suture without any complications.

Conclusion

At the hybrid angiosuite, transcervical access via direct neck exposure has a feasible option in terms of device's profile and support in which the femoral route cannot be desirable from unfavorable anatomy.

Outpatient Neurointervention Clinic – Satisfaction Survey

DANBI PARK¹, DAE CHUL SUH¹

¹ASAN MEDICAL CENTER/ SEOUL/ Korea

Intracranial saccular aneurysms occur in 1% to 2% of the general population and account for approximately 80% to 85% of non-traumatic subarachnoid hemorrhages. Unruptured aneurysm was the most common disease (49%) among 2000 patients who visited outpatient clinic in Asan Medical Center until 2016.

Day-care management of unruptured intracranial aneurysms can shorten hospital stay, reduce medical cost and improve outcome. Our study revealed that day-care management of UIAs resulted in 2% adverse events and 4.5% recurrence that required additional coil embolization without further event. Outcome of outpatient neurointervention of UIAs in this study was comparable to other studies regarding endovascular treatment for inpatients with UIAs.

Satisfaction survey for the recent 100 patients with aneurysms showed mean 9.7 points at 10 point scale. The main reasons were rapid decision process and kind explanation of medical personnel. New and innovative endovascular devices facilitate the management of difficult aneurysms and improve clinical outcomes. Although time span between the appearances of new devices is getting shorter worldwide, the possible benefits from fast introduction of devices must be carefully weighed against the risks arising from them as well especially in Asian countries. Reasonable communication among the appropriate government authorities, manufacturers, and the related medical societies may improve the registration process and reduce safety issue of devices in the future.

PL06

THIS ABSTRACT IS NOT AVAILABLE

WEAVE™ Intracranial Stent Trial: Final Trial Results In 152 Consecutive Patients Treated On-Label

MICHAEL J ALEXANDER¹

¹*CEDARS-SINAI MEDICAL CENTER/ LOS ANGELES/ U.S.A.*

Purpose

Following the approval trial of the Wingspan® Stent for symptomatic intracranial atherosclerotic disease in which a 4.5% periprocedural complication rate was seen, favorable registry data was reported. Subsequently, a trial using the device in an IDE application, not for its original indication, demonstrated poor clinical results with a 14.7% periprocedural complication rate. The WEAVE (Wingspan Stent System Post Market Surveillance Study) Trial is a prospective trial evaluating periprocedural outcomes in patients with the revised FDA indications for on-label use. This is the largest on-label study of the Wingspan Stent ever conducted in the United States.

Materials and Methods

Data for the 199 patients undergoing stenting are included in this report. The primary analysis endpoints included periprocedural stroke or death in patients who were treated on-label. On-label indication included 70% or greater intracranial stenosis, with two prior strokes in the target territory, with one of the events occurring with preventive medical therapy, and stenting greater than 7 days following the most recent qualifying stroke. Stenting was performed by experienced interventionalists (mean Wingspan case experience 37 stents). Patient outcomes were assessed by an independent Stroke Neurologist.

Results

In the 199 consecutive patients enrolled in the trial, 152 patients were treated on-label and are included in the primary analysis, and 46 patients were treated off-label and are included in the secondary analysis. The mean stenosis in the primary analysis group was 83.3%. Of the 152 patients in the primary analysis, 4 patients (2.6%) reached a primary endpoint of stroke, or death within 72 hours. In the off-label group, 11 of the 46 patients (23.4%) reached a stroke or death endpoint within that period. In off-label use, there was a statistically higher rate of complications compared to on-label use, $p < 0.0001$.

Conclusions

The final trial results of the 152 on-label patients of the WEAVE Trial have demonstrated a very low periprocedural morbidity of 2.6% . This data lends support to the concept that refined patient selection criteria and establishment of best practice techniques and management for these patients can substantially decrease the periprocedural risk of intracranial stenting and benefit these patients clinically.

PL08

Imaging Pre/Post AVM Treatment: In Acute Haemorrhage, Planning & Post Treatment

CC TCHOYOSON LIM¹

¹*NATIONAL NEUROSCIENCE INSTITUTE, RADIOLOGICAL/NEUROSCIENCE ACP, DUKE-NATIONAL UNIVERSITY OF SINGAPORE/Singapore*

Arteriovenous malformations (AVM) are vascular abnormalities with a nidus connecting between feeding arteries and early draining veins without a normal intervening capillary bed. They typically present with hemorrhagic stroke, or seizures, and can be asymptomatic. Although DSA is the gold standard in assessing all components of the AVM with high temporal resolution, non-invasive methods are preferred as a supplement for surveillance after treatment.

This presentation will cover diagnostic CT, MRI, DSA imaging of AVM in hemorrhagic stroke and unruptured AVM. Cases of typical acute hemorrhage, clues to underlying AVM, CT and MR angiographic features, as well as pre-treatment functional MRI and DTI will be presented. Surveillance post treatment using MRI and DSA assessment, newer techniques such as 4D MRA and CT perfusion, and pitfalls of imaging will be summarized.

AF17

THIS ABSTRACT IS NOT AVAILABLE

AF18

THIS ABSTRACT IS NOT AVAILABLE

Dural AVF: How To Avoid Complications

ANCHALEE CHUROJANA¹

¹CENTER OF INTERVENTIONAL RADIOLOGY/ SIRIRAJ HOSPITAL, MAHIDOL UNIVERSITY, BANGKOK/ Thailand

DAVFs are abnormal communications within the dura or near venous sinuses. Symptoms are related to their locations and type of venous drainages. Retrograde sinus drainage (RSD) and/or cortical venous reflux (CVR), which may be aggravated by the associated venous thrombosis, will lead to more severe symptoms of venous congestion, focal neurological deficits or even venous hemorrhage.

The goal of treatment of DAVFs with RSD and/or CVR is only for cure. There is no role for partial treatment in these aggressive behavior of DAVFs. The shunt-locations and the absence or presence of sinus thrombosis will determine the choice of endovascular techniques. The goal is to selectively occlude the dural sinus compartment that is exclusively drainage of the DAVF, or disconnect the leptomeningeal reflux while preservation of the main channel for drainage of the normal brain. Arterial or venous approach or combine can be proposed. To achieve a cure for CVR, the venous approach with coil embolization is more likely to succeed, even the access through the thrombosed dural channel. In some circumstances, if it is reluctant to have sinus sacrifice, using balloon protection in the dural sinus during transarterial injection of liquid embolic material can be the choice. Whenever endovascular techniques have failed to be curative or unfeasible, surgery should be considered.

Certain specific anatomical locations such as that along the floor of the anterior cranial fossa are usually much more easily reached and safely treated by surgery than by embolization through ophthalmic and ethmoidal arteries.

For treatment consideration, every treatment options and techniques should have to be weighted against between their associated risk and natural risk of the disease itself.

To avoid the complications of treatment, clarified exact shunt locations, recognition of functional vascular anatomy, understanding embolic material properties, and planning of safety margin for either arterial or venous embolization are the key factors of success.

AF20

THIS ABSTRACT IS NOT AVAILABLE

AF21

THIS ABSTRACT IS NOT AVAILABLE

Corelab Assessed Results Of A 'Real Life Cohort' Of 201 Ischemic Stroke Patients Treated With EmboTrap

PATRICK A. BROUWER¹; LEONARD LL YEO¹; ÅKE HOLMBERG ON BEHALF OF THE KAROLINSKA UNIVERSITY
NEUROINTERVENTIONAL TEAM¹

¹DEPARTMENT OF NEUROINTERVENTION, KAROLINSKA UNIVERSITY HOSPITAL, STOCKHOLM, Sweden

Purpose

We studied patients treated with the EmboTrap Revascularization Device in a prospective registry which is corelab evaluated by physicians from external centers. The goal was to determine how the EmboTrap would perform under the everyday conditions of a high-volume stroke center.

Materials and Methods

We examined all acute stroke patients treated with the Embotrap device from October 2013 to March 2017 in our centre. Imaging parameters and times were adjudicated by corelab personnel blinded to clinical information, treating physician and clinical outcomes. Clinical evaluation was done by independent neurologists and put in a national registry. Evaluated endpoints were: successful revascularization (modified Thrombolysis in Cerebral Infarction (mTICI) 2b-3) and good clinical outcomes at 3 months (modified Rankin Scale (mRS) 0-2).

Results

201 consecutive patients with a median NIHSS of 15 (range 0-30) were included. 170 patients (84.6%) achieved mTICI 2b/3 reperfusion. The median number of attempts was 2 (range 1-10) with 52.8% of the population achieving good functional outcomes (mRS 0-2) at 3 months. On univariate analysis good functional outcome was associated with the number of attempts, puncture-to-reperfusion time, anterior circulation occlusion, and NIHSS score. On multivariate analysis, pre-treatment NIHSS (OR 0.845 per point, 95%CI 0.793-0.908, p<0.001) and puncture-to-reperfusion time (OR 0.9952 per minute, 95%CI 0.9914-0.9975, p =0.023) were associated with good functional outcomes at 3 months.

Conclusion

The Embotrap device has a high rate of successful reperfusion. Our corelab audited single-center experience proves the technical feasibility and safety of the Embotrap for first line use in a real-world setting.

AF23

THIS ABSTRACT IS NOT AVAILABLE

DF001

Cavernous Sinus Dural Arteriovenous Fistula: Selective Embolization Vs Sinus Packing

ASUKA ELISABETH KROPP¹; TAKASHI IZUMI¹; MASAHIRO NISHIHORI¹; TOSHIHIKO WAKABAYASHI³; SHIGERU MIYACHI²

¹NEUROSURGERY/ NAGOYA UNIVERSITY GRADUATE SCHOOL OF MEDICINE/ Japan, ²NEUROSURGERY/ AICHI MEDICAL UNIVERSITY / Japan, ³ADVANCED THERAPIES/ SIEMENS HEALTHCARE KK/ Japan

Purpose

Endovascular therapy has been used to manage intracranial dural AVFs safely with satisfactory results. However, sinus packing (SP) as classical treatment option for cavernous sinus dAVF bears risks, such as obliteration of normal venous drainage, perioperative complications, and worsening neurological symptoms. Aim of this study was to compare the outcome of SP and selected embolization technique (SE) for CS dAVF.

Materials and Methods

53 CS-dAVF patients treated by TVE between 2005 and 2016 at our facility were included. 31 cases were treated with SP, whereas 22 cases were treated with SE of the most upper-stream shunted pouches adjacent to CS.

Results

Mean number of coils used during SE were 10.8 and 21.1 during SP. Complete occlusion after initial treatment were 45% and 61%, after 6 months 82% and 85% in SE and SP respectively. Complete resolution of symptoms was achieved in 77% of SE group and 65% in SP. Perioperative neurological complications were temporarily seen in 9.1% in SE with subsequent complete resolution and 16% in SE, though 9.7% of these symptoms persisted. As for the 24/53 incomplete occlusions, 8.3% of SE developed perioperative neurological complications compared to none in SP. Complete resolution of symptoms was achieved in 67% in SE and 64% in SP. Recurrence was seen in 9.1% of SP group.

Conclusion

SE is a safe and effective treatment for TVE in CS dAVF with full patent venous drainage provided by fewer coil mass and without permanent neurological complication compared to SP.

DF002

Interventional And Surgical Treatment For Spinal Dural Arteriovenous Fistula

BIAN LISONG¹

¹NEUROSURGERY DEPARTMENT/ BEIJING HAIDIAN HOSPITAL/ China

Purpose

The objective of the study was to evaluate the efficacy, recurrence rate and related complications of surgical and interventional treatment for spinal dural arteriovenous fistula.

Materials and Methods

Retrospective analysis of 38 patients with spinal dural arteriovenous fistula diagnosed by spinal angiography and treated in Beijing Hai Dian Hospital between May 2013 and July 2014. 38 cases included 31 male and 7 female. The average age was 53.5 years. The treatment strategies included traditional surgical treatment and endovascular embolization treatment. All patients received long-term follow-up and were compared in the efficacy, recurrence rate and related complications of Surgical and Interventional Treatment.

Results

Of 8 patients received endovascular embolization treatment, neurological status (Aminoff Score) improved in 5 (62%), decreased after treatment in 1 (13%), decreased after improvement in 2 (25%), confirmed recurrence by imaging examination and turned into surgical treatment. No obvious related complications were noted in embolization group. 34 patients received surgical treatment, including 2 recurrences after embolization treatment. Of all 34 patients, neurological status (Aminoff Score) improved in 22 (69%), decreased after treatment in 4 (12%), remained clinically unchanged in 6 (19%). Epidural hematoma was noted in 1 case (3%). Incision infection was noted in 1 case (3%). No obvious related complications were noted in other cases. In the follow-up of 1 year, no recurrence was noted in surgical group.

Conclusion

Both surgical and interventional treatments for spinal dural arteriovenous fistula were effective. Compared with interventional treatment, surgical treatment had lower recurrence rate while higher complication rate

DF003

Innovative Approach For Endovascular Treatment Of Skull Base Dural Arterio-Venous Fistulae

GURUPRASADH CHANDRASHEKHAR¹; UDAY LIMAYE¹; SUNANDA ANAND¹
¹INTERVENTIONAL NEURORADIOLOGY/ HINDUJA HOSPITAL/ India

Purpose

To treat skull base and cavernous dural arterio-venous fistulae by endovascular means using innovative trans-venous approach

Materials and Methods

Four cases of dural arterio-venous fistula including three cases of cavernous sinus dural AVF and one case of lesser wing of sphenoid osteodural fistula were treated by endovascular means using an alternative trans venous pathway. These cases were unique as each of these fistulae did not have the direct conventional venous drainage; On the contrary these dural AVF's drained via the superior ophthalmic vein into the external facial venous system and the sphenoid osteodural AVF had its drainage predominantly via pterygoid plexus with all the four dural AVF's draining via external jugular venous system. The target venous pouch was reached via these facial and the pterygoid veins

Results

The navigation of the microcatheters and guidewires through these maxillofacial venous system was challenging, however the desired target venous pouch could be reached and complete obliteration of the dural AVF were obtained in all four cases using coils and onyx.

Conclusion

The knowledge of the anatomy of the maxillofacial and skull base venous system coupled with advances in the hardware technology have enabled the treatment of these complex and technically challenging neurovascular entity.

DF005

The Osseous Venous Structures Adjacent To The Jugular Tubercle Associated With Anterior Condylar Dural Arteriovenous Fistula

KATSUHIRO MIZUTANI¹; TAKENORI AKIYAMA¹; YASUHIRO MINAMI²; MASAHIRO TODA¹; HIROKAZU FUJIWARA²;
KAZUNARI YOSHIDA¹

¹NEUROSURGERY/ KEIO UNIVERSITY SCHOOL OF MEDICINE/ Japan, ²RADIOLOGY/ KEIO UNIVERSITY SCHOOL OF
MEDICINE/ Japan

Purpose

Although the involvement of osseous component with anterior condylar dural arteriovenous fistula (AC-DAVF) has been frequently described in the past literatures, the osseous venous structures where AC-DAVF develops has not been fully elucidated. In this study, we investigated the osseous venous structures adjacent to the hypoglossal canal in normal control subject as well as AC-DAVF cases.

Materials and Methods

We included 50 cases with unruptured aneurysms as normal control subjects and 7 cases with AC-DAVF into the current study. The osseous venous structures adjacent to the hypoglossal canal in the normal subjects as well as the cases with AC-DAVF were analyzed using CT-digital subtraction venography and cone beam CT reconstructed from 3D angiography.

Results

In about a half of laterals in normal subjects, the osseous venous structure was visualized within the jugular tubercle superomedially to the hypoglossal canal. We named it as jugular tubercle venous complex (JTVC). Nine fistulas were detected in 7 cases with AC-DAVF. The fistulas of AC-DAVF were in JTVC (33.3%), anterior condylar vein (33.3%), and other venous channels within exoccipital (33.3%).

Conclusion

Although JTVC was a venous structure frequently found in normal subjects, it had not been generally recognized before the current study. The venous channel between the anterior condylar vein and the JTVC was the common origin site for AC-DAVF and it was associated with 66.6 % of cases with AC-DAVF in the current study. The knowledge obtained from the current study is important for an interventional neuroradiologist as well as a neurosurgeon.

DF006

Treatment Of Transverse-Sigmoid Sinus Dural Arteriovenous Fistula (TSDAVF), Through Petrosquamous Branch Of Middle Meningeal Artery Using Ethylene-Vinyl Alcohol Copolymer (EVOH) Or PHIL With Detachable Microcatheter

KHAIRUL AZMI ABD KADIR¹; FADHLI MOHAMED SANI¹; SIA SHEAU FUNG²; MOHD SALAHUDDIN KAMARUDDIN¹
¹BIOMEDICAL IMAGING/ UNIVERSITY MALAYA MEDICAL CENTRE/ Malaysia ²NEUROSURGERY/ UNIVERSITY MALAYA
MEDICAL CENTRE/ Malaysia

Purpose

We sought to assess technical success, and clinical and imaging outcomes of using EVOH compare to PHIL for Transverse-Sigmoid Sinus Dural Arteriovenous (TSDAVF) treatment.

Materials and Methods

6 consecutive patients with a TSDAVF were treated between **October 2008** and **October 2017**. There were five men and one woman in this series. All patients TSDAVF presented DAVFs with cortical venous reflux.

Procedures performed under general anesthesia consist of an arterial approach whereby a Sonic detachable microcatheter is navigated via a petrosquamous branch of the middle meningeal artery to the TSDAVF. EVOH or PHIL was then injected with "Plug and Push" technique

Results

Postoperative digital subtraction angiography confirmed the elimination of the TSDAVFs in all patients treated with EVOH or PHIL. Clinical and angiographic follow up after six months shows no recurrence and improvement of the clinical symptoms in 5 patients. One patient die of chronic venous hypertension. One patient shows recurrent with Onyx after 9 year follow up. PHIL has advantage of simpler preparation, good penetration into the fistula ,faster plug formation and lesser artifacts compare to EVOH. However PHIL tend to fragmented during injection resulting distal embolization into the draining veins.

Conclusion

Both EVOH and PHIL are safe and effective in treatment of Transverse- Sigmoid Sinus DAVFs. Long term follow up with MRI is required to detect recurrence.

DF007

Intracranial Dural Arterio Venous Fistulae -An Institutional Experience And Proposal Of A New Anatomico-Functional Classification System

LEVE JOSEPH DEVARAJAN SEBASTIAN¹; NISHCHINT JAIN¹; SOMORENDRA SHAMBUNDURAM¹; AJAY GARG¹; SHAILESH GAIKWAD¹

¹NEUROIMAGING AND INTERVENTIONAL NEURORADIOLOGY/ ALL INDIA INSTITUTE OF MEDICAL SCIENCES/ India

Purpose

To retrospectively analyze the angioarchitecture and clinical presentations of cranial dural arteriovenous fistula with management perspective and develop a new comprehensive classification system which can better explain clinical features and help devise optimal management strategies.

Materials and Methods

Clinical and angiographic records of all the patients with intracranial dural arteriovenous shunts who presented to our Department during January 2005 and August 2015 were analyzed retrospectively. Angioarchitectural features especially venous drainage pattern and the presence of cortical venous strain (CVS) and parenchymal venous strain (PVS) formed the basis for a new classification system and the same were correlated with clinical presentation and outcome.

Results

Of the 59 patients (male: female = 44:15, mean age -42.8 years), 24 (40.66%), 13 (22%) and 22 (37.28%) patients presented with aggressive, intermediate and benign symptoms respectively. Of the 33 patients (55.9%) with dural sinus shunts 16 patients had cortical venous reflux (CVR). Among them, CVS and PVS were seen in 10 of whom 5 had aggressive clinical presentation. Six patients with PVS only had intermediate symptoms. Six out of 17 patients without CVR had PVS and presented with symptoms of raised pressure. Overall, in DSS presence of CVR and PVS had significant ($p < 0.05$) correlation with hemorrhage and raised intracranial pressure respectively. Majority of the 26 patients with extrasinus shunts presented with aggressive symptoms (77%). Of the 33 patients treated by endovascular embolization 93% showed clinical improvement

Conclusion

Classification of CDAVFs into dural sinus shunts and extra sinus shunts with consideration of parenchymal and cortical venous strain correlated well with clinical severity.

DF009

Cranial Neural Crest As The Risk Factor Of Dural AVFs

MICHIHIRO TANAKA¹

¹NEUROSURGERY/ KAMEDA MEDICAL CENTER/ Japan

Purpose

This study retrospectively analyzed the correlation between the distribution of DAVFs and the dural membrane derived from cranial neural crest cells (CNC).

Materials and Methods

A consecutive case series of sixty-six DAVFs (32 men and 34 women, mean 68.4 years) was analyzed. Superselective digital subtraction angiography and high-resolution cone beam CT were performed in order to identify the shunt point. The topographical area derived from CNC was reviewed and identified from the literature and the relationship between CNC and the shunt point of DAVFs was defined.

Results

The CNC provides the mesenchyme forming the frontal, sphenoid, squamous temporal bones. Paraxial mesoderm plays a direct role in skeletogenesis of the parietal, petrous temporal and occipital bones. In our series, a total of 15 cases were identified as the olfactory groove, falx cerebri, tentorium cerebelli and lateral spinal DAVFs. These belonged to the area derived from CNC and presented aggressive clinical course with significant cortical venous reflux. The other 51 cases were identified as the carotid cavernous, anterior condylar confluence and transverse-sigmoid sinus. These areas derived from paraxial mesoderm associated with endochondral bone and presented with a benign clinical course. Cortical venous reflux was observed only 37% of this group.

Conclusion

DAVFs associated with CNC considered as an independent risk factor for aggressive clinical course and hemorrhage.

Radiosurgery In AVM & Dural AVF: Difficulties Post-Embolization

SHIGERU MIYACHI¹

¹NEUROENDOVASCULAR CENTER/ AICHI MEDICAL UNIVERSITY, NAGAKUTE/ Japan

It is clear that reducing the size and shunt flow of AVMs improves the effect of SRS. However, recent reports addressed the negative effect of embolization prior to stereotactic radiosurgery (SRS) because of a lower rate of total obliteration than radiosurgery alone. The main reasons for such a result might include the following: 1) the embolization blurs the nidus margin and causes a targeting error and 2) a part of the nidus that disappears just after the proximal feeder occlusion due to the temporary flow regression is outside of the radiosurgery target and may later recanalize due to hemodynamic remodeling.

We investigated whether the performance and quality of embolization may influence the success of SRS based on a retrospective case cohort study in Japan. This study showed that proper embolization with a high rate of nidus penetration to avoid recanalization is important for complete, cooperative combined treatments. A proper strategy and technique is essential for promoting occlusion following SRS.

While, radiosurgery of embolized dural AVF is very effective. After the maximum transarterial or transvenous embolization remnant shunt is easily occluded with SRS. Although there are little adverse events in such combination therapy, we must care the radiation injury of cranial nerve, particularly in dural AVF at cavernous sinus.

In conclusion proper embolization with liquid materials for the AV shunt diseases with a high rate of nidus penetration and sufficient flow reduction is essential to contribute to and promote occlusion following radiosurgery.

Aggressive Cavernous Sinus Dural Arteriovenous Fistula: Angioarchitecture Analysis And Embolization By Various Approaches

MICHAEL MU HUO TENG^{1,2,3}; CHAO-BAO LUO^{2,3}; FENG-CHI CHANG^{2,3}; CHUNG-JUNG LIN^{2,3}; WAN-YUO GUO^{2,3}

¹DEPARTMENT OF MEDICAL IMAGING/ CHENG HSIN GENERAL HOSPITAL/ Taiwan, ²DEPARTMENT OF RADIOLOGY/ TAIPEI VETERANS GENERAL HOSPITAL/ Taiwan, ³NATIONAL YANG-MING UNIVERSITY SCHOOL OF MEDICINE/ Taiwan

Cavernous sinus dural arteriovenous fistula (AVF) may become aggressive because of the following conditions: 1. Occlusion or stenosis of the inferior petrous sinus, or compartment between the inferior petrous sinus and the cavernous sinus, with fistula flow reflux to veins of brainstem leading to brainstem ischemia. 2. Venous drainage to cerebral cortical vein causing cerebral edema or hemorrhage.

Treatment of these aggressive dural AVF is important, and should be performed soon to avoid further aggravation of neurological condition. The occluded, narrowed, or compartmented inferior petrosal sinus may sometimes be able to approached and get access to the cavernous sinus for embolization.

If catheterization of cavernous sinus via the inferior petrosal sinus was found to be impossible after attempts and there is no other ways possible, then we can take the more difficult and highly technical method of trans-orbital direct puncture through the junction of the superior and inferior orbital fissure. We had performed direct puncture of the ophthalmic vein to bring a catheter to the cavernous sinus, or direct puncture of the cavernous sinus for closure of these AVF.

In one patient, the venous pocket (cavernous sinus) of the dural AVF was posterior to the internal carotid artery which was larger in diameter than the venous pocket. The needle entering from the orbit through the orbital fissure aimed the venous pocket had to pass through the internal carotid artery. We did punctured through the internal carotid artery, did coiling in the venous pocket, and placed a small coil at the anterior wall of the carotid artery for hemostasis. The fistula successfully obliterated with no complication.

Spinal Dural AVF: Surgery Or Endovascular

DAE CHUL SUH¹

¹ASAN MEDICAL CENTER/ SEOUL/ Korea

Spinal dural arteriovenous fistulas (SDAVFs) are the most common form of spinal vascular disease, occurring in about 70% of spinal vascular malformation cases and 56% of our patient series. Despite being the most commonly encountered spinal vascular malformation, SDAVFs are rare and still underdiagnosed entities, which, if not treated properly, can lead to considerable morbidity with progressive spinal cord symptoms. Venous congestive myelopathy (VCM) is a characteristic feature of SDAVF patients and is caused by the regurgitation of fistular flow through the radicular vein to the perimedullary venous plexus.

The induced-wedge technique resulted in complete or nearcomplete obliteration of the fistula feeder in most patients (82%) with SDAVF judged amenable to this procedure. Neurologic symptoms were improved in all patients during a median 18 months follow-up and all 10 examined by follow-up MRI showed complete fistula obliteration.

The concomitant origin of the ASA or PSA with the feeder occurs occasionally. Complete obliteration of the fistula can be achieved either by embolization or open surgery. Embolization can be carefully performed in selected patients who are in a poor condition and do not want to undergo open surgery.

AF35

THIS ABSTRACT IS NOT AVAILABLE

DF008

Analysis Of Diagnosis And Treatment Of Dural Arteriovenous Fistulas Involving The Superior Petrosal Veins

MA YONGJIE¹; ZHANG HONGQI¹; LING FENG¹; LI GUILIN¹; HE CHUAN¹; SUN LIYONG¹
¹NEUROSURGERY/ XUANWU HOSPITAL, CAPITAL MEDICAL UNIVERSITY/ China

Purpose

To investigate the clinical manifestations and imaging features of dural arteriovenous fistulas with super petrosal venous drainage and treatment.

Materials and Methods

From May 2013 to September 2014, 9 patients with petrosal vein drained dural arteriovenous fistula at the Department of Neurosurgery, Xuanwu Hospital, Capital Medical University and the Department of Neurosurgery, Beijing Haidian Hospital were enrolled retrospectively. The patients were treated with endovascular embolization or microsurgery, and the MRI and DSA examinations were improved, and the scores of the modified Aminoff&Logue scale (mALS) were performed before and after treatment.

Results

In the 9 patients, there were 3 females and 6 males. They all had different degrees of limb sensory and motor abnormalities, 7 of them also had urination and / or bowel disorders, 4 had cranial nerve dysfunction, including hoarseness, bucking, hiccup, and paralysis. Six patients received embolization treatment, 3 received microsurgery, and they all achieved anatomic cure. The preoperative mALS score was 6.0 ± 2.7 , and the score at 3 months after procedure was 2.8 ± 1.7 . There was significant difference between before and after treatment ($t = 4.816, P < 0.05$).

Conclusion

The dural arteriovenous fistulas involving petrosal veins are kinds of rare cerebrovascular malformations. The lesion involves a wide range. The clinical manifestations are severe. Both endovascular embolization and microsurgery can achieve a more ideal therapeutic effect. If the vascular condition is permitted, the interventional embolization treatment should be preferred.

Diagnosis And Treatment Of Brain Stem Venous Hypertensive Congestion

MA YONGJIE¹; ZHANG HONGQI¹; LI GUILIN¹; LING FENG¹

¹NEUROSURGERY/XUANWU HOSPITAL, CAPITAL MEDICAL UNIVERSITY/ China

Purpose

Brain stem venous hypertensive congestion are uncommon, we present our 5 cases with brain stem venous hypertensive congestion due to (S)DAVF, present our experience of diagnosis and treatment of these rare vascular diseases.

Materials and Methods

The data of five cases of patients with brain stem congestion treated in Xuanwu Hospital between August 2014 and August 2015 were reviewed retrospectively, including their clinical history, neuroimaging, treatment and follow-up data.

Results

The five cases included 2 superior petrosal sinus DAVF, 1 hypoglossal canal DAVF, 1 craniocervical junction DAVF and a cervical SDAVF. 4 patients underwent microsurgical treatment while 1 got embolization. Postoperative DSA confirmed the obliteration of the fistulas and MRI indicated remission of the congestion. All patients had clinical improvement.

Conclusion

The brain stem venous hypertensive congestion is a kind of vascular lesion caused from (S)DAVFs. The clinical symptoms are not specific, MRI and DSA are of great value for diagnosis.

DF010

Shunting Point Of Cranio-Cervical Junction Dural AVF And New Classification, Based On Preoperative Images, Intraoperative Findings Including ICG Video Angiography

SHUNJI MATSUBARA¹; YUKARI OGAWA¹; KEITA KINOSHITA¹; HIROKI TAKAI¹; HIROYUKI TOI¹; MASAACKI UNO¹
¹NEUROSURGERY/ KAWASAKI MEDICAL SCHOOL / Japan

Purpose

Subtypes of cranio-cervical junction dural arteriovenous malformation(CCjdAVF) has been recently proposed in the international journal(Hiramatsu et al. JNS, 2017, DOI:10.3171/2017.3.JNS163048). Our study investigates the angioarchitecture focusing on the association between the shunt point and surrounding various structures.

Materials and Methods

Patients managed at our institution consists of 6 males, ranging from 60 to 77 years old, presented with SAH in 2, myelopathy in 1 and incidentally found in 3. Preoperative CTA, MRI, intraoperative microscopic findings and ICG videoangiography were retrospectively reviewed, and were attempted to categorize into new classification.

Results

Their angiography demonstrates the feeding arteries arising from C1 and C2 radiculomedullary artery supplied by vertebral artery with the drainage to anterior and/or posterior spinal vein in all patients. The patients underwent surgical intervention including craniotomy and drainer ligation in 4 and radiation following TAE in 1. During the microscopic surgery, shunting point was confirmed just behind the C1 nerve root in 3 patients and on the C1 nerve in 1 patient. Five patients had typical CCJ dural AVF(type 1), one patient had radicular AVF(type 2), and none had epidural(type 3/4) or pial AVF(type 5).

Conclusion

Our analysis clarified the shunting points at the dura of the cranio-cervical junction adjacent to C1 spinal nerve or on the nerve itself mimicking spinal dural AVF. Proposed classification may organize a variation of this relatively rare and peculiar disorder.

Transarterial Embolization Of Dural AVFs With NBCA

SHUSHI KOMINAMI¹; MASANORI SUZUKI¹; AKIRA WATANABE¹; AKIO MORITA²

¹DEPARTMENT OF NEUROSURGERY/ CHIBA- HOKUSO HOSPITAL, NIPPON MEDICAL SCHOOL/ Japan, ²DEPARTMENT OF NEUROSURGERY/ NIPPON MEDICAL SCHOOL/ Japan

Purpose

We have treated dural arteriovenous fistulae (dAVFs), which were difficult for transvenous approach, by transarterial embolization using NBCA. Although ONYX is easier to handle and sometimes effective in those cases, we prefer NBCA because we believe that NBCA has less demerit than ONYX. We demonstrate cases of transarterial embolization of dural AVFs with NBCA and discuss its merit and demerit.

Materials and Methods

We treated 28cases of dAVFs transarterially with NBCA. All these cases were either thought to be difficult or failed to approach transvenously. The lesions were located in transverse-sigmoid sinus in 11cases, tentorial sinus in 6cases, superior sagittal sinus in 3cases, anterior condylar confluence in 3cases, and four in other locations.

Results

All dAVFs we treated with NBCA were totally obliterated and cured, except for six cases. One of the six cases which could not be cured with NBCA was an old case of dAVF of the superior sagittal sinus. We would recommend ONYX for the treatment of such case. The other five ended up with incomplete filling of affected sinus due to inappropriate delivery of glue. One case was sent to radiosurgery and the rest were followed up with observation. No ischemic or haemorrhagic complications occurred in this series.

Conclusion

Even though NBCA requires skills and experience to embolize properly, it still is a good material to treat dAVFs. We should choose the right material for the treatment of dAVFs depending on the site and nature of the shunt, for the safety and benefit of the patient.

Hybrid Neurosurgical Technique For The Treatment Of The Complex Spinal Arteriovenous Fistulas

SUN LIYONG¹; LI GUILIN¹; HE CHUAN¹; ZHANG HONGQI¹

¹NEUROSURGERY/XUANWU HOSPITAL, CAPITAL MEDICAL UNIVERSITY/ China

Purpose

In some cases of spinal arteriovenous fistulas (SAVFs), the angioarchitecture is complex. It is difficult to identify the fistulas site or expose the aneurysmal structure of anterior spinal artery (ASA) with traditional neurosurgical technique. Therefore, we apply the hybrid neurosurgical technique in treatment of complex SAVFs, and summarize the surgical nuances and evaluate the clinical outcome.

Materials and Methods

32 cases of the SAVFs who underwent hybrid neurosurgical technique in our center, including 8 cases in craniocervical junction, 6 cases in cervical segment, 5 cases in thoracic segment and 13 cases in lumbosacral segment; 18 cases presented with venous hypertensive myelopathy, 14 cases presented with subarachnoid hemorrhage; 9 cases underwent the embolization of the aneurysmal structure of ASA; 30 cases underwent surgery in hybrid operation room with the confirmation of the occlusion of fistulas; 2 cases underwent the second stage surgery after embolization; 6 cases underwent the embolization by in situ catheterization of the arterialized drainage vein of fistulas.

Results

9 cases with aneurysmal structure of ASA were successfully embolized. The intraoperative angiography revealed occlusion of the fistulas in all the 32 cases. The follow-up time was 12.3 months, mRS score in 19 cases was 0-1, mRS score 2 in 6 cases, mRS score 3 in 7 cases. 14 cases with previous SAH have no recurred SAH during follow-up.

Conclusion

Hybrid neurosurgical technique is useful and convenient compared with the traditional technique for the treatment of the complex SAVFs.

Adjunctive Techniques To Enhance Safety Of Trans-Venous Embolization For Cranial Dural Arteriovenous Fistula

TAKENORI AKIYAMA¹; SATOSHI TAKAHASHI¹; KATSUHIRO MIZUTANI¹; KAZUNARI YOSHIDA¹

¹NEUROSURGERY/ KEIO UNIVERSITY/ Japan

Purpose

To investigate treatment results of transvenous coil embolization (TVE) for sinus-type cranial dural arteriovenous fistula (dAVF), focusing on the treatment safety in relation to the adjunctive maneuvers.

Materials and Methods

Serial 52 cases diagnosed as sinus type dAVF with 55 lesions treated by the first author in 63 sessions were analyzed. Rate of treatment morbidity (symptomatic or asymptomatic, procedure related or not), mortality, withdrawal rate, incomplete occlusion, retreatment are counted. Adjunctive techniques other than simple single catheter embolization in the affected sinus are investigated.

Results

The affected lesions were CS 19 cases, TS 26, ACC 5, other 5. Most of the lesions were preoperatively investigated by conebeam CT reconstructed from 3D rotational angiography to evaluate precise locations of fistula. Multiple microcatheters were used in 17 sessions (28%). Triple coaxial venous catheters to enhance accessibility used in 15 sessions (25%). Rate of using percutaneous direct puncture and balloon sinus-plasty were 8% respectively. There was no procedure-related symptomatic complication and mortality (0%). Asymptomatic subarachnoid hemorrhage and systemic complication were observed in two cases. 2 lesions were cured by additional TAE. Most of lesions except for 4 lesions including a case of cortical venous reflux were eradicated.

Conclusion

In combination with proper adjunctive maneuvers, TVE become an extremely safe procedure with good clinical outcome. Novel techniques such as Onyx usage must be used only when safety and effectiveness is superior to classical TVE in each individual case.

DF015

Imaging Characteristics And Initial Results Of The Treatment Of Dural Arteriovenous Fistulas Outside Cavernous Sinus By Endovascular Intervention In Bach Mai Hospital

TRAN ANH TUAN¹; NGUYEN ANH TUAN¹; PHAM MINH THONG¹

¹RADIOLOGY/ BACH MAI HOSPITAL/ Vietnam

Purpose

To describe the imaging of Dural arteriovenous fistulas outside cavernous sinus (DAFoCS) in DSA and evaluate the initial results of endovascular treatment.

Materials and Methods

A prospective, uncontrolled study including 18 patients with DAFoCS treated by endovascular intervention from January 2016 to June 2017 in the Radiology department at BMH.

Results

9 cases presented at transverse and sigmoid sinus, 3 cases at superior sagittal sinus, 1 case at sphenopalatine vein, 5 cases at the other dural venous sinuses. 50% of the cases were fed by branches of the ECA; the others by multiple feeding arteries (ECA, ICA, vertebral artery, etc.). According to Cognard classification: 16,7% type I, 11,1% type IIa, 33,3% type IIb, 33,3% type IIa + b, 5,5% type III. 6 cases (33.3%) had venous thrombosis. 16 patients were embolized by transarterial (88.9%) and 2 patients by combined transarterial and transvenous (11.1%). 15 patients were treated with Onyx (83.5%), one case with Histoacryl alone, 2 patients with the combination of Onyx, Phil, Coils, Histoacryl. There were 11 cases of occlusion > 90% malformation (61.1%), 6 cases of occlusion 70-90% (33.4%), only 1 case of occlusion < 70% (5%). Two patients had acute intracerebral hemorrhage complication immediately after intervention (11.1%), of which one patient died after the intervention.

Conclusion

The most common location is in the transverse and sigmoid sinus. Most patients are type IIb and type IIa+b (Cognard classification). Endovascular (transarterial, transvenous) interventions are highly effective and safe.

Giant Aneurysms - Causes Of Recurrence Post Coiling

CHAO-BAO LUO¹

*¹DEPARTMENT OF RADIOLOGY/ TAIPEI VETERANS GENERAL HOSPITAL AND NATIONAL YANG-MING UNIVERSITY, TAIPEI/
Taiwan*

The goal of aneurysm treatment should be permanent occlusion of the aneurysm from the circulatory systems to prevent aneurysm rupture or re-rupture. Endovascular coiling intracranial aneurysms with detachable coils has been extensively used with promising results. This technique is particularly useful for small- and medium-size (less than 10mm) intracranial aneurysm with durable angiographic outcomes. However, the outcomes of coiling giant aneurysm remain challenge because of relative low initial complete occlusion (10-68%) and high recanalization rate (56-90%) because of low packing density, coil compaction and/or recurrent/ re-growth of aneurysm. Causes of recurrent giant aneurysm after coiling may relate to the morphology of aneurysm (eg. narrowing vs wide-neck aneurysm), thrombotic or non-thrombotic, ruptured or non-ruptured, complete or incomplete initial aneurysm coiling; other factors include age (elderly vs younger), sex (female vs male). Small recurrent aneurysm may not need further intervention. However, if the recurrent or re-growth aneurysm sac is relative larger than 3mm, re-embolization should be considered to prevent aneurysm rupture or re-rupture.

High packing density of aneurysm sac usually associated with low aneurysm recurrent, this can be achieved by technique of multiple catheters in the aneurysms and/or looping microcatheter in aneurysm sac. Utilization of bio-coating coils also has the capability of increasing aneurysm packing density. Selection of liquid embolic material such as Onyx for occlusion of aneurysm sac had been reported to increasing aneurysm sac occlusion and reduce aneurysm recurrence. Recently, application of stent, particularly, flow-diverter stent to alter intra-aneurysm hemodynamic is addressed in recent published data with promising angiographic outcomes with 70-95% aneurysm occlusion in a long-term imaging follow up. Endovascular management of intracranial giant aneurysm remains a challenge work. Increasing aneurysm packing density by various technique and devices as well as alteration of intra-aneurysm hemodynamic by utilization of flow-diverter stent may have better durable clinical and angiographic outcomes.

AF45

THIS ABSTRACT IS NOT AVAILABLE

Management Of Wide Necked Acutely Ruptured Aneurysms

WINSTON LIM¹

¹DEPARTMENT OF DIAGNOSTIC RADIOLOGY/ SINGAPORE GENERAL HOSPITAL/ Singapore

Management options for wide necked aneurysm (> 4mm neck and Sac to Neck ratio <2) have continued to evolve from the days of parent vessel occlusion with balloons or surgical ligation to the current brace of stents and novel endosaccular and neck bridging devices as well as improvements in surgical techniques and armamentarium.

In acutely ruptured wide necked aneurysms, several other considerations come into play when an endovascular approach is being considered. In our practice, temporary remodeling techniques are preferred as this avoids the need for antiplatelet therapy when neck bridging devices are required.

Generally, ventricular drains will be inserted prior to procedures when neck bridging devices use is anticipated. However, subsequent management of drains and shunts remains problematic when they block or require conversion. When supplemental antiplatelet therapy is required, we routinely administer intra-procedure Aspirin 300mg and Plavix 375 mg, once a decision has been made to use adjunctive device.

Current options for treatment are listed below and will be discussed. As always, what is best for the patient in the local setting and given expertise will drive decision making.

Surgery

Endovascular:

Complex Coils

Balloon Assistance / Wire assistance

Multi Catheter Techniques

Bridging Stents

Other Neck Bridging Devices

Flow Diverter Stents

AF47

THIS ABSTRACT IS NOT AVAILABLE

Dural Arteriovenous Fistulas At The Petrous Apex: Therapeutic Strategies

JINGWEI LI¹; GUILIN LI¹; HONGQI ZHANG¹

¹NEUROSURGERY/ XUAN WU HOSPITAL, CHINA CAPITAL MEDICAL UNIVERSITY/ China

Purpose

The dural arteriovenous fistulas (DAVFs) at the petrous apex are rare but possess aggressive neurological behaviors. A close relationship between different draining vein and clinical characteristics was found in our clinical work, therefore, we aim to summarize our experience of this disease and discuss the therapeutic strategies for different patients.

Materials and Methods

16 males and 5 females patients were included. They were described as: Type I, a small low-flow fistula without obvious dilated petrosal vein; Type II, a high-flow fistula with a vein lake distal to the dilated petrosal vein; Type III, a high-flow fistula with a high dilated petrosal vein connecting the fistula.

Results

All of the type I patients presented NHND and were cured after transarterial embolization (3/6) or microsurgical disconnection (3/6). 9/12 of the type II patients presented NHND and 3/12 of them presented SAH. 83.4% of them received transarterial embolization and 8.3% received microsurgical disconnection. All of the type III patients presented SAH and need microsurgical disconnection after transarterial embolization to achieve the complete obliteration. The complications can be seen in 3 patients (14.3%), including transient cranial nerve palsy(2 patients) and death(1 patient). After 9-41 months follow-up showed the cure rate reached 95.2% and the average Barthel index was obviously improved from 48.6 to 92.9.

Conclusion

The DAVFs at petrous apex are rare but possess aggressive neurological behaviors, necessitating early and complete obliteration. Based on the types of draining vein, transarterial embolization combined with surgical disconnection may cure the fistula in a safe, effective and simple way.

Angiographic And Clinical Characteristics Of Thoracolumbar Spinal Epidural And Dural Arteriovenous Fistulas

YUJI MATSUMARU¹; HIRO KIYOSUE²; YASUNARI NIIMI³; KEISUKE TAKAI⁴; TOMOYA ISHIGURO⁵; JSNET SPINAL AV SHUNTS STUDY GROUP¹

¹DEPARTMENT OF NEUROSURGERY/ UNIVERSITY OF TSUKUBA/ Japan, ²DEPARTMENT OF RADIOLOGY/ OITA UNIVERSITY/ Japan, ³DEPARTMENT OF NEUROENDOVASCULAR THERAPY/ ST. LUKES INTERNATIONAL HOSPITAL/ Japan, ⁴DEPARTMENT OF NEUROSURGERY/ TOKYO METROPOLITAN NEUROLOGICAL HOSPITAL/ Japan, ⁵DEPARTMENT OF NEUROSURGERY/ OSAKA CITY GENERAL HOSPITAL/ Japan

Purpose

The purpose of this study is to compare the angiographic and clinical characteristics of spinal epidural arteriovenous fistulas (SEAVFs) and spinal dural arteriovenous fistulas (SDAVFs) of the thoracolumbar spine.

Materials and Methods

A total of 168 cases diagnosed as spinal dural or extradural arteriovenous fistulas of the thoracolumbar spine were collected from 31 centers. Angiographic images were evaluated, with a special interest in spinal levels, feeders, shunt points, a shunted epidural pouch and its location, and drainage pattern, by 6 readers to reach a consensus.

Results

The consensus diagnoses by the 6 readers were SDAVFs in 108 cases, SEAVFs in 59 cases, and paravertebral arteriovenous fistulas in 1 case. The thoracic spine was involved in SDAVFs (87%) more often than SEAVFs (17%). Both types of arteriovenous fistulas were predominant in men (82% and 73%) and frequently showed progressive myelopathy (97% and 92%). The shunt points of SDAVFs were medial to the medial interpedicle line in 77%, suggesting that SDAVFs commonly shunt to the bridging vein. All SEAVFs formed an epidural shunted pouch, which was frequently located in the ventral epidural space (88%) and drained into the perimedullary vein (75%), the paravertebral veins (10%), or both (15%).

Conclusion

SDAVFs and SEAVFs showed similar symptoms and male predominance. SDAVFs frequently involve the thoracic spine and shunt into the bridging vein. SEAVFs frequently involve the lumbar spine and form a shunted pouch in the ventral epidural space draining into the perimedullary vein.

Cerebrofacial Arteriovenous Metameric Syndrome (CAMS) Type II Presenting With Acute Life-Threatening Epistaxis: A Synergistic Endovascular And Surgical Approach To Treatment.

ARVIN RAJADURAI¹; LAU JIA HIM¹; PATRICIA WILSON²; MOHAMMAD ALI MAT ZAIN³

¹RADIOLOGY/ HOSPITAL KUALA LUMPUR/ Malaysia, ²RADIOLOGY/ NATIONAL UNIVERSITY OF MALAYSIA MEDICAL CENTRE (UKMMC)/ Malaysia, ³PLASTIC SURGERY/ HOSPITAL KUALA LUMPUR/ Malaysia

Purpose

Cerebrofacial arteriovenous metameric syndrome (CAMS) is a rare disorder that is classified based on its embryological metameric level. We report a case of CAMS Type II presenting with acute life threatening bleed; discussing its clinical characteristics, imaging manifestations and treatment results obtained with a synergistic endovascular and surgical treatment approach.

Results

A 28-year-old woman from Borneo developed progressive soft tissue facial enlargement and blurring of vision. A CT angiogram revealed extensive facial and bilateral orbital arteriovenous malformations. She defaulted follow-up and presented several months later with life-threatening epistaxis causing hypovolaemic shock. She had temporary iodinated nasal packing to arrest the bleeding and was air-lifted to a specialized center. MRI and diagnostic angiography showed an extensive arterio-venous AVM involving both maxilla, ethmoids and along the both optic nerves (left more than right). Pre-operative catheter and balloon-assisted embolization was performed with precipitating hydrophobic injectable liquid (PHIL), targeting flow aneurysms and AVM feeders. Following embolization, flow to the AVMs were reduced but not completely occluded. She underwent a wide local excision, left orbital exenteration, and soft tissue reconstruction with Transverse rectus abdominis myocutaneous (TRAM) flap. Post-operatively, nasal packing was removed but showed blood pooling in the posterior nasal cavities. Second angio-embolization was done for residual AVMs with 30% N-butyl cyanoacrylate (NBCA) and bleeding was arrested.

Conclusion

CAMS is an uncommon disease that can present with life-threatening bleed when left untreated. A synergistic multidisciplinary and multimodality treatment approach is essential in treating CAMS to ensure the best clinical outcome

Clinical Features And Outcomes Of Pediatric Spinal Cord Arteriovenous Malformations

JINGWEI LI¹; HONGQI ZHANG¹

¹NEUROSURGERY/ XUAN WU HOSPITAL, CHINA CAPITAL MEDICAL UNIVERSITY/ China

Purpose

Spinal cord arteriovenous malformation (SCAVM) is the main component of intradural arteriovenous malformation, which represent rare and insufficiently pathologic entity. Few published data are available concerning the pediatric SCAVM patient cohort to illustrate its natural history, clinical features and outcome. Besides, the comparison between its subtypes remains to be confirmed. We aimed to summarize the clinical features and outcomes in pediatric SCAVM patients and compare the differences between its subtypes (glomus-type and juvenile-type).

Materials and Methods

Eighty-two consecutive patients with SCAVMs were retrospectively reviewed, including 49 glomus-type patients and 33 juvenile-type patients. Treatments were performed with embolization (n=56), surgery (n=8) and combination (n=18). Clinical features and results were assessed and compared.

Results

The mean age at presentation was 9.95 ± 3.76 years with a slight male predilection (1.3:1 sex ratio). Acute progression can be seen in 65 patients (79.3%), including 56 patients presented with hemorrhage. Dangerous structures can be found in 53 patients (64.6%). The annual bleeding rate and annual rebleeding rate before treatment were 6.86% and 17.30%. After a mean follow-up of 71.4 ± 12.5 months, 84.1% were improved, 13.4% were unchanged, and 2.4% were deteriorated. Patients with juvenile-type SCAVMs own more feeding arteries and need more times treatment ($P < 0.05$), however, the elimination rate was lower and the deterioration rate was higher ($P < 0.05$).

Conclusion

Pediatric SCAVMs associate with more dangerous structures and carry a high risk of bleeding and rebleeding. Glomus and juvenile SCAVMs have different clinical features, angioarchitectures and obliteration rates, which may affect their long-term prognosis.

SQUID Co-Polymer Embolic Material For Embolisation Of Brain Arteriovenous Malformation : Our Initial Experience

LI SHYAN CH'NG¹; ZULKIFLI ZAKI ABDUL GHANI¹; AHAMD SOBRI MUDA²

¹RADIOLOGY/ HOSPITAL SUNGAI BULOH/ Malaysia, ²RADIOLOGY/ UNIVERSITY PUTRA MALAYSIA/ Malaysia

Purpose

The analyze new co-polymer liquid embolic agent, Squid (Balt, France) safety and feasibility for the treatment of intracranial arteriovenous malformation.

Materials and Methods

46 embolisation procedures performed with Squid for arteriovenous malformation (AVM) from April 2015 till July 2017 at Hospital Sungai Buloh were analysed . There were 6 female and 10 male patients. The mean age was 34 years, varying between 9 and 62 years. The Spetzler-Martin grade was 2 in 4 procedures, 3 in 27 procedures and 4 in 15 procedures. Among the 25 patients, 15 patients presented with hemorrhage, 5 patients with seizures as well as 5 patients with headache and neurology. The AVMs were located in the temporal lobe in 5, parietal lobe in 7, frontal lobe in 3, posterior fossa in 6, basal ganglia in 3 and parasagittal in 1.

Results

Obliteration rate of the AVMs were 10-100% (mean 33%). Four cases of intracranial bleed (8%) noted post procedure. One mortality (2%) reported which the patient developed cerebellar hemorrhage post procedure. 1 patient (2%) fitted during procedure, however, no intracranial bleed noted on post procedure Computed Tomography (CT) Brain. Seven patients (15%) had perforation during catheter manipulation. One case (2%) of fractured catheter were recorded. The average volume of Squid injected was 0.6 ml per nidus. 13 procedures used SQUID12 formulation, 29 procedures used SQUID 18 formulation while another 3 procedures used a combination of SQUID 12 and 18 formulations.

Conclusion

Squid is a safe and effective embolic agent for treatment of cerebral AVMs.

Initial Experience With 4D-DSA For Shunt Diseases

TAKASHI IZUMI¹; MASAHIRO NISHIHORI¹; ASUKA ELISABETH KROPP¹; CHIHEB DAHMANI; IWAO KOJIMA²; TOSHIHIKO WAKABAYASHI³

¹NEUROSURGERY/ NAGOYA UNIVERSITY/ Japan, ²ADVANCED THERAPIES/ SIEMENS HEALTHCARE PTE LTD/ SINGAPORE, ³ADVANCED THERAPIES/ SIEMENS HEALTHCARE K.K./ Japan

Purpose

4D-DSA technology, developed by Siemens, is a three-dimensional image with time resolution and may assist the understanding of angioarchitecture. We assessed the efficacy of 4D-DSA for shunt disease compared to 3D-DSA.

Materials and Methods

We performed 3D-DSA and 4D-DSA for 14 patients including 10 dural arteriovenous fistula and four arteriovenous malformation from May to November, 2017. All patients except for two cases underwent imaging just before endovascular treatment. We compared the visibility of feeders and drainers in 3D-DSA and 4D-DSA with conventional DSA.

Results

3D image extracted from 4D-DSA is equal in quality to 3D-DSA. 3D image from 4D-DSA is superior for opacification of drainer or sinus compared to 3D-DSA. For detection of drainage from the nidus component, 3D images from 4D-DSA is useful as well. Among AVM cases, time resolution of 4D-DSA is solid for distinguishing feeders and drainers intuitively. In few DAVF cases, however, the vessel contour in 3D image from 4D-DSA is faint as oppose to 3D-DSA which has more contrast and allows to recognize even tiny feeders.

Conclusion

4D-DSA technology provides 3D image with time resolution. In addition, enough quality 3D image is also reconstructed from 4D-DSA. Among AVM cases, 4D-DSA seems to be useful for understanding drainers. But among DAVF cases, 4D-DSA has little benefit to detect shunted area.

Nation-Wide Survey Of Pediatric Brain Arterio-Venous Shunts In Japan: (Japanese Pediatric Arterio-Venous Shunts study: JPAS)

MASAKI KOMIYAMA¹; AIKO TERADA¹; TOMOYA ISHIGURO¹; YASUNARI NIIMI²; HIDENORI OISHI³

¹DEPARTMENTS OF NEURO-INTERVENTION AND NEUROSURGERY/ OSAKA CITY GENERAL HOSPITAL/ Japan,
²DEPARTMENT OF NEUROENDOVASCULAR THERAPY/ ST. LUKE'S INTERNATIONAL HOSPITAL/ Japan, ³DEPARTMENT OF
NEUROENDOVASCULAR THERAPY AND DEPARTMENT OF NEUROSURGERY/ JUNTENDO UNIVERSITY FACULTY OF
MEDICINE/ Japan

Purpose

Pediatric arterio-venous (AV) shunts of the brain comprise of vein of Galen aneurysmal malformations, pial AV fistulas, dural AV shunts, and AV malformations with nidi. The purpose of this study is to clarify the incidence of these vascular malformations, therapeutic intervention including medical treatment, and their outcome.

Materials and Methods

We performed nation-wide survey of pediatric AV shunts under the age of 6 years old (children of 5 years old were included) diagnosed between January 2012 and December 2016. In addition, we performed the survey on diagnostic catheter angiography for the same age group. We sent queries (excel files) by e-mailing to all the members of Japan Society of Neurosurgical Endovascular Surgery and Japan Society of Pediatric Neurosurgery, totaling 4,123 physicians asking to join this study. Two hundred and eight hospitals, which contained almost all large neurosurgical/general hospitals and children's hospitals in Japan, responded and returned the excel files from the representative physician of each hospital.

Results and Conclusion

These results of JPAS will be presented at the conference since they are not open until the annual meeting of Japan Society of Neurosurgical Endovascular Surgery in November 2017. We will discuss the present clinical status of pediatric AV shunts in Japan.

AN001P

Correlation Of Cerebral Catheter Angiogram Diagnosed Aneurysms With Pre-Angiogram Non-Contrast Enhanced Cranial CT Scans

CESAR DE GUZMAN¹; JOLLY JASON CATIBOG¹

¹DEPARTMENT OF RADIOLOGY/ PHILIPPINE GENERAL HOSPITAL/ Philippines

Purpose

The initial non- contrast enhanced cranial CT scans of patients presenting with neurologic symptoms is critical as first step in the management of these patients in that it guides the Neurologist as to what to do next. Several patterns of subarachnoid hemorrhage have been identified: the perimesencephalic type, the diffuse aneurysmal type, and peripheral sulcal type.

This study aims to identify the common findings in the non- contrast enhanced cranial CT scan of the cerebral catheter angiogram aneurysm diagnosed patients.

Materials and Methods

The official report of all patients diagnosed with aneurysms via cerebral catheter angiogram were retrieved. Aneurysm characteristics were identified. The non- contrast enhanced cranial CT scan reports were then reviewed and recorded. A total of 55 patients were included in the study.

Results

The presence of subarachnoid hemorrhage is correlated with the presence of aneurysms, with a strong positive correlation. 69% of all aneurysms presented with a diffuse aneurysmal type of subarachnoid hemorrhage, 5% with a peripheral sulcal type of subarachnoid hemorrhage, and none presented with a perimesencephalic type of subarachnoid hemorrhage. 25% of all aneurysm diagnosed patients did not present with subarachnoid hemorrhage.

Conclusion

Cerebral catheter angiogram as the next imaging modality after the initial non- contrast enhanced cranial CT scan, given the presence of diffuse aneurysmal and peripheral sulcal types of subarachnoid hemorrhage, is therefore recommended.

Endovascular Treatment For Ruptured Aneurysm In Coexistence Of Severe Vasospasm : Vascular Change And Technical Consideration

CHEOL YOUNG LEE¹; HYUN WOO KIM¹; EUI GYU SIN¹; JIHYE SONG¹

¹NEUROSURGERY/ KONYANG UNIVERSITY HOSPITAL, / Korea

Purpose

In vasospasm periods, optimal timing of treatment for ruptured aneurysms remains controversial. In generally, it was recommended that treatment be delayed until its disappearance, but this might be associated with aneurysmal re-rupture. In severe spasmotic condition, various circumstances could be happened unlike non-spasmotic phase.

Materials and Methods

Two patients had sudden onset of headache and irritability. Patients and their families did not remember exactly when the symptoms first appeared. On examination, SAH caused by A-com and distal ACA aneurysms and severe vasospasm of ACA were identified.

Results

When microcatheter was advanced near to aneurysm through ACA, blood flow arrest was occurred in total ACA territory. there was no flow via contralateral area. In one patient, spasmotic ACA dilated after first passing of microcatheter (Pure effect of catheterization). Thereafter, blood flow was well maintained through the ACA. Coiling was continued. In the other patient, vasospasm was not improved. Patient was treated with advance-withdrawal technique (withdrawal of the catheter immediately after the partial coil with one or two coils, repeatedly after several minutes), and chemical angioplasty simultaneously. In 2 patients, aneurysms were obliterated and the blood flow was well maintained in ACA territory. there was no definite thromboembolic event.

Conclusion

In severe vasospasm period, early endovascular treatment may be proper treatment for ruptured aneurysm. However, various circumstances, which parent artery occlusion caused by intravascular device or spasmotic artery dilation by catheterization can be occurred. It is thought that appropriate treatment and technique are needed according to the change of vessels.

AN004P

Comparative Analysis In Patients With Poor-Grade Aneurysmal Subarachnoid Hemorrhage: Clipping With Simultaneous Decompression Versus Coil Embolization Followed By Decompression

EUI JONG KIM¹; HEE SUP SHIN²; JUN SEOK KOH²; CHANG-WOO RYU³

¹DEPARTMENT OF NEURORADIOLOGY/ KYUNG HEE UNIVERSITY HOSPITAL/ Korea, ²NEUROSURGERY/ KYUNG HEE UNIVERSITY AT GANGDONG/ Korea, ³NEURORADIOLOGY/ KYUNG HEE UNIVERSITY AT GANGDONG/ Korea

Purpose

We evaluated the clinical characteristics of patients with poor-grade aneurysmal subarachnoid hemorrhage(aSAH) in order to address the issues related to outcomes of those patients with comparing the results of aneurysmal clipping with simultaneous decompressive surgery to those of coil embolization followed by decompression

Materials and Methods

In 591 patients with aSAH, 70 patients with Hunt and Hess grade(H-H grade) IV and V underwent decompressive surgery including craniectomy, lobectomy, and hematoma removal. We divided the patients into two groups according to clipping vs. coil embolization (clip group vs. coil group), and analyzed their outcomes.

Results

Clipping was performed in 40 patients and coil embolization was performed in 30 patients. No significant differences in demographics were observed between the two groups. Middle cerebral artery and posterior circulation aneurysms were more frequent in the clip group. The patients with H-H grade IV and V experienced poorer outcome (Glasgow outcome scale (GOS) score I-III in 61 patients (87.1%) and GOS score IV in 29 patients (41.4%)) than with H-H grade I-III. No significant difference in mortality was recorded between the two groups, however, in comparing functional outcome, the coil group showed more favorable outcome ($p < 0.05$)

Conclusion

Despite aggressive surgical maneuvers for elevated ICP, there were disappointing outcomes in poor-grade aSAH. Nevertheless, early coil embolization followed by decompression surgery have proved more efficacious than those with clipping in patients with poor-grade aSAH.

Treatment Of Ruptured Blood Blister-Like Aneurysm Of The Supraclinoid Internal Carotid Artery

HAEWOOK PYUN¹; DAEYOUNG HONG¹; SEON-TAK JIN²; YEONKOO KANG¹; DONGHUN KANG³

¹RADIOLOGY/ POHANG STROKE AND SPINE HOSPITAL/ Korea, ²NEUROSURGERY/ KYUNGPOOK NATIONAL UNIVERSITY SCHOOL OF MEDICINE/ Korea, ³ NEUROSURGERY/ POHANG SEMYEONG CHRISTIANTY HOSPITAL/ Korea

Purpose

Ruptured blood-blister like aneurysm(BBAs) of the supraclinoid internal carotid artery(ICA) are still difficult and harsh to manage regardless of surgical or endovascular treatment.

In spite of use of a diversity of neurointerventional devices, we discovered new saccular like sac at short term follow up angiography, which was not found at initial angiography.

Materials and Methods

We analyzed the seven BBAs in 6 consecutive patients(2 men and 4 women; mean age 55 years, range 45-64 years) admitted to our center from 2010 to 2017.

Results

All of 6 BBAs were treated by endovascular method using a diversity of neurointerventional devices. Initial treatment of ruptured BBAs consisted of multiple stenting only in 3 patient, Stent-assisted coil embolization and/or additional stenting in 3 patients.

Rebleeding occurred in one patient. There was no relapse in 1 patient just by first treatment. the remaining five patients needed more than 1 additional reconstructive endovascular treatment.

Conclusion

There is not only one correct answer to treatment of ruptured BBAs of the supraclinoid ICA. When we encounter ruptured BBAs with sac can be packed with coils fortunately, insertion of coils as much as possible is indispensable. Otherwise, looking for second chance of management of the ruptured BBAs is necessary after short termed follow up angiography.

AN006P

Efficacy Of VasoCT And Highresolution Intracranial Stent CT As An Adjuvant Technology In The Assessment Of Procedural Success In Flow Diverter Stent Patients.

JAGADEESAN DHANASEKARAN¹; SAIKIRAN GUTTA¹; SANTHOSH JOSEPH¹; VINAY HEGDE¹; SAIKANTH DEEPALAM¹; RAJESH POOSARLA¹

¹NEURORADIOLOGY/ SRI RAMACHANDRA MEDICAL COLLEGE AND RESEARCH INSTITUTE/ India

Purpose

To assess the role of Vaso CT and High resolution intracranial stent CT in neuroendovascular procedures; more specifically to explore its value in the evaluation of flow diverter stents and to estimate the successfulness of the procedure.

Materials and Methods

All patients who had complex intracranial aneurysms in whom Flow diverter device placement was judged as a feasible treatment option were primarily taken up for the study. Endovascular treatment was performed by using a biplane flat panel angiographic system (Allura Xper FD 20/20; Philips Healthcare) with dedicated 3D RA Xtravision software.

Results

It was observed that High resolution stent CT showed whether Flow diverter device opened out completely or not and VASO CT showed good apposition and varying degrees of malapposition of device.

Conclusion

This study showed a significant role for VASO CT in the identification of in-stent neointimal hyperplasia and the adequacy of apposition of flow diverter stent to vessel wall on follow up. The findings of this study data influence on table management decisions, which will eventually predict procedural success and outcome of the aneurysms being treated.

AN007P

Brain Abscess Formation Following Stent Assisted Coil Embolization For Middle Cerebral Artery Aneurysm

JUNG HO KO¹; YOUNG-JOON KIM¹; HYUN HO JUNG²

¹DEPARTMENT OF NEUROSURGERY/ DANKOOK UNIVERSITY, COLLEGE OF MEDICINE/ Korea, ²DEPARTMENT OF NEUROSURGERY/ YONSEI UNIVERSITY, COLLEGE OF MEDICINE/ Korea

Purpose

The brain abscess after coil embolization is extremely rare and few cases reports has been reported.

Results

A 24-year-old man was admitted to our institute with severe headaches that developed suddenly. Brain computed tomography (CT) revealed a subarachnoid hemorrhage in the basal cistern and both sylvian cistern. A left ICA angiogram showed an about 1.5mm sized very small aneurysm on left bifurcation of middle cerebral artery. We performed Y-configured stent-assisted coil embolization. The coil embolization was successfully finished without any complications and the patent flow of both branches of M2 were clearly identified on digital subtraction angiography (DSA). On fifth post-embolization day, patient had a chill sensation and body temperature was checked over 38oC. White blood cell count and level of ESR and CRP were increased and staphylococcus aureus was cultured from the venous blood. The central venous catheter induced bacterial sepsis was suspected. The central venous catheter was immediately removed and susceptible antibiotics had been injected according to the result of antibiotics sensitivity test until the result of the laboratory tests became normal. At 3 months later, patient complained of headache, nausea and vomiting. Brain magnetic resolution image (MRI) scan show several well-rim enhancing lesion in left temporo-parietal lobe. The stereotactic aspiration was performed for 3 lesions each other and the greenish-white colored pus was aspirated. The pathogen was identified as staphylococcus aureus in the culture study.

Conclusion

We report a case of brain abscess following stent assisted coil embolization for ruptured middle cerebral artery aneurysm.

Endovascular Treatment Of Kissing Aneurysms

KENSAKU YOSHIDA¹; HIDENORI OISHI²

¹NEUROSURGERY/ TOKYO METROPOLITAN HIROO HOSPITAL/ Japan, ²NEUROSURGERY/ JUNTENDO UNIVERSITY SCHOOL OF MEDICINE/ Japan

Purpose

Kissing aneurysms were defined as two adjacent aneurysms, which have their own neck and adhere partially to each other. We summarized the patients of kissing aneurysms in our institutions.

Materials and Methods

Five cases of ruptured kissing aneurysms were treated by endovascular treatment. Two cases of five were originated from the internal carotid-posterior communicating artery and ipsilateral internal carotid-anterior choroidal artery and three cases originated from distal anterior cerebral aneurysms. Three of five cases were able to perform coil embolization from the same working angle each other. All cases were successfully treated by endovascular treatment without complication.

Results

In surgical treatment for kissing aneurysms, there were a few reports suggesting the usefulness of endovascular treatment. However, in the case of surgical clipping for kissing aneurysms, great caution is required because there is not enough space around the aneurysmal neck than solitary aneurysm and it is difficult to determine which aneurysm has bled, and which should be clipped first, the potential for premature rupture may be higher than ordinary aneurysm. On the other hand, endovascular treatment can be safely performed when we got working angle of confirming the aneurysmal necks.

Conclusion

Endovascular treatment for kissing aneurysms in our series was successfully performed.

AN009P

Management Of Giant Supraclinoid Aneurysms Utilising The Staged Diverter-In-Stent Technique – A Preliminary Experience In A Tertiary Center

KHAIRUL AZMI ABD KADIR¹; FADLI MOHAMED SANI; SIA SHEAU FUNG; KAMILAH MANAN
¹BIOMEDICAL IMAGING/ UNIVERSITY MALAYA MEDICAL CENTRE/ Malaysia

Purpose

Experience with endovascular treatment of giant supraclinoid aneurysms utilizing staged Flow Diverter-in-stent technique is still limited. We share our preliminary experience using this technique in our centre.

Materials and Methods

3 patients (2 women, 1 men) with 3 giant supraclinoid internal cerebral artery aneurysms treated with staged Flow Diverter-in-stent technique in our centre.

Flow Diverter-in-stent techniques have been described in previous literature. Patients underwent staged endovascular treatment for their aneurysms.

The objective of the initial treatment stage in the acute phase to protect the aneurysm sac with stent-assisted coiling. The stent serves as a scaffold for endothelial growth over time and to strengthen the vessel structure.

The subsequent treatment in the sub acute phase is the Flow Diverter deployment, which will achieve permanent exclusion from the arterial circulation of the aneurysm.

We use combination of LEO (Balt Extrusion, Montmerency, France) as the scaffolding stent and SILK (Balt Extrusion, Montmerency, France) as the Flow Diverter.

Results

Treatment of wide-necked giant aneurysm using the Flow Diverter-in-stent technique is safe and effective. The initial use of concentric stent as a scaffold to provide a stable vasculature prior to Flow Diverter deployment is safe and effective. Serial follow-up imaging after the insertion is mandatory for reassessment of the aneurysm

Conclusion

Treatment of wide-necked giant aneurysm using the diverter-in-stent technique is safe and effective. The use of concentric stent as a scaffold provided a stable vasculature prior to flow diverter insertion. Serial follow-up imaging after the insertion is mandatory for reassessment of the aneurysm

AN011P

Early Experience With Pipeline Flex Embolization Device For Complex And Tandem Internal Carotid Artery (ICA) Aneurysms

KHAIRUL AZMI ABD KADIR¹; FADLI MOHAMED SANI¹; CHAN KIN WONG¹; MOHD SALAHUDDIN KAMARUDDIN¹; MOHD SAFARALI OTHMAN¹; SIA SHEAU FUNG²

¹BIOMEDICAL IMAGING/ UNIVERSITY MALAYA MEDICAL CENTRE/ Malaysia, ¹MERDU/ MEDICAL FACULTY/ Malaysia

²NEUROSURGERY/ UNIVERSITY MALAYA MEDICAL CENTRE/ Malaysia

Purpose

The Pipeline Flex embolization device has some peculiarities in comparison with the previous generation device. We sought to assess technical success, and clinical and imaging outcomes of Pipeline Flex embolization device treatment for complex and tandem ICA aneurysms in our centre

Materials and Methods

Six unruptured ICA aneurysms from single centre were treated between Nov 2016 to Nov 2017. The patients were followed up at 6-month and 1-year post treatment with cerebral angiogram. Analyses on sequential change of aneurysm size after PED, morphology on aneurysm occlusion, the effect of incorporated vessels and stent morphology were performed

Results

Four patients were female and 1 patient was male. Two aneurysms were large (15-25 mm). Four aneurysms are small with tandem intracranial aneurysms which cannot be treated with coiling or clipping.

All aneurysms were successfully treated in a single session. A single stent was used in all cases, with partial coiling for the large aneurysms. There were no intra or periprocedural complications. No neurological deficits in all patients.

Three aneurysms show complete occlusion on 6 months follow up.

Another 3 patients still waiting for follow up.

There were no cases of aneurysm rupture after treatment, and no patients required re-treatment at last available follow-up.

Conclusion

Pipeline Flex embolization device appears technically feasible, safe and effective for the treatment of complex and tandem intracranial ICA aneurysms. The Pipeline Flex embolization device allows more precise and controlled deployment.

AN012P

Unusual Case Of Basilar Artery Dissection As A Cause Of Subarachnoid Hemorrhage In A Patient Of Systemic Lupus Erythematosus

KICHUL CHA¹; SUHYUN PARK²

¹NEUROSURGERY/ POHANG SAINT'S MARY HOSPITAL/ Korea, ²NEUROLOGY/ POHANG SAINT'S MARY HOSPITAL/ Korea

Purpose

Systemic lupus erythematosus (SLE) is an autoimmune disorder characterized by inflammation on body organs including kidney, skin, joints, and blood vessels. We report a case of subarachnoid hemorrhage (SAH) caused by a ruptured dissecting aneurysm on basilar artery in a patient of SLE.

Materials and Methods

A 48-year-old woman with a history of SLE admitted to emergency department for sudden onset of severe headache and subsequent altered mentality. She has been under follow-up for SLE since 3 years and on low-dose steroids. Physical examination revealed high systolic BR of 200 mmHg and comatous mentality. Cranial computed tomography (CT) showed a large amount of SAH in basal cistern. Conventional cerebral angiography showed a fusiform dilatation of mid-basilar artery.

Results

Double stent-assisted coil embolization was done for the ruptured dissecting aneurysm of basilar artery. The final angiography revealed a completely embolized dissecting aneurysm with occlusion of left posterior cerebral artery as a complication of the procedure. Additionally, extraventricular cerebrospinal fluid drainage was made for reduction of intracranial pressure. CT on the next day of procedure showed a intact blood flow of posterior circulation. However, her condition and neurological findings progressively got worse, and she eventually died on the 4th day of hospitalization.

Conclusion

Our case suggests that the dissecting aneurysm of cerebral arteries can be caused by inflammation of blood vessels in patients of SLE and the patients tend to have poor prognosis.

AN013P

Result And Experience Of Endovascular Treatment For Top Basilar Aneurysm In Bach Mai Hospital

LE HOANG KIEN¹; TRAN ANH TUAN¹; VU DANG LUU¹
¹*RADIOLOGY DEPARTMENT/ BACH MAI HOSPITAL/ Vietnam*

Purpose

The authors aims to report the result and experience in treatment of wide neck cerebral artery aneurysm by using coils and balloon.

Materials and Methods

Thirty patients were included in the retrospective study during the interval between January 2009 to January 2017 in Bach Mai hospital. A total of thirty wide-neck aneurysms have been treated by using coils with assisted balloon or Stent. The group of the patients was comprised of 13 men and 17 women, aged 29 to 65 years (mean 55,57 years). The sized of the aneurysm was in the range 1.4mm to 14mm (mean 4,7 mm). The dome to neck ratio was range form 0,82 to 1,15. 10 patients was treated for unrupted aneurysm and the remaining presented with a subarahnoid hemorrhage. The material used compose GDC, Matrix, Axium and Microvention coils with Hyperform or Hyperglie baloon.

Results

In the 30 aneurysm treated by using the coils and assitted remodelling technique with Hyperform or Hyperline balloons, immediated angiographic result consisted of total occlusion 27case (90%) and partial occlusion in 3 case. There was one procedure related complications with sub-hemorrhage post-operation. Except this patient, most of patient were successfully resolved without neurologic deffecit (25 cases – 83.3%). Focal recanalization with coils compaction of the neck portion was observed in 1 case.

Conclusion

Using coils with assisted balloon in endovascular treatment is a safe and effective for wide-necked cerebral aneurysm.

AN014P

Stent Assisted Coil Embolization For Unruptured Middle Cerebral Artery Aneurysm

KOHSUKE TERANISHI¹; KENJI YATOMI¹; HIDEKI ENDO¹; SENSU NONAKA¹; MUNETAKA YAMAMOTO¹; HIDENORI OISHI²

¹DEPARTMENT OF NEUROSURGERY/JUNTENDO UNIVERSITY/JAPAN, ²DEPARTMENT OF NEUROSURGERY-NEUROENDOVASCULAR THERAPY / JUNTENDO UNIVERISTY/Japan

Purpose

Stent assisted coil embolization (SACE) has been widely used for unruptured intracranial aneurysm with the development of devices and technique. We present our experience with emphasis on unruptured middle cerebral artery aneurysm treatment with SACE.

Materials and Methods

We retrospectively examined consecutive 44 cases (45 aneurysms) who were treated with stent assisted coiling between January 2015 to October 2017.

Results

Mean age 62.6 years old (± 10.0), female 28 (62.2%), mean aneurysm size 4.9mm(± 1.9)(1.8-10.8)、immediate obliteration rate : complete occlusion 29(64%) neck remnant 4(9%), body filling 12(27%). number of stent used : single stent 33、Y stent 12、type of stent Neuroform Atlas 3、Enterprise 1、rest of cases were treated with LVIS Jr. stent. Complication, recurrence and clinical course were examined. Either MRA or Angiographic follow-up was performed every six months up to 2 years after intervention. Also management of antiplatelet therapy was examined during follow up.

Conclusion

Stent assisted coil embolization is safe and effective treatment for unruptured wide-neck intracranial aneurysm. Continuous data collection is needed for better and appropriate treatment for the future cases.

AN015P

Fusion Three-Dimensional Angiography Of Both Internal Carotid Arteries In The Evaluation Of Anterior Communicating Artery Aneurysms

KUHYUN YANG¹

¹NEUROSURGERY/ GANGNEUNG ASAN MEDICAL CENTER / UNIVERSITY OF ULSAN MEDICAL COLLEGE/ Korea

Purpose

To determine whether 'fusion 3D angiography' of both internal carotid arteries (ICAs) can better disclose vascular details in patients diagnosed with anterior communicating artery (ACoA) aneurysms by computed tomography angiography (CTA) or magnetic resonance angiography (MRA).

Materials and Methods

Thirty-eight patients diagnosed with ACoA aneurysms by CTA or MRA were evaluated by the new post-processing feature, fusion 3D angiography, with results individually interpreted by four experts. Those experts compared the fusion 3D angiography with dominant A1 side single 3D angiography to define advantages and disadvantages for ACoA aneurysms. Patients with unilateral A1 aplasia or rudimentary A1 were excluded. Patients who showed any disadvantages with this additional feature were classified as group I; those with no advantages as group II; those with one or two advantages as group III; and those with three or more advantages as group IV. Radiological and clinical results were also evaluated.

Results

Of the 38 patients, 33 (87%) benefited from fusion 3D angiography, including 17 in group III and 16 in group IV; of the remaining patients, one was classified as group I and four as group II. Representative five categories of advantage to fusion angiography were found and summarized by the four experts. All 33 patients showed defining the exact anatomy of the ACoA and 22 (67%) showed full angiographic features of A2 or A3, including branches.

Conclusion

Fusion 3D angiography can significantly contribute to a better understanding of the complex anatomy of the ACA-ACoA complex, which is essential for successful treatment planning for ACoA aneurysms.

AN016P

Endovascular Management Of Dissecting Aneurysms Of Great Arteries Of The Neck- An Institutional Experience

LEVE JOSEPH DEVARAJAN SEBASTIAN¹; JEYASEELAN NADARAJAH¹; NISHCHINT JAIN¹; SHAILESH GAIKWAD¹
¹NEUROIMAGING AND INTERVENTIONAL NEURORADIOLOGY/ ALL INDIA INSTITUTE OF MEDICAL SCIENCES/ India

Purpose

To review our institutional experience in the endovascular management of dissecting aneurysms of great neck arteries

Materials and Methods

We identified cases of dissecting aneurysms involving large arteries of the neck which were treated by endovascular means during January 2015 to August 2017 from our Departmental archive. Data on demography, clinical presentation, angiographic findings, management and outcome were obtained for analysis from various medical and imaging records.

Results

All the 11 patients identified including three kids were male with a mean age of 33 years (3-72). Duration of symptoms varied from one day to six months. Most common presentation was progressive pulsatile neck swelling. Four patients had associated local/ systemic infections. Of the rest, 2 had history of trauma, one had surgery for craniovertebral junction anomaly while one patient had neurofibromatosis. No predisposing factors were identified in the remaining three. Internal carotid, External carotid and vertebral arteries were involved in 8, 1 and 2 patients respectively. Mean size of the aneurysm was 5 cm (2-11cm). Four cases were treated by parent vessel occlusion. In the remaining 7 parent vessel was preserved while achieving aneurysm exclusion at the same time. For this stent grafts were used in 4 patients and overlapping closed cell stents with or without adjuvant coiling in three patients. One stented patient on anti platelets developed Subdural hemorrhage requiring burr hole evacuation. No other procedure related complications were noted.

Conclusion

Dissecting aneurysms of neck can occur secondary to infection or trauma. Endovascular treatment is effective in the management of otherwise difficult lesions.

AN017P

Stent Assisted Coil Embolization For Acutely Ruptured Cerebral Aneurysms

MASAYUKI EZURA¹; TAKAHIRO MORITA¹; SHINYA HARYU¹; TAKASHI INOUE¹; HIROSHI UENOHARA¹
¹NEUROSURGERY/ NHO SENDAI MEDICAL CENTER/ Japan

Purpose

Stent placement is prohibited in acutely ruptured aneurysm in Japan. There is a few cases in which effective embolization is impossible without stent. We recently perform stent assisted coil embolization in very limited cases.

Materials and Methods

We performed the first case in December 2016. We had 4 cases more since then. All the 5 aneurysms were internal carotid artery aneurysm with very wide neck.

Results

We treated 27 cases of acutely ruptured aneurysms including 15 cases of internal carotid artery aneurysms. So, stent is necessary in 18.5% of acutely ruptured aneurysms and in 33.3% of acutely ruptured internal carotid artery aneurysms. Balloon assisted coiling was tried but failed in all the cases. Clopidogrel, loading dose of 300 mg, was administered via stomach tube at the time of failure of balloon assisted coiling. Stent used were Neuroform in 1, and Neuroform Atlas in 4. Estimated rupture portion disappeared in all the cases. There were no cases with rebleeding. MRI in several days later revealed patency of stent in all the cases.

Conclusion

Stent assisted coil embolization is feasible in selected cases even in acute phase.

AN019P

Diagnostic Accuracy Of 128 MDCT Angiography For Evaluating Cerebral Aneurysm Using Digital Subtraction Angiography (DSA) As The Standard Of Reference

MOHAMMAD MUDZAKIR ZAINAL ALAM¹; LAI KHIN WEE²; FADHLI MOHAMED SANI¹

¹BIO MEDICAL IMAGING/ UNIVERSITY MALAYA MEDICAL CENTRE/ Malaysia, ²BIO MEDICAL ENGINEERING, FACULTY OF ENGINEERING/ UNIVERSITY OF MALAYA/ Malaysia

Purpose

To investigate diagnostic accuracy of 128 MDCTA of brain in detecting cerebral aneurysm compare to DSA of cerebral that had been a gold standard in diagnose the aneurysm. This study also to find out the percentage of aneurysms size below 4mm that are detected in both examination in related to diagnose cerebral aneurysm.

Materials and Methods

This is a retrospective study where data of patient undergone both CTA of brain and DSA of cerebral are collected. The data such as aneurysm size and location are analyse from the report in both examination. Data from May 2015 until March 2016 are collected. The data is descriptive and inferential statistic acquired.

Results

The data are contribute in True Positive (TP), True Negative (TN), False Negative (FN) and False Positive (FP). The positive predictive value (PPV) = 0.96 and negative predictive value (NPV) = 0.3. The sensitivity results is 82% and it identified the ability of MDCTA to detect aneurysms. The specificity results is 75%. Diagnostic accuracy of the study is 81%, and the significant results prove the accuracy of MDCTA.

Conclusion

128 MDCTA is an accurate imaging modality for detection and visualize cerebral aneurysm in range 3-4mm and above. It still have limitation in specificity to choose as primary imaging tool to diagnose cerebral aneurysms less than 2mm at the certain location of the aneurysm.

AN020P

Flow Diversion Stent For Large And Giant Internal Carotid Artery Aneurysm: Initial Experience At A Single Centre

NUR SETIAWAN SUROTO¹; FITRA FITRA¹; ASRA AL FAUZI¹

¹DEPARTMENT OF NEUROSURGERY / FACULTY OF MEDICINE, UNIVERSITAS AIRLANGGA, DR. SOETOMO GENERAL HOSPITAL/ Indonesia

Purpose

Treatment of large and giant aneurysm has traditionally been associated with a higher morbidity and mortality than smaller lesions. Endovascular technique with flow diversion stent provide parent vessel reconstruction to treat large and giant intracranial aneurysm. We report our initial experience using flow diversion stent with Pipeline Embolization Devise (PED) in three patients.

Results

Headache was a common symptom followed by opthalmoplegia in all patients. Three patients with internal carotid artery aneurisms were successfully treated with flow diversion stent using Pipeline Embolization Devise (PED). No patients suffered from intra or post procedural complications

Conclusion

The use of flow diversion stent is effective and safe therapy for the treatment of large, giant, and wide necked aneurysm. Now, it represents a paradigm shift for the management of this kind of intracranial aneurysm in our institution.

3D Vascular Model Is Valuable In Coil Embolization Of The Aneurysms

SHIGERU NEMOTO¹

¹*ENDOVASCULAR SURGERY/ TOKYO MEDICAL AND DENTAL UNIVERSITY/ Japan*

Purpose

3D imaging is valuable in diagnostic neuroradiology and neurointervention. In coiling of the aneurysm, shaping of the microcatheter is a key to successful embolization. With 3D printer a 3D aneurysm model is made according to the 3D data of the aneurysm. Usefulness of this vascular model in coil embolization of cerebral aneurysm is examined.

Materials and Methods

An aneurysm vascular model is made of ABS resin with 3D printer according to dicom data of cerebral aneurysm. A microcatheter is shaped as same as this aneurysm vascular model. Microcatheter is navigated into the aneurysm and coils were inserted into the aneurysm. Results were compared with and without vascular model.

Results

Catheter shaping according to the vascular model leads to easy navigation into the aneurysm and to stable catheterization during coil insertion.

Conclusion

Catheter shaping according to the 3D vascular model is valuable in coil embolization of the aneurysm not only for beginners but also for experts. 3D printer is an useful device in endovascular treatment of the cerebral aneurysms.

Local Experience On Treatment Of Posterior Circulation Cerebral Aneurysms With Flow Diverting Device

STEPHEN WONG¹; LIK FAI CHENG¹; NEERAJ MAHBOOBANI¹; JOHNNY KF MA¹

¹DEPARTMENT OF RADIOLOGY/ PRINCESS MARGARET HOSPITAL/ Hong Kong

Purpose

Posterior circulation aneurysms are rare. Moreover, it is technically difficult to treat due to its complicated anatomy with number of perforators. In this retrospective study, we reviewed the efficacy and safety of the usage of flow diverting device in posterior circulation aneurysms.

Materials and Methods

We have retrospectively reviewed all posterior circulation aneurysms treated with flow diverting devices from 2013 to 2017. The aneurysmal size, location, coverage of side branches, O'Kelly Marotta (OKM) grading scale and complications are recorded.

Results

10 patients with 10 aneurysms at the posterior circulation were identified. 8 of the aneurysms were located in the vertebral artery, 1 in the posterior inferior cerebellar artery and 1 in the basilar artery. There were 5 fusiform aneurysms, 4 saccular and 1 with residual neck/recanalization. 3 presented as acute rupture. 6 out of 10 achieved ideal angiographic response, i.e. OKM grade D or complete resolution of aneurysm on computer tomographic angiography at subsequent follow-ups. 2 out of 10 showed a change in OKM grade with partial thrombosis or stasis of blood flow in the aneurysm. 1 patient had vertebral artery dissection requiring stenting during the procedure otherwise no other procedural related complication such as perforator infarction was noted. During the follow-up period, 2 patient died, one due to chronic obstructive airway disease while the other died of acute pulmonary oedema.

Conclusion

Flow diverting device is effective in treating posterior circulation aneurysms with good angiographic response on subsequent follow-ups.

AN027P

Acute Subdural Hematoma Following Coil Embolization For Ruptured Distal Anterior Cerebral Artery Aneurysm

TARO YAMASHITA¹; FUMINORI SHIMIZU¹
¹NEUROSURGERY/ SEIJINKAI SHIMIZU HOSPITAL/ Japan

Purpose

We report a case of subdural hematoma following coil embolization for ruptured distal anterior cerebral artery aneurysm.

Materials and Methods

73-year-old woman was admitted to the hospital with severe headache from two days ago. Head CT showed subarachnoid hemorrhage (Fisher group 2), and CTA revealed a 4.5 × 3.8 mm sized aneurysm at the A2–A3 junction of the right anterior cerebral artery. On the same day, we performed endovascular treatment to the ruptured aneurysm and finished as complete occlusion in 50 minutes. During the operation, activated clotting time (ACT) was 371 seconds after heparin induction. There was no evidence of enlargement subarachnoid hematoma on the CT scan immediately after operation. The patient was entered stroke care unit and recovered from anesthesia. But blood pressure rose up to 208/90 mmHg and then right pupil became wide. CT image showed right acute subdural hematoma without enlarge subarachnoid hemorrhage. Craniotomy and evacuated hematoma were carried out, but the right hemisphere became broad ischemic change. She was transferred to long term care hospital 3 months later in modified Rankin Scale (mRS) 5.

Conclusion

Excessive effect of heparin and sudden elevation of blood pressure might cause re-bleeding of the aneurysm. The point of rupture might face the direction of subdural space not a direction of subarachnoid space after inserted coil.

AN028P

Coil Embolization With A Dual-Microcatheter Technique For A Kidney Bean-Shaped Coil Frames To Treat Aneurysm With A Branch Incorporated Into The Sac

WON-BAE SEUNG¹

¹NEUROSURGERY/ DONGGUK UNIVERSITY GYEONGJU HOSPITAL/ Korea

Purpose

An aneurysm which is a small branch incorporated into the sac or the neck is one of the most difficult aneurysm to treat with coil embolization. Here, we report a successfully treated a ruptured wide-necked large aneurysm with an incorporated anterior choroidal artery (AchoA) using by dual-microcatheter technique for shaping of coil frame like as kidney bean appearance.

Results

A 49-year-old man with a Hunt and Hess grade 2 and Fischer grade 2 subarachnoid hemorrhage was identified as having a wide-neck large AchoA aneurysm arising from the sac. We performed a coil embolization with a dual-microcatheter technique for achieving individual frames at upper and lower parts of the sac to save AchoA through cleavage between two frames. Complete aneurysm occlusion with patency of the AchoA without coil loop prolapsed into the parent vessel was achieved.

Conclusion

The presence of normal branch vessels arising from the dome is a limitation for endovascular treatment. A dual-microcatheter technique with optimal catheter placement for dual frames with cleavage for saving branch vessel has not been published. With appropriate techniques, most aneurysms with a branch incorporated into the sac could be safely treated by coiling, with acceptable outcomes.

Intracranial Mirror Aneurysms: Anatomic Characteristics And Treatment Options

YOUNG DAE CHO¹; HYUN-SEUNG KANG¹; MOON HEE HAN¹
¹RADIOLOGY/SEOUL NATIONAL UNIVERSITY HOSPITAL/ Korea

Purpose

Mirror aneurysms generally are considered a subset of multiple aneurysms, defined as aneurysms occurring bilaterally and symmetrically on same named vessels. Although not infrequent, the characteristics of mirror aneurysms are not well studied. This investigation was conducted to elucidate the anatomic features of such lesions and examine treatment options.

Materials and Methods

A retrospective review was conducted, aimed at 172 patients treated for 344 mirror aneurysms between January, 2007 and December, 2015. Aneurysms of similar nature but in asymmetric locations on same named vessels were excluded. All available records were examined, assessing lesion characteristics and treatment outcomes.

Results

In this series of patients (N=172), mirror aneurysms most often involved middle cerebral artery bifurcation (n=83), followed by paraclinoid internal carotid artery (n=50) and posterior communicating artery (n=21). Most lesions (95.3%) were ≤ 10 mm across, and in 126 patients (74.6%), size ratios were $>50\%$. Of the 344 aneurysms studied, coil embolization was undertaken in 217, surgical clipping in 62, and observation alone (no treatment) in 65. Coil embolization and surgical clipping were done bilaterally in 83 and 12 patients, respectively. In 12 patients, combined coiling and clipping were implemented on each side. Single-stage coil embolization of both aneurysms took place in 73 patients, with excellent post-procedural (85.6%) and follow-up (86.8%) occlusive results. There was no procedure-related morbidity or mortality.

Conclusion

By adapting treatment strategies to differing configurations and vascular sources, mirror aneurysms can be safely and effectively treated. If feasible, single-stage coil embolization is a reasonable treatment option for mirror aneurysms.

Follow-Up Outcomes After Re-Embolization For Recanalized Aneurysms After Initial Coiling: Further Recurrence Rates And Related Risk Factors

YOUNG DAE CHO¹; HYUN-SEUNG KANG¹; MOON HEE HAN¹
¹RADIOLOGY/ SEOUL NATIONAL UNIVERSITY HOSPITAL/ Korea

Purpose

Although it is well known that coiled aneurysms can recanalize over time, long-term outcomes of re-embolization for recurred aneurysms have not been adequately investigated. We studied the retreatment outcomes of re-embolized aneurysms during follow-up monitoring and assessed the risk factors related to further recanalization.

Materials and Methods

A total of 129 patients with 133 aneurysms were retrospectively reviewed. Each aneurysm was subjected to re-embolization because of major recanalization after initial coil embolization, and underwent midterm and extended monitoring after retreatment. Cumulative medical records and radiologic data were assessed. Repeat recurrence rates and related risk factors were assessed by binary logistic regression analysis.

Results

A total of 47 aneurysms (35.3%) displayed recanalization at 6 months post-reembolization, with 17 and 30 instances of minor and major recanalization, respectively. Multivariate analysis indicated that posterior circulation (HR=6.129; p=0.010), large aneurysm (>7 mm) (HR=13.598; p<0.001), and incomplete occlusion at the second coiling (HR=9.975; p=0.001) were significant factors for recanalization. Of 86 aneurysms showing complete occlusion at the mid-term, 76 were further evaluated (≥12 months), displaying 18 aneurysms (23.7%) of delayed recanalization during a follow-up of 230.1 aneurysm-years. Of 15 aneurysms with minor recanalization at the 6-month, 6 (40.0%) progressed to major recanalization during a follow-up of 44.0 aneurysm-years.

Conclusion

The majority of recoiled aneurysms (64.7%) displayed complete occlusion at the 6-month follow-up. However, posterior circulation, large aneurysm (>7 mm), and incomplete occlusion at the second coiling were risks for further recanalization. The mid-term and delayed recanalization rates of the re-embolized aneurysms seem to be higher than those of the initial aneurysms.

Growth Of Asymptomatic Intracranial Fusiform Aneurysms: Incidence And Risk Factors

YOUNG DAE CHO¹; HYUN-SEUNG KANG¹; MOON HEE HAN¹
¹RADIOLOGY/ SEOUL NATIONAL UNIVERSITY HOSPITAL/ Korea

Purpose

Growth of intracranial fusiform aneurysm (IFA) may become clinically problematic through mass effect or rupture. We investigated growth rate and factors contributing to growth in asymptomatic untreated IFAs.

Materials and Methods

As a retrospective review, we assessed patients diagnosed with asymptomatic IFAs between August 2000 and September 2014, all untreated. No acute or symptomatic dissecting lesions were considered. Clinical and serial angiographic follow-up data were analyzed, defining growth as expansion >2mm in one or more dimensions. A binary logistic regression model and Kaplan-Meier method were applied for statistical analysis.

Results

Mean follow-up in the 82 eligible patients was 63 months (range, 15-190 months). Among them, 7 aneurysms (8.5%, 2.1%/ aneurysm-year) demonstrated growth (in any dimension). In univariate analysis, height and multiplicity of aneurysm emerged as significant factors in terms of growth. Height remained an independent risk factor in the binary logistic regression model, with receiver operating curves indicating a threshold of 6.9mm initial height in determining IFA growth (area under the curve, 0.804). Six patients (except one undertaken endovascular treatment) were observed during continued follow-up monitoring. All 6 lesions were stable in serial imaging tests, without further detectable growth or rupture (mean, 33 months).

Conclusion

Most (91.5%) of the asymptomatic and untreated IFAs studied proved to be stable, with no continued growth. However, because aneurysm height proved independently predictive of growth (lesions >6.9mm being at risk), periodic imaging is required in those left untreated. Growing yet asymptomatic aneurysms call for the utmost caution and care in decision making.

Case Report: Transient Cortical Blindness Post Cerebral Angiography

ABDUL FATTAH ABDUL HAMID¹; A FATTAH AH ¹; FADZIL F ¹; YAACOB Y ²; THANABALAN J¹

¹UNIT OF NEUROSURGERY, DEPARTMENT OF SURGERY/ UNIVERSITI KEBANGSAAN MALAYSIA MEDICAL CENTRE/ Malaysia, ²DEPARTMENT OF RADIOLOGY/ UNIVERSITI KEBANGSAAN MALAYSIA MEDICAL CENTRE/ Malaysia

Intro

Transient cortical blindness after cerebral angiography is rarely encountered; nonetheless, it is one of the reported complications. This rare entity has to be promptly recognised and intervened early. It is imperative to rule out other causes of cortical blindness before the diagnosis of cortical blindness post cerebral angiography is made, as they entail different treatment approach.

We report a case of a patient who underwent a cerebral angiography, and subsequently developed bilateral loss vision two hours after giving intracortical contrast medium.

Report

68-year-old man with a previously clipped right ICA aneurysm underwent a follow-up cerebral angiography 6-month later. However, two hours post-procedure, patient became confused and had bilateral loss of vision. Ophthalmology assessment revealed no local cause. CTA brain showed no evidence of intracranial bleeding or vascular occlusion/spasm. MRI brain revealed no evidence of acute infarction in the posterior circulation or along the optic pathways. Echocardiography ruled out any embolic event of cardiac origin.

The impression of post angiography cortical blindness was made, and the patient was hydrated and started on Dexamethasone. Patient's vision steadily improved and gained full vision after 2 days. He was discharged after a week stay, with a complete visual recovery and no evidence of other neurological deficit.

Conclusion

Transient cortical blindness post angiography is a diagnosis of exclusion. It is paramount to exclude ischaemic or embolic event as TCB is self limiting and reversible. Steroid may have role in hastening the recovery, as seen in this case; however, there is no hard evidence on this.

Unilateral Orbital Venous-Lymphatic Malformation Associated With Retroorbital Arteriovenous Fistula In Fluctuating Proptosis Patient

ABHINANT AWAIWANONT¹; CHAI KOBKITSUKSAKUL¹

¹*DIVISION OF INTERVENTIONAL NEURORADIOLOGY, DEPARTMENT OF DIAGNOSTIC AND THERAPEUTIC RADIOLOGY / RAMATHIBODI HOSPITAL/ Thailand*

Purpose

We would like to describe clinical presentation, radiographic finding and endovascular treatment of a rare case of venous-lymphatic malformation associated with arteriovenous shunt patient.

Materials and Methods

Retrospective review was conducted. We reported a case of 26-year-old non-traumatic man who presented with progressive painless proptosis and chemosis of his left eye for three weeks with significant history of recurrent proptosis since childhood. Provocative causes of symptomatic VLM were not exhibited.

Results

On physical examinations, left eye was downward displacement and limited movement. His left vision was 20/200 with increase ocular pressure. MRI brain and orbit revealed large T2 hyperintensity enhancing intraconal mass with venous compartment without evidence of phleboliths or intracranial developmental venous anomaly. These findings indicated left orbital VLM. He received NBCA embolization via left ophthalmic artery then followed by direct puncture technique with NBCA and sclerosing agent injection. On 1-months follow-up, significant improvement were demonstrated.

Conclusion

We successfully treated the VLM with arteriovenous shunt patient who presented with fluctuating unilateral orbital symptoms without classic intracranial venous anomaly. Nowadays, treatment strategies for reduce recrudescence rate remain challenging. Contrast enhanced MRA brain and orbit is the cost-effectiveness investigation for initial hemodynamic evaluation. Cerebral angiography should be performed for intracranial shunt assessment especially in highly suspicious case. Transarterial embolization and percutaneous sclerotherapy might be appropriate therapeutic options for orbital VLM associated with retroorbital arteriovenous shunt. We also concur with recent hypothesis mechanism of VLM with spontaneous intraorbital AVF that caused by erosion of ophthalmic artery from primary orbital disease.

A0003P

Autoregulation Of The Intracranial Vascularization - Posterior Circulation Collaterals: A Case Report

ALPHADENTI HARLYJOY¹; AFFAN PRIYAMBODO¹

¹DEPARTMENT OF NEUROSURGERY/ FACULTY OF MEDICINE, UNIVERSITAS INDONESIA/ Indonesia

Purpose

Circle of Willis is an essential part of the intracranial vascularization, in which the anterior circulation connects with posterior circulation. Patency of this structure is crucial in keeping the brain functioning optimally. Autoregulation of the intracranial vascularization involving Circle of Willis is commonly found in several pathologies, including neurooncology cases.

Results

We report a case of sphenoorbital meningioma in a 34 years old Indonesian woman, presented with protruding left eye and blurry vision for the past 4 years. The right eye followed suit two years after. The digital subtraction angiography (DSA) revealed diminished bilateral anterior circulation, caused by compression of the tumor. The posterior circulation took over the entire system through its collateral and managed to compensate for the anterior circulation lost.

Conclusion

Autoregulation of the intracranial vascularization and patency of the Circle of Willis are important in maintaining sufficient blood flow to the central nervous system

A0004P

Endovascular Therapy For Blunt Vertebral Arterial Injury In Our Institution, 5 Cases Series

GAKU MATSUMOTO¹; FUMIAKI IWASE¹; JUNICHI INOUE¹; TATSUHO KOBAYASHI¹; YOSHIBUMI MIYAZAKI; YUTA KAWASHIMA¹

¹EMERGENCY AND CRITICAL CARE MEDICAL CENTER/ YAMANASHI PREFECTURAL CENTRAL HOSPITAL/ Japan

Purpose

To assess the efficacy of endovascular therapy for blunt vertebral arterial injury.

Materials and Methods

We retrospectively reviewed cases with blunt vertebral arterial injury who underwent endovascular therapy. We assess patients' characteristics, therapeutic methods, technical success and patients' prognosis.

Results

7 lesions in 5 cases were enrolled. Range of age was 63-83 and cervical fractures were observed in 4 cases. Imaging appearances included 2 pseudoaneurysms, one symptomatic stenosis, one occlusion and 3 transections. We performed stent assisted arterial reconstruction for pseudoaneurysms and stenotic lesion. Occlusive lesion underwent parent arterial occlusion to avoid arterial embolism due to recurrence ahead of cervical reduction surgery. Though we carried out parent arterial occlusion for arterial disruption, we selected stent assisted arterioplasty in one case with bilateral vertebral arterial disruption. In all operations, we achieved technical success and didn't experience surgical complication. Two patients died from multiple organ dysfunction and brain stem infarction, and one patient went into vegetative state due to brain trauma.

Conclusion

We experienced seven endovascular therapies in 5 cases. The results showed high successful rate and no complication.

A0005P

Vein Of Galen Malformation In An Infant: Case Report And Review

HADIO ALI KHAZATSIN¹; ARYATAMA¹; TRAN CHI CUONG¹; NGUYEN NGOC PI DOANH²

¹INTERVENTIONAL NEURORADIOLOGY/ UNIVERSITY OF MEDICINE AND PHARMACY/ Vietnam, ²NEUROSURGERY / NHI DONG 2 HOSPITAL/ Vietnam

Purpose

To describe a rare case of Vein of Galen malformation (VOGM) in an infant who presented with congestive heart failure and melting brain syndrome as well as to increase the awareness dealing with this challenging VOGM diagnostic and therapeutic dilemma urging early recognition and satisfactory treatment.

Materials and Methods

A case report and literature review.

Results

We reported a case of successful treatment and excellent clinical outcome in an infant with Vein of Galen malformation. An infant presented with congestive heart failure and melting brain syndrome due to VOGM at 6 months of age. The diagnosis was confirmed and the first embolization attempt was done at 6 months of age, although it was a partial success as a result of cardiac arrest suffered during the procedure. The second embolization of the feeding arteries was achieved 6 months later and successful in occluding the remaining feeding arteries.

Conclusion

Vein of Galen malformation is a rare congenital vascular malformation and usually manifests with congestive heart failure. Our case report and literature review suggests early and appropriate diagnostic examination should be performed and the management of VOGM should involve a multidisciplinary team. Endovascular approaches to VOGM treatment are continually improved, with increasing success in reducing mortality and morbidity in patients with VOGM. The goals of endovascular therapy in VOGM presented with congestive heart failure is to establish hemodynamic stability as well as to allow for further heart and brain development.

A0006P

The Rupture Of A Balloon Guide Catheter (BGC) -Suggestions For The Safe Usage Of BGC-

HIROAKI SATO¹; NAOSUKE KANENAKA¹; HAJIME ABE¹; KEISUKE MATSUBARA¹; HIROHITO UKETA¹
¹NEUROENDOVASCULAR THERAPY/ TOKYO METROPOLITAN POLICE HOSPITAL/ Japan

Purpose

We usually use a balloon guide catheter (BGC) in cases of carotid artery stenting (CAS) or mechanical thrombectomy. However this time we unexpectedly experienced a balloon rupture event with BGC. So we ran experiments to determine the reason for the rupture. In this report, we present our case and experimentation. Additionally I'd like to talk about the characteristics of BGC.

Materials and Methods

A 68 yr old female presented with rt.U/E paresis. The diagnosis was symptomatic carotid artery stenosis. After deployment of BGC during CAS, we inflated the balloon up to the point of occlusion of the common carotid artery. The balloon suddenly ruptured. We tried to inflate the balloon again to occlude the vessel, but the balloon ruptured again. Therefore in the end, we used the normal guiding catheter.

Results

After this unexpected event, we investigated the reason for balloon rupture by experimentation. Through experimentation we determined that the important factor is the discrepancy between the balloon size and the vessel diameter. We strongly believe this is a key aspect of safe usage of BGC.

Conclusion

This event has made us aware of an important consideration that we must make in order to use BGC safely. It also highlights the need to be safety conscious during medical procedures.

A0008P

Isolated Non-Traumatic, Non-Aneurysmal Convexal Subarachnoid Hemorrhage In A Patient With Evans Syndrome

MOHAMAD SYAFEEQ FAEZ MD NOH¹; ANNA MISYAIL ABDUL RASHID²

¹DEPARTMENT OF IMAGING/ FACULTY OF MEDICINE AND HEALTH SCIENCES, UNIVERSITI PUTRA MALAYSIA/ Malaysia,

²DEPARTMENT OF MEDICINE/ FACULTY OF MEDICINE AND HEALTH SCIENCES, UNIVERSITI PUTRA MALAYSIA/ Malaysia

Purpose

To describe a rare case of isolated non-traumatic, non-aneurysmal convexal subarachnoid hemorrhage in a patient with Evans syndrome

Materials and Methods

Multimodality imaging methods; via computed tomography (CT), magnetic resonance imaging (MRI), and diagnostic cerebral angiography

Results

Combination of multimodality imaging methods employed in this case proved that the likely cause of this patient's isolated convexal subarachnoid hemorrhage was the vasculitis possibly occurring due to the hematological disorder; Evans syndrome

Conclusion

Spontaneous non-traumatic, non-aneurysmal convexal subarachnoid hemorrhage is a rare entity - of which there are multiple possible etiologies. In this case, Evans syndrome was the likely etiology

A0009P

Cerebral Venous Sinus Thrombosis Presenting As Atypical Subarachnoid Hemorrhage

NORLIA OMAR¹; SHAMINA MOHD SHAHABAR¹; NG WEI LING¹; TAN SUZET¹

¹RADIOLOGY DEPARTMENT/ HOSPITAL TAIPING/ Malaysia

Introduction

Cerebral venous sinus thrombosis (CVST) is a rare but important cause of subarachnoid hemorrhage (SAH). We present two recent cases of CVST presenting with acute SAH only and to emphasize that atypical patterns of SAH should raise suspicions of CVST, a condition which should not be missed.

Report

We had 2 patients who presented with sudden onset of headache and hemiparesis. In both cases, the only positive finding on plain CT Brain was acute SAH.

The first case was a 69 year old lady who had diffuse supratentorial SAH with relative sparing of basal cisterns. Cerebral CT Angiography (CTA) done immediately did not reveal any aneurysm. An MR Venogram (MRV) done was inconclusive and the presence of extensive superior sagittal sinus thrombosis was confirmed by cerebral CT Venogram (CTV).

The second case was a 49 year old lady with a more focal SAH at the vertex. MR Angiogram (MRA) was negative. Both MRV and CTV confirmed the presence of thrombus in the anterior 2/3 of superior sagittal sinus.

Conclusion

These two cases highlight that CVST can also present as acute SAH only. An urgent search for CVST using CTV/MRV should be initiated in cases of atypical SAH.

A0012P

Traumatic Pseudoaneurysm Of The Superficial Temporal Artery Treated By Endovascular Coil Embolization

YON-KWON IHN¹; WON SANG JUNG¹; BUM-SOO KIM
¹*RADIOLOGY/ ST.VINCENT/ Korea*

Purpose

Although pseudoaneurysm of the superficial temporal artery (STA) are very rare, it is well known that any blunt or penetrating trauma may result in a pseudoaneurysm. We present two cases of traumatic pseudoaneurysm of the STA, which were treated with coil embolization

Materials and Methods

A 25-year-old male patient with a 6-month history of a painless pulsating mass on right temple. He had sustained blunt trauma. Six weeks later, the patient noticed the painful mass on the contused area. CTA revealed a 8 mm sized aneurysm of the right STA. Selective angiography showed the pseudoaneurysm from the frontal branch of STA and delayed emptying of dye. Subsequently, the microcatheter was advanced into the STA just distal portion of pseudoaneurysm. Two platinum microcoils were deployed in the STA distal to the origin of pseudoaneurysm and microcatheter was withdrawn to proximal to the origin of pseudoaneurysm, where additional two microcoils were deployed. Final angiograms revealed complete occlusion of the pseudoaneurysm..

Conclusion

Although pseudoaneurysm of the superficial temporal artery are very rare, endovascular coil embolization can be a viable option.

Traumatic Vertebral Arteriovenous Fistula With Giant Aneurysm

YUKARI OGAWA¹; SHUNJI MATSUBARA ; TAKAYA KITANO²; KEIJIRO HARA¹; TOSHIHIRO HOTTA³; MASAYUKI UNO¹
¹NEUROSURGERY/ KAWASAKI MEDICAL SCHOOL/ Japan, ²STROKE MEDICINE / KAWASAKI MEDICAL SCHOOL/ Japan,
³ACUTE MEDICINE/ KAWASAKI MEDICAL SCHOOL/ Japan

Intro

Vertebral artery injury(VAI) associated with cervical trauma is being increasingly recognized with aggressive screening examination.

Report

Seventy five-year-old man had traffic accident while driving a car and became cardiopulmonary arrest. After the resuscitation, he was brought to our emergency department. On admission, he was coma and hypo blood pressure caused by spinal shock. Initial whole body CT revealed the dislocation of cervical vertebrae in C4/5 level, and initial craniocervical CTA detected aneurysmal expansion arising from the left vertebral artery. As the aneurysmal lesion was rapidly expanded in serial CTA on the following day, angiography was performed on 2nd day from the onset. His left vertebral angiography(VAG) indicated arteriovenous fistula with approximately 3 cm giant aneurysm in C4/5 level with the drainage to external vertebral plexus. Whereas right vertebral artery(VA) was also obliterated, upper basilar artery was opacified by carotid injection via posterior communicating artery. Although aneurysmal pouch was asymptomatic lesion, prophylactic endovascular treatment was conducted in order to prevent aneurysmal rupture and to occlude AV fistula simultaneously. The aneurysm and left VA were completely occluded, using Penumbra coil 400 and standard platinum coils. Although no additional neurological symptoms appeared after the operation, tetraplegia caused by severe cervical spinal cord injury persisted. After posterior cervical fixation surgery, he was transferred to rehabilitation center.

Conclusion

Blunt vertebral artery injury is associated with complex cervical injury. Patients with severe cervical trauma should be considered arteriography to find out any types of VAI for early intervention.

Regression Of Aneurysms Associated With Cerebral Arteriovenous Malformation Post Intranidal Embolization Of Arteriovenous Malformation: A Case Report

AI PING PHUAR¹; LI SHYAN CH'NG¹; AHMAD SOBRI MUDA²; ZULKIFLI ZAKI ABDUL GHANI¹

¹RADIOLOGY/ HOSPITAL SUNGAI BULOH/ Malaysia, ²RADIOLOGY/ UNIVERSITI PUTRA MALAYSIA/ Malaysia

Intro

Aneurysm associated with cerebral arteriovenous malformation (AVM) has a high risk of haemorrhage at presentation and requires treatment to prevent further episode. The treatment strategy for symptomatic lesions would be targeted at the bleeding point (ie. aneurysm or AVM). However, the initial treatment option of aneurysm or AVM nidus is still debatable.

Report

A 44-year-old lady presented with persistent vomiting and Computed Tomography (CT) brain showed intraventricular haemorrhage. Cerebral angiography revealed right posterior fossa AVM with feeders from the right superior cerebellar artery (SCA) and right posterior inferior cerebellar artery (PICA). The lesion had superficial drainage into the superficial cortical vein and deep venous drainage into the right internal cerebral vein. 3 aneurysms were seen arising from the proximal right PICA. Embolization of the AVM was done intranidally via the feeders with liquid embolic material. After embolization in 3 stages, post embolization angiography showed stasis of contrast within these aneurysms and approximately 80% of the AVM occluded. Reduction of blood flow velocity into the aneurysm post nidal occlusion would lead to gradual decrease in size and regression of the aneurysms. This case suggests that proximal aneurysms may also regress spontaneously post AVM nidal occlusion and may not need to be occluded first prior to nidal occlusion.

Conclusion

Our case demonstrated that primary treatment of the AVM nidus can treat proximal flow-related aneurysms concurrently.

Neglected And Complex Scalp Arteriovenous Malformation

AFFAN PRIYAMBODO¹; KEVIN GUNAWAN¹; PARINTOSA ATMODIWIRJO²; WISMAJI SADEWO¹; HANIF GORDANG TOBING¹; SETYO WIDI NUGROHO¹

¹NEUROSURGERY/ FACULTY OF MEDICINE UNIVERSITAS INDONESIA, CIPTO MANGUNKUSUMO NATIONAL GENERAL HOSPITAL/ Indonesia, ²PLASTIC SURGERY/ FACULTY OF MEDICINE UNIVERSITAS INDONESIA, CIPTO MANGUNKUSUMO NATIONAL GENERAL HOSPITAL/ Indonesia

Intro

Scalp arteriovenous malformation (SAVM) is rare condition consist of abnormal arteriovenous communication within the subcutaneous fatty layer of the scalp. Management of scalp AVM is difficult because of its high shunt flow, intracranial communication, complex vascular anatomy and cosmetic problems.

Report

We report a rare case of SAVM in a 19 years-old man, presented with pain pulsatile swelling over parietooccipital region of the head, and increasing in size for the past 19 years. The patient had undergone four vascular ligation operations in the past 2 years in previous hospital, however the lesion recurred with additional new feeders, increasing in size, and followed by moderate pain. There was a soft, bluish and pulsatile lesion in bilateral parietooccipital region with bruit on auscultation.

Digital subtraction angiography (DSA) revealed SAVM with tortuous feeding arteries with from right occipital, superficial temporal, middle meningeal, and pharyngeal artery, then also from left occipital and internal maxillary artery, with 24 cm nidus, and enlarged draining scalp veins. He then underwent SAVM excision after attaining proximal control of bilateral external carotid artery. Post-operative DSA revealed occipital SAVM with feeder arising from left occipital artery, 2.5 cm nidus, and draining to scalp vein. Pre-operative radiological evaluation should be used for the assessment of feeding arteries, drainage vessels, nidus or fistula, connected vascular structures and shunt flow volume in order to prevent any possible complications. Surgical excision is the most common and successful method to deal with SAVM.

Conclusion

Surgical excision with pre-operative DSA has excellent outcome in treatment of SAVM.

AV006P

Spinal Radicular Arteriovenous Fistula, With MRI Finding Mimicking Spinal Dural Arteriovenous Fistula (SDAVFs)

PAKORN JIARAKONGMUN¹; EKACHAT CHANTHANAPHAK¹; SIRINTARA PONGPECH¹

¹RADIOLOGY, RAMATHIBODI HOSPITAL MEDICAL SCHOOL, MAHIDOL UNIVERSITY/ INR DIVISION/ Thailand

Purpose

To review a case of radicular AVFs at the lower thoracolumbar spine with clinical presentation and MRI findings mimic SDAVFs, with successful endovascular treatment.

Materials and Methods

Retrospectively review of a case of spinal radicular AVFs in Ramathibodi Hospital in 2017.

Results

A 30 year-old man present with clinical back pain and progressive weakness of both legs and bowel & bladder dysfunction for 2 months. MRI T-L spine shows small hemosiderin deposition in conus from old hematomyelia, and dilated perimedullary veins at posterior spinal canal up T6 level. Spinal angiogram shows spinal radicular AVFs at T12 level, fed by left T11 and T12 arteries with venous reflux to radicular veins from T12 level, causing congestion of perimedullary veins. The ASA arises from left T7 artery, shows delayed venous drainage of the spinal cord.

Trans-arterial glue embolization performs via left T12 artery using 0.6cc injection of 1:5 conc. NBCA, with total obliteration of the AVFs.

Conclusion

Our case is a young adult, who develops clinical presentation and MRI finding of myelopathy with old hematomyelia with no definite intramedullary AVMs nidus, plus dilated posterior perimedullary veins indicating spinal venous hypertension, therefore DDx of previously ruptured superficial spinal cord AVMs or radicular AVMs are the most likely diagnosis.

While the more common SDAVFs, mostly occurs in elderly patients, with quite similar presentation and imaging, but usually has different natural history, and hematomyelia is very uncommon in presentation for the SDAVFs.

Endovascular treatment with liquid adhesive is treatment of choice for SCAVFs and SDAVFs, with favorable outcome.

CF001P

Anatomical Variation Of Facial Vein In Carotid-Cavernous Fistula And Trans-Facial Vein Embolization

CHAO-BAO LUO^{1,2}; FENG-CHI CHANG^{1,2}; MICHAEL MU-HUO TENG^{1,3}; CHUNG-JUNG LIN¹; WAN-YOU GUO¹

¹DEPARTMENT OF RADIOLOGY/ TAIPEI VETERANS GENERAL HOSPITAL/ Taiwan ²DEPARTMENT OF RADIOLOGY/ NATIONAL YANG-MING UNIVERSITY SCHOOL OF MEDICINE/ Taiwan ³DEPARTMENT OF MEDICAL IMAGING/ CHEN-HSIN GENERAL HOSPITAL/ Taiwan

Purpose

Trans-facial vein (FV) via internal jugular vein (IJV) is an alternative to embolize carotid cavernous fistulas (CCFs). The purpose of this study is to report the anatomical variation of FVs and our experiences of trans-FV embolization of CCFs.

Materials and Methods

Over 6 years, a total of 129 CCFs were referred for endovascular embolization. From these database, there were 26 patients undergoing trans-FV embolization because of anterior drainages of CCFs. There were 12 men, 14 women; age ranged from 27 to 72 years old. We retrospectively analyses angioarchitecture of CCFs with emphasizing the anatomical variations of FVs, angiographic and clinical outcomes after embolization.

Results

Of these CCFs, FVs drained to IJVs in 10 (38%), while FVs unexpectedly emptied to the external jugular veins (EJVs) in 16 (62%). All FVs entered into IJVs at the level of hyoid bone. In those CCFs with fistulas to FVs and EJVs, the termination of FV were variable and could be in superior (n=5), inferior (n=1) or at the level of hyoid bone (n=10). Successful microcatheterization via different insertions of FVs to jugular veins were achieved in all. Two patients had fistula recurrence. Four patients experienced impairment of third or sixth cranial nerves. The mean clinical follow-up was 18 months.

Conclusion

Trans-FV embolization is an effective and safe method to manage CCFs. However, there may have anatomical variations of the FVs, therefore, careful fistula venous drainage workup prior to trans-FV embolization is essential to reduce the erroneous attempt, procedural timing and peri-procedural risk.

CF002P

Transient Ptosis Post Caroticocavernous Fistula Embolisation: A Case Report

GAYATHRI LETCHUMANAN¹; BOON HOCK KHOR¹; NOR AZIZAH AB RAHMAN¹; LI SHYAN CH'NG¹; ZULKIFLI ZAKI ABDUL GHANI¹

¹DEPARTMENT OF RADIOLOGY/ HOSPITAL SELAYANG/ Malaysia ¹DEPARTMENT OF RADIOLOGY/ HOSPITAL SUNGAI BULOH/ Malaysia

Purpose

Endovascular embolisation of caroticocavernous fistula (CCF) is a widely accepted, safe and successful treatment option.

Results

We report on a 26 years old Malay lady who presented with chemosis and painful ocular movement of right eye as well as diplopia. No history of prior trauma. A contrast enhanced computed tomography scan of the brain was done which showed enlarged, tortuous right superior ophthalmic vein with bulky right cavernous sinus. Cerebral angiogram revealed right caroticocavernous fistula with dural shunt between intracavernous branches of both internal carotid arteries (ICA) and cavernous sinus as well as dural shunts between meningeal branches of both external carotid arteries (ECA) and cavernous sinus. The fistula was occluded by packing the cavernous sinus with coils via right superior ophthalmic vein. Patient developed new onset of ptosis post embolisation which resolved spontaneously 4 weeks post embolisation. Ptosis may be due to irritation of cranial nerve III in cavernous sinus post coiling, mass effect of swollen fresh thrombus in sinus or compression of nerve due to closely packed coils.

Conclusion

Transient ptosis post CCF embolisation is a recognised complication and needs to be closely followed-up.

CF003P

PHIL (Precipitate Hydrophobic Injectable Liquid) As An Embolic Agent In The Treatment Of A Type D CCF (Carotico-Cavernous Fistula): A Preliminary Experience In A Tertiary Center

KHAIRUL AZMI ABD KADIR¹; QAIRUL IRWAN HAML¹; SIA SHEAU FUNG¹; FADHLI MOHAMED SANI¹
¹*BIOMEDICAL IMAGING/ UNIVERSITY MALAYA MEDICAL CENTRE/ Malaysia*

Intro

The use and advantages of embolic material PHIL as treatment of indirect CCF and to facilitate embolic material visualisation with less streak artefacts in subsequent follow-up computed tomography (CT) scans in comparison to other embolic materials such as ethylene vinyl alcohol and coil.

Report

We highlight a case of indirect CCF which was successfully treated via an endovascular method and a transarterial approach. The patient developed gradual onset of eye redness for over a month duration. A contrast enhanced brain CT scan showed right globe proptosis and dilated right superior ophthalmic vein and right cavernous sinus. A cerebral angiogram revealed a right Type D CCF. Embolisation was done via super-selective catheterisation of the ECA branch feeder artery using a detachable microcatheter. PHIL embolic agent was then injected into the fistula which completely filled the fistulous space, right cavernous sinus and into the right superior ophthalmic vein. Control angiogram showed obliteration of the fistula. A repeat CT brain done showed embolic material within the region of the right cavernous sinus with minimal streak artefacts.

Conclusion

There is potential use of PHIL due to its non-adhesive property which allows safer and better penetration into the CCF. Other advantages include simpler preparation and absence of metallic component which renders lesser artefacts on CTs.

CF004P

A Rare Case Of Traumatic Carotid-Cavernous Sinus Fistula (CCF) With Persistence Primitive Trigeminal Artery Treated With Detachable Balloon

KHAIRUL AZMI ABD KADIR¹; SIA SHEAU FUNG²; NUR AZIDAWATI AB HALIM¹; SOO SUET WOON¹; FADHLI MOHAMED SANI¹; MOHD SALAHUDDIN KAMARUDDIN¹

¹BIOMEDICAL IMAGING/ UNIVERSITY MALAYA MEDICAL CENTRE/ Malaysia ²NEUROSURGERY/ UNIVERSITY MALAYA MEDICAL CENTRE/ Malaysia

Purpose

Persistent primitive trigeminal artery is a persistent embryonic or fetal vascular anastomosis between the cavernous carotid artery and the vertebra-basilar artery. We present a rare case of traumatic CCF due to laceration of persistent primitive trigeminal artery treated with detachable balloon.

Results

Two months after motor vehicle accident, a 17-year-old female complained of right eye swelling and blurring of vision. On examination noted pulsatile right eye proptosis with injected conjunctiva, ocular hypertension and abducens nerve palsy.

CTA noted an enlarged right cavernous sinus with dilated and tortuous right superior ophthalmic, right periorbital veins and left cavernous sinus. Associated tortuous collateral veins in the occipital region.

Angiogram demonstrated presence of persistent primitive right trigeminal artery from the ascending part of cavernous portion of the right internal carotid artery to the mid basilar artery. Left vertebral artery angiogram revealed a retrograde filling of the right cavernous sinus through a persistent primitive trigeminal artery, confirming associated right trigeminal cavernous fistula.

She underwent endovascular treatment. A Hyperglide balloon (eV3 Neurovascular, Irvine, CA, USA) was positioned in the cavernous segment of the right ICA covering the fistulous tract. Using microcatheter and Traxcess 14 guidewire, the origin of persistent primitive trigeminal artery and the fistulous hole was selectively cannulated through the right internal carotid artery. The fistula was occluded using a detachable balloon (Goldbal 4, Balt extrusion, France).

Conclusion

Traumatic Carotid-Cavernous Sinus Fistula (CCF) with persistence Primitive Trigeminal Artery was successfully treated with detachable balloon. She recovered from blurring of vision, reduction in eye swelling and normalization of intraocular pressure.

DF001P

TAE Of SSS-dAVF By Direct Puncture Of Transosseous Feeder

ASUKA ELISABETH KROPP¹; TAKASHI IZUMI¹; MASAHIRO NISHIHORI¹; YOSUKE TAMARI¹; TOSHIHIKO WAKABAYASHI
¹NEUROSURGERY/ NAGOYA UNIVERSITY GRADUATE SCHOOL OF MEDICINE/ Japan

Purpose

Superior sagittal sinus dural arteriovenous fistulas (SSS-dAVF) are rare and only comprise 5-10% of all AVFs. Due to its central location, multiple vessels are feeding the fistula, which necessitates a multimodality therapy. We have directly punctured the transosseous feeder and arterially embolized the parallel sinus with NBCA.

Materials and Methods

37-year-old male presented with nausea, headache and papilledema. MRI and DSA revealed SSS-dAVF and transverse sinus (TS) dAVF. TVE of TS-dAVF and TAE of SSS-dAVF was performed within an interval of one month.

Results

SSS-dAVF was fed by superficial temporal artery (STA), occipital artery (OA), middle meningeal artery (MMA), and maxillary artery (MA). STA and OA perforated the skull and flowed bilaterally into parallel sinuses. TAE was performed in these feeders in 2 consecutive treatment sessions. Bilateral STA, MMA and left IMA were embolized with 20%NBCA to reduced inflow, followed by a direct puncture through an intradiploic channel. Puncture location was marked with non-transparent sticker and confirmed with cone-beam CT. 33%NBCA was injected and successfully embolized the left parallel sinus and obliterated cortical venous reflux. After 2 months, right parallel sinus was treated similarly, but due to unstable needle positioning and premature glue injection, embolization was incomplete. Therefore, complete occlusion was accomplished by additional right MMA embolization. No neurological adverse event was observed after the procedures.

Conclusion

A direct puncture of shunt point can aid a successful embolization of dAVF when distal access is difficult. However, precise and stable needle access are a requisite for successful permanent embolization.

Balloon-Assisted Onyx Embolization Of Intracranial Dural Arteriovenous Fistula

CHAO-BAO LUO¹; FENG-CHI CHANG¹; CHUNG-JUNG LIN¹; WAN-YUO GUO¹; MICHAEL MU HUO TENG^{1,2}

¹DEPARTMENT OF RADIOLOGY/ TAIPEI VETERANS GENERAL HOSPITAL/ Taiwan, ²DEPARTMENT OF MEDICAL IMAGING/ CHEN-HSIN GENERAL HOSPITAL/ Taiwan

Purpose

The purpose of this study is to report our experiences of Onyx embolization of intracranial DAVFs by using various balloon-assisted techniques to enhance the treatment effect and safety of embolization.

Materials and Methods

Over a 3-year period, a total of 21 patients with intracranial DAVFs undergoing trans-vascular Onyx embolization by various balloon-assisted techniques. There were 16 men, 5 women (mean age: 63 yrs). We retrospectively analyses the grading of DAVFs, balloon-assisted techniques, and procedure-related complication. Angiographic and clinical outcomes were evaluated as well.

Results

Of these 21 DAVFs, two was Cognard type I, type II in 5, type III in 9 and type IV in 5. There were 4 techniques of balloon-assisted techniques in our series and included (1) trans-arterial Onyx injection via a balloon catheter (n=10), (2) trans-arterial Onyx injection via a balloon catheter in dural feeder with a protective balloon in another crucial dural feeder (eg. ICA, n=3), (3) trans-arterial Onyx injection with a protective balloon in adjacent dural sinus (n=3), (4) trans-venous Onyx injection with a protective balloon in a crucial dural feeder (n=5). There was no significant procedure-related neurological complication. All DAVFs were totally occluded in immediate post-embolization angiogram. One patient had recurrent fistula and underwent a second embolization. The mean follow-up was 19 mos.

Conclusion

Balloon-assisted technique has the capability to enhance the effect and safety of embolization, to reduce the Onyx reflux to dural feeders and to avoid inadvertent Onyx reflux to other crucial dural feeders and adjacent dural sinus.

DF003P

A Case Of Dural Arteriovenous Fistula Draining Into Cortical Veins Presenting With Intracerebral Hemorrhage

HADIO ALI KHAZATSIN¹; ARYATAMA NURHASYIM¹; TRAN CHI CUONG¹

¹*INTERVENTIONAL NEURORADIOLOGY/ UNIVERSITY OF MEDICINE AND PHARMACY/ Vietnam*

Purpose

To describe a rare case of dural arteriovenous fistula presenting with intracerebral hemorrhage and its successful treatment.

Materials and Methods

A case report

Results

A 54-year-old man presented with a severe headache, speech difficulty, and right extremity weakness. Brain magnetic resonance imaging (MRI) and magnetic resonance angiography on admission showed a left temporal lobe hemorrhage and prominent left middle meningeal artery. Digital subtraction angiography (DSA) revealed an arteriovenous fistula located in the tentorial region around the temporal lobe and draining into cortical veins in a retrograde manner. Most of these dAVF presenting with intracerebral hemorrhage is located in the tentorial region. Successful treatment was achieved by percutaneous transarterial embolization with the combination of glue-like substances and embolic particles.

Conclusion

The dural arteriovenous fistula is one of the rare cause of intracerebral hemorrhage and often misdiagnosed. Early diagnosis and successful treatment of dAVF remains challenging. Tentorial dAVF with retrograde venous drainage is a malignant type of dAVF since it can not obliterate spontaneously and the high risk of intracerebral hemorrhage. Transarterial embolization with the combination of glue-like substances and embolic particles should be considered for tentorial dAVF treatment.

DF004P

Intracranial Venous Hypertension Induced By Superior Vena Cava Syndrome Mimicking Dural Arteriovenous Fistula

JEONGWOOK LIM¹

¹NEUROSURGERY/ CHUNGNAM NATIONAL UNIVERSITY HOSPITAL/ Korea

Purpose

The intracranial venous hypertension causes from various disease entity. Especially venous sinus thrombosis or intracranial dural arteriovenous fistulas are well known induced intracranial venous hypertension in the cavernous sinus and superior ophthalmic vein, sequently lead to ophthalmic symptoms like exophthalmos, oculomotor nerve palsy and headache etc.

Our case shows the intracranial venous hypertension without intracranial vascular lesion causes from extracranial arteriovenous fistula and mimicked dural arteriovenous fistula.

Materials and Methods

A 35-year-old female admitted with a headache, right side the oculomotor nerve palsy and right side ocular pain. Her past medical history had kept insulin dependent diabetic mellitus, chronic renal failure, hypertension about 20 years ago. And she had undergone several extracranial arteriovenous fistula for hemodialysis. Recently, she underwent arteriovenous fistula using artificial vessel at between right side brachial artery and external jugular vein 3 months ago. Magnetic resonance image showed strongly intracranial dural arteriovenous fistula. Digital subtraction cerebral angiogram showed no abnormal intracranial vascular lesion but occlusion of right side proximal jugular vein, severe stenosis of inominate vein, reflux from extracranial arteriovenous shunt to external jugular vein to internal jugular vein to inferior petrousal sinus to cavernous sinus to superior ophthalmic vein.

Results

We performed the balloon angioplasty at severe stenosis of brachiocephalic vein. Post-balloon angioplasty angiogram showed no more intracranial venous reflux.

Conclusion

Extracranial arteriovenous fistula can induce intracranial venous hypertension in the poor venous circulation case.

DF005P

Proximal Coil-Protected Embolization For Cranial And Spinal Shunt Diseases With N-Butyl Cyanoacrylate Or Onyx

JIN WOO KIM¹; BYUNG MOON KIM²; DONG JOON KIM²; KEUN YOUNG PARK²

¹RADIOLOGY/ INJE UNIVERSITY ILSAN PAIK HOSPITAL/ Korea, ²RADIOLOGY/ SEVERANCE HOSPITAL, YONSEI UNIVERSITY COLLEGE OF MEDICINE/ Korea

Purpose

To evaluate outcomes of proximal coil-protected technique for N-butyl cyanoacrylate (NBCA) or Onyx embolization of cranial and spinal shunt diseases.

Materials and Methods

All patients who underwent proximal coil-protected liquid embolization for cranial and spinal shunt diseases were identified from a prospectively maintained neurointerventional database. This technique was employed because tortuous feeding arteries prohibited microcatheter navigation close enough to a target lesion or for prevention of unintentional reflux. Angiographic and clinical outcomes were retrospectively evaluated.

Results

Fifteen patients with cranial (n=9) and spinal (n=6) arteriovenous fistulas (n=10) or malformations (n=5) underwent proximal coil-protected embolization. A total of 22 feeders were embolized with NBCA (n=17) or Onyx (n=5). Penetration of embolic agents into the target lesion was successful in all 22 feeders without any unintentional reflux or premature occlusion of the major draining veins. Post-embolization angiographies revealed complete occlusion in 10, near complete in 3, and partial in 2 patients. There was no treatment-related morbi-mortality. Four patients received additional treatments (1 Onyx embolization, 2 r-knife, and 1 microsurgery). All patients showed complete occlusion on a follow-up angiography (mean, 6 months). Symptoms improved completely in 10 and partially in 4, and remained unchanged in 1 patient.

Conclusion

Proximal coil-protected technique seemed safe and effective for NBCA or Onyx embolization of cranial and spinal shunt diseases when it was difficult to navigate feeding arteries close enough to the target lesion.

Embolization Of Spinal Cord Arteriovenous Shunt (SCAVSs) With Histoacryl

KHAIRUL AZMI ABD KADIR¹; FADLI MOHAMED SANI¹; MOHD SALAHUDDIN KAMARUDDIN¹; SIA SHEAU FUNG²
¹BIOMEDICAL IMAGING/ UNIVERSITY MALAYA MEDICAL CENTRE/ Malaysia ²NEUROSURGERY/ UNIVERSITY MALAYA
MEDICAL CENTRE/ Malaysia

Purpose

Spinal cord arteriovenous shunts (SCAVSs) are rare lesions that represent about only one-tenth of brain arteriovenous shunts. The purpose of this case series is to report our experience treating SCAVSs with Histoacryl.

Materials and Methods

9 consecutive patients with SCAVS were treated between **2009** and **2017**. They presented with spinal venous hypertensive symptoms of varying severity and chronicity. 7 patients diagnosed with Spinal Dural Arteriovenous Fistula (SDAVF) and 2 patients with intradural arteriovenous shunt.

Procedures performed under general anesthesia consist of an arterial approach with selective navigation of microcatheter into the fistula site. Diluted Histoacryl was injected to occlude the fistula and base of draining veins

Results

8 patients were successfully treated with this technique and 1 patient had spontaneous thrombosis of the fistula on the day of treatment.

Clinical and MRI follow up with mri shows no recurrence and improvement of the clinical symptoms in 8 patients. A single patient did not show any improvement of symptoms despite reversal of spinal cord venous hypertensive changes and disappearance of the fistula.

Conclusion

Based on our experience SCAVSs shunt can be treated successfully with Histoacryl, however penetration of the base of draining vein is crucial to prevent recurrence as in other dural fistulas.

DF010P

Experience Of Covered Coronary Stent Grafts As Treatment Option For Carotid Cavernous Fistulas With Follow-Up Results

SEUNG YOUNG CHUNG¹; SE HUN CHANG¹; MOON SUN PARK¹
¹DEPARTMENT OF NEUROSURGERY/ EULJI UNIVERSITY HOSPITAL/ Korea

Purpose

Endovascular detachable balloon occlusion and coil occlusion have been well-established options for the treatment of carotid cavernous fistulas. In recent years, sporadic treatment of CCFs endovascular covered stent grafting is proving an excellent result not only in successful treatment of fistula but also preserving patency of parent artery. We present our experience of CCFs, treated by covered stents, and provide their clinical and angiographic follow-up results.

Materials and Methods

Four consecutive patients with CCFs underwent the Jostent coronary stent graft (Abbott Vascular, Redwood City, CA) placement alone at our department during 2 years. Two were direct CCFs with a symptom triad and 2 were indirect CCFs with diplopia. These patients had periodic clinical follow-up (at 6-29 months) with all receiving angiographic follow-up (at 5-15 months).

Results

Covered stent placement was technically successful in all patients. Immediate post-procedural complete exclusion of the fistula was achieved in 3 and near complete exclusion with small endoleak was observed in 1 after stent placement. ICA patency was preserved in all. Symptoms related to CCFs regressed within 1-14 days in all patients after treatment without thromboembolic events. There was no mortality and no immediate post-procedural morbidity related to the procedure. Final follow-up angiography showed complete exclusion of all CCFs and revealed good stent patency of the ICA without intra-stent stenosis.

Conclusion

Graft-stents should be considered as an alternative option of treating CCFs and preserving the parent artery by arterial wall reconstruction especially in patients with a fistula that cannot be successfully occluded with detachable balloons or coils.

DF011P

Radiation Dose Monitoring For Patients Undergoing Cerebral Angiography And Interventional Neuroradiology - Measurement Of Dose Distribution, Association With Air Kerma And Various Disorders

SHUNJI MATSUBARA¹; GO HITOMI¹; TAKASHI MORITAKE²; HIROKI MATSUMOTO¹; TOSHIATSU UCHIDA¹; MASAOKI UNO¹

¹NEUROSURGERY/ KAWASAKI MEDICAL SCHOOL / Japan, ¹RADIOLOGICAL TECHNOLOGY/ KAWASAKI MEDICAL SCHOOL HOSPITAL/ Japan ²RADIOLOGICAL HEALTH SCIENCE, INSTITUTE OF INDUSTRIAL ECOLOGICAL SCIENCES/ UNIVERSITY OF OCCUPATIONAL AND ENVIRONMENTAL HEALTH/ Japan

Purpose

Since the number of patients undergoing angiography (angio) and interventional neuroradiology(IVR) is currently increasing, a survey of radiation dose monitoring is required. We prospectively measured maximum entrance skin dose (max ESD) of the head and lens dose during angio and IVR using RADIREC, a cap attached with 64 radiophotoluminescence glass dosimeters, and analyzed the association with Air Kerma value(AK).

Materials and Methods

Max ESD of 100 patients (45 angio/55 IVR) utilized by Philips Allura Xper 20/10 were measured. They were highly associated with AK(angio: $y=0.51x$, $r=0.96$, IVR: $y=0.49x$, $r=0.97$). Then, max ESD of 795 angio and 321 IVR patients was retrospectively calculated, based on our formula and recorded AK.

Results

Prospective measurement for the highest dose was located in occipital adjacent to external occipital protuberance; in angio patients, max ESD indicated a mean of 391 ± 253 mGy, lens dose indicated a mean of 44 ± 35 mGy. Retrospective estimated max ESD study showed a mean of 559 ± 256 mGy in angio patients and 1386 ± 975 mGy in IVR patients. Moreover, a median of estimated max ESD in each IVR procedure were as follows: AVM 1957mGy (545 - 6456), dural AVF 1576mGy (881 - 3315), intracranial tumor 1470mGy (653-2009), thrombectomy 1196mGy (348-2449) and aneurysm 1107mGy (334-2300), respectively.

Conclusion

The highest dose distribution was located in occipital region. AK value is useful as real-time intraoperative monitoring, though distinct from true max ESD value. In particular, optimization of radiation exposure for AVM or dural AVF patients should be considered.

DF012P

Malignant Intracranial Dural Arteriovenous Fistula (DAVF) Mimicking Acute Ischemic Stroke Presentation

SUTEE CHAOVORAWINYOO¹

¹NEUROINTERVENTIONAL RADIOLOGY/ RAMATHIBODI HOSPITAL/ Thailand

Purpose

Intracranial dural arteriovenous fistula (DAVF) are acquired abnormal shunts within the dura. Arterial supply is usually from adjacent branches of the dural arteries. They present variably with hemorrhage or venous hypertension, and can be challenging to treat.

Results

A right-handed 68-year-old female with underlying disease of atrial fibrillation and hypertension and right posterior inferior cerebellar artery infarction. She presented with rapidly progressive confusion and quadriparesis in 2 hours. Initial CT-Brain non-contrast show no abnormality detected and she was treated as multiple embolic stroke. But her consciousness and motor power were worsening in time. 14 hours was passed, she was intubated and had decorticate posture. Contrast CT was performed for rule out diagnosis of meningoencephalitis. Right basal ganglia hemorrhage and cortical venous reflux was detected, so malignant intracranial dural arteriovenous fistula was diagnosis. Emergency cerebral angiogram was done and showed left transverse-sigmoid sinus DAVF with cortical venous reflux (CVR). Transvenous coiling and glue embolization of left transverse-sigmoid sinus was done. After that, DAVF was slow antegrade flow to distal superior saggital sinus and no CVR detected. Her clinical is better in time. She can talk and do daily activity as please in 2 months but still left hemiplegia.

Conclusion

Malignant intracranial dural arteriovenous fistula (DAVF) can present with aggressive symptoms that mimicking stroke case. Delay diagnosis make worse result of treatments. Non-classical stroke case must evaluate by using CT-Brain with contrast or MRI.

ST002P

Intracranial Anterior Circulation Major Branch Artery Stenosis Choice Of Treatment: A Case Series

ARYATAMA ARYATAMA¹; HADIO ALI KHAZATSIN¹; MINH DUC HA¹; KHANH TRAN¹; DUY LINH NGUYEN; MONG HAI YEN TRANG; DUC THANH NGUYEN; CHI CUONG TRAN¹

¹INTERVENTIONAL NEURORADIOLOGY/ UNIVERSITY OF MEDICINE AND PHARMACY HO CHI MINH CITY, VIETNAM/
Vietnam

Purpose

To study the choice of treatments for intracranial anterior circulation major branch stenosis.

Materials and Methods

All patients that brain Digital subtraction angiography (DSA) showed intracranial anterior circulation major branch stenosis from February until October 2017 in University of Medicine and Pharmacy Ho Chi Minh City and Thong Nhat Public Hospitals.

Results

By October 31st 2017, there were 14 patients with at least one DSA confirmed anterior circulation major branch artery stenosis. Seven (50%) patients had single lesions, and 7 (50%) had tandem (multiple) lesions. Eight cases (57.14%) involved M1, 3 (21.43%) involved M2, and 3 (21.43%) involved A1. One case (7.14%) also involved larger anterior circulation lesion, and 4 (28.57%) also had posterior circulation lesions. Nine cases (64.29%) had only >70%, 2 (14.29%) had only <70%, and 3 (21.43%) had both <70% and >70% stenosis. Ten patients (71.43%) had histories of Transient Ischemic Attack (TIA), 3 (21.43%) had histories of previous stroke, and 1 (7.14%) had an acute ischemic stroke. Four cases (28.57%) were treated by medication only; 3 (21.43%) by combination of medication and balloon dilatation; 5 (35.71%) by combination of medication, balloon dilatation, and stenting; 1 (7.14%) by ADAPT thrombus aspiration; and 1 (7.14%) had intervention only for its posterior circulation lesion (balloon dilatation). Among the cases given medication only, 2 showed good collaterals.

Conclusion

The choice of treatment for intracranial stenoses in anterior circulation major branch is mainly based on the site of the lesion, the percentage of stenosis, the presence of collaterals, and the clinical history.

Endarterectomy And Stent Extraction For The Treatment Of Vertebral Artery Ostium Occlusion With Stent Fracture

BIN YANG¹; YAN MA¹; LIQUN JIAO¹

¹NEUROSURGERY/ XUANWU HOSPITAL, CAPITAL MEDICAL UNIVERSITY/ China

Intro

As one of the most common area of stenosis, vertebral artery ostium (VAO) is most frequently involved by atherosclerosis. The relative risk of stroke or death in patients with vertebral artery ostium stenosis (VAOS) is 6 times greater than that in VAOS-free patients, and the 5-year survival rate for VAOS patients is 22% lower than that for VAOS-free patients. Because of the high technical success rate and low perioperative complication rate, endovascular treatment has been widely used in the treatment of symptomatic VAOS patients who failed with optimal drug treatment. But the overall in-stent restenosis (ISR) rate is disappointed. In addition to neointimal hyperplasia, stent fracture may play an important role in ISR and subsequent occlusion. Because the fractured stent increases the difficulty of intervention,³ microsurgical revascularization may become an alternative choice in the case of failed interventional recanalization. We report one case of symptomatic VAO occlusion with stent fracture which were treated with vertebral artery endarterectomy (VAE) and stent extraction.

Report

A 69-year-old male patient presented to our facility with a history of cerebral infarction, hypertension, diabetes mellitus, coronary artery disease, atrial fibrillation, and smoking for intermittent vertigo. The symptom couldn't relieve in despite of optimal medical therapy. Digital subtraction angiography (DSA) showed right VAO severe stenosis and left VAO occlusion. A drug-eluting stent (DES) (Xience Xpension, Abbott, USA) was deposited in June 2015. Because the stent was insufficiently expanded under nominal pressure (10atm), a greater pressure (14atm) was set for satisfactory expansion. No residual stenosis occurred and the morphology of stent was normal. Aspirin (100mg/d) and clopidogrel (75mg/d) were recommended and the symptom relieved completely until vertigo recurred 10 months after the procedure. DSA revealed right VAO occlusion and stent fracture. Retrograde blood flow was able to reach the distal part of the V1 segment. Interventional recanalization was tried firstly but failed. Then we performed VAE and stent removal in June 2016. The patient was in the supine position and the head extended and rotated 10-15 degrees toward the contralateral side. The skin incision followed the lower part of the medial edge of the sternocleidomastoid muscle and extended by curving it along the clavicle. Collateral branches from the thyrocervical trunk were protected carefully to avoid posterior circulation ischemic events. After V1 exposure and full heparinization, proximal subclavian artery (SCA) was achieved by an 8F balloon guide catheter (Merci, Stryker, USA). Then temporary occlusion was achieved by proximal balloon expansion and distal clipping. Longitudinal incision was performed at the junction of VA and SCA. Once the reflux blood flow was present and no residual plaque was identified, continuous suture was applied. The fractured stent was extracted completely and vertebral artery was recanalized without residual stenosis. No periprocedure complications occurred and the patient was discharged in an improved condition. A 12-month ultrasound follow-up didn't reveal restenosis, and the patient complained no recurrent ischemic events with aspirin.

Conclusion

VAE combined with stent extraction is an alternative technique for some selected patients who had VAO occlusion with stent fracture. The collaterals must be carefully evaluated to minimize the risk of surgery. More cases and long-term follow-up are needed to confirm its safety and efficacy.

ST004P

Intracranial Angioplasty And Stenting For Cerebral Artherosclerosis: Results Of 106 Cases

DAEHYUN HWANG¹; KIJAE LEE¹; JAECHAN SHIM; HOKYUN KIM; JEONGHO SUH

¹RADIOLOGY/ SEOUL PAIK HOSPITAL/ Korea

Purpose

Stroke is most common cause of life threatening neurological disease and also it is leading cause of adult disability and third leading cause of death. Intracranial atherosclerosis is 8 to 10% of all ischemic strokes and reported poor outcome and high rate of morbidity and mortality.

Materials and Methods

We evaluated 109 cases (age mean 60, range 34-80 years, M:F =54:55) who underwent intracranial stenting between March 2004 and December 2008. The location of lesion was anterior circulation (n=73), MCA(n=37), ICA (n=36), posterior circulation (n=36) and mean stenosis was 72.8%

Results

The stent procedural success rate was 91.8%. 9 cases are unable to reach stent the target and performed Balloon angioplasty. There were overall three complications (2.7%) within period of follow up (six months) ; these included one acute strokes (0.9%), and one deaths(0.9%), one restenosis(0.9%). The kind of stent was Endeavor (n=39), Vision(n=15), Cyper(n=14), Flexmaster (n=10), Neuroform (n=7), , Arthos pico (n=7), Tsunami (n=5), Guidant (n=3), Abbott (n=1).

Conclusion

In selected patients, endovascular revascularization of intracranial arteries with stent assisted angioplasty is technically feasible, effective and safe. Randomized multicenter trial comparing angioplasty and stenting with medical management alone must be performed.

Drug eluting stents are long term survival than Bare metal stents, Especially cavernous lesion of ICA is good indication of drug eluting stent.

Clopidogrel Resistance Related Delayed Thrombosis Of Carotid Artery Stenting: A Case Report

KUEI-HONG KUO^{1,2}

¹*DIVISION OF MEDICAL IMAGE/ FAR EASTERN MEMORIAL HOSPITAL/ Taiwan, ²SCHOOL OF MEDICINE/ NATIONAL YANG MING UNIVERSITY/ Taiwan*

Purpose

Carotid artery stenting (CAS) with dual antiplatelet therapy is a well-established revascularization method. In-stent thrombosis of CAS is a rare but potentially catastrophic complication. We present a case with clopidogrel-resistance related delayed thrombosis following CAS.

Materials and Methods

A 60-year-old female patient was sent to the emergency department due to sudden onset of left limbs weakness. Magnetic resonance imaging showed acute right cerebral infarction and carotid plaque image revealed high grade right carotid bulb stenosis with a big ulcerative hemorrhagic plaque. Carotid stenting was done with dual antiplatelet therapy was first given for 7 days and adequate blood heparinization was achieved in procedure. The closed-cell stent was successfully deployed without complications; two days later, the patient was discharged on dual antiplatelet medications. However, another acute infarction occurred on the next day of discharge with presentations of slurred speech and left limb weakness. Computed tomography (CT) with multiphase CT angiography showed new hyperacute right cerebral infarction and carotid in-stent thrombosis. Intra-arterial thrombectomy was performed with subsequent reperfusion.

Results

Antiplatelet function test for aspirin and clopidogrel were checked and found 0% platelet inhibition to the P2Y12 receptor. Clopidogrel-resistance related delayed in-stent thrombosis was diagnosed.

Conclusion

Despite that a routine test of antiplatelet function being controversial, the present case showed that test of antiplatelet resistance may reduce rare but catastrophic complications. It may be indicated to check antiplatelet function before CAS for patients with certain risk factors (e.g. severe stenosis, big hemorrhagic plaque, old age, repetitive thrombotic events).

ST008P

Intracranial Hemorrhage Is More Likely To Occur In Intracranial Metastatic Foci Comparing To Acute Infarct Region Following Intravenous rt-PA And Intra-Arterial Thrombectomy In A Patient With Acute Infarct And Intracranial Metastases

MICHAEL MU HUO TENG¹; HO-CHUAN HSU¹; SHANGYI YAN²; WEI-TEING CHEN³

¹DEPARTMENT OF MEDICAL IMAGING/ CHENG HSIN GENERAL HOSPITAL/ Taiwan, ²NEUROLOGY/ CHENG HSIN GENERAL HOSPITAL/ Taiwan, ³CHEST MEDICINE/ CHENG HSIN GENERAL HOSPITAL/ Taiwan

Intro

We will present a patient with acute stroke caused by a large artery occlusion and found to have an unknown lung lesion at the same time. Intracranial hemorrhage (ICH) occurred after the patient received intravenous rt-PA treatment (IVT) and intra-arterial thrombectomy (IAT).

Report

A 58-year-old female presented with sudden onset of left extremities weakness. NIHSS was 18. No area of low density infarct or high density ICH was found in the pre-contrast cerebral CT. CT angiogram performed after IVT demonstrated right M1 occlusion. Post-contrast CT of the brain was not performed. An opaque lung lesion was noted in the chest X-ray with unknown nature. IAT was performed.

Re-opening of arterial occlusion with mTICI 3 was achieved after IAT. CT and MRI after IAT showed ICH in metastatic foci but not in the acute infarct region. CT of lung later suspected lung cancer T3N2M1 (stage IV). Sono-guided core needle biopsy for hepatic tumor showed metastatic adenocarcinoma. EGFR mutation was detected (Exon 19: in frame deletion). Lung tumor was treated with Iressa. MRI after 3 months of treatment showed resolution of intracranial metastases. NIHSS reduced gradually from 18 (before thrombectomy) to 8 (day 1), 4 (day 2), and 0 (3 months).

Conclusion

The acute infarct region is less likely to have hemorrhage comparing to intracranial metastatic foci following IVT and IAT in this patient. More observations are needed to see if this is a general rule or not.

ST009P

Intravenous Eptifibatide As The Adjuvant Treatment In Immediately Re-Occlusion After Mechanical Thrombectomy – Single Center Experience And Review Of The Literature

MUNGKORN APIRAKKAN¹; CHAI KOBKITSUKSAKUL¹; EKACHAT CHANTHANAPHAK¹; SIRINTARA PONGPECH¹
¹RADIOLOGY, RAMATHIBODI HOSPITAL/ DIVISION OF INTERVENTIONAL NEURORADIOLOGY/ Thailand

Purpose

Combined intravenous antiplatelet with rt-PA in acute ischemic stroke is safe. However, given intravenous antiplatelet during mechanical thrombectomy still be inconclusive. In the setting of ruptured intracranial atheromatous plaque, immediately re-occlusion after mechanical thrombectomy may have occurred. Intravenous glycoprotein IIb/IIIa may improve the re-occlusion rate and outcome of patient. Our objective is to report our institutional experience in given intravenous eptifibatide followed by multiple attempts of mechanical thrombectomy.

Results

We retrospectively reviewed three cases of acute middle cerebral artery occlusion with immediately re-occlusion after multiple attempts of mechanical thrombectomy. A bolus dose of eptifibatide (180 microgram/kg) with continuous dripping (2 microgram/kg) was given intravenously during the operation. The immediate angiographic results were evaluated. Our procedures were technically successful in all three patients. Immediately angiographic re-opening of the vessels were obtained and still persist within 30-minutes after eptifibatide was given. Angiographic patency rates were 100%. The patients were clinically improve at follow-up period without new neurological abnormality. The NIHSS score and modified Rankin scale were evaluated at 1st week, then 1st and 3rd months after the operation.

Conclusion

Added intravenous anti-platelet during mechanical thrombectomy may prevent immediately re-occlusion of the intracranial artery in the setting of ruptured atheromatous plaque. Also the acute phase of vessels patency is acceptable. In our experience, bolus and continuous dripping of intravenous eptifibatide may reduce re-occlusion rate, improve post-procedural outcome and safe, which support the previously published documents.

ST010P

Mechanical Thrombectomy In Patients With Acute Vertebrobasilar Occlusion: 5 Year-Experiences In Siriraj Hospital

PAYOTHORN DECHARIN¹; BOONRERK SANGPETNGAM¹; EKAWUT CHANKAEW¹; THAWEEESAK AURBOONYAWAT¹; DITTAPONG SONGSAENG¹; CESAR DE GUZMAN JR; TIPLADA BOONCHAI; ANCHALEE CHUROJANA
¹ FACULTY OF MEDICINE, SIRIRAJ HOSPITAL, MAHIDOL UNIVERSITY/ INTERVENTIONAL RADIOLOGY EXCELLENT CENTER/ Thailand

Purpose

To evaluate the treatment outcome of mechanical thrombectomy in patients with vertebrobasilar artery occlusion (VBAO).

Materials and Methods

Between January 2013 and June 2017, 23 patients with VBAO underwent mechanical thrombectomy. The criteria were large to medium artery occlusion on CTA or MRA and absence of clinical or imaging of brainstem infarction. Data were analyzed, including demographics, NIHSS, procedure time, angiographic grading, complications, modified Rankin Scale (mRS), and mortality at 3 months. Good clinical outcome was defined as mRS \leq 2 at 3 months.

Results

The mean age of patients was 65.3 years. The median NIHSS was 19. The median procedure time was 55.3 minutes. Satisfactory recanalization (TICI 2b or 3) was achieved in 73.9%. There were 5 cases of periprocedural complications which were distal emboli, stuck catheter and dissection of vertebral artery. Only 1 case was found to have symptomatic ICH. The 3-month mortality rate was 34.7%. Good clinical outcome was obtained in 30.4% and not associated with age, sex, onset to recanalization time, procedure time, intravenous thrombolysis, and baseline NIHSS. However complete recanalization (TICI=3) (P=0.069) and no demonstrable brainstem infarction on MRI or using MRI as the tool for patient selection (P=0.142) had non significant trend toward positive factors for good outcome.

Conclusion

Mechanical thrombectomy was a feasible and efficient treatment for patients with acute VBAO. Complete recanalization in patient who had no brainstem infarction seem to be possible factors that are associated with good clinical outcome. Using MRI as a tool for assessment of brainstem for proper patient selection is recommended.

ST011P

Angiographic And Clinical Factors Related With Good Functional Outcome After Mechanical Thrombectomy In Acute Cerebral Artery Occlusion

SANG KYU PARK¹

¹NEUROSURGERY/ INCHEON ST. MARY'S HOSPITAL/ Korea

Purpose

Acute occlusion of a major cerebral artery is associated with high mortality and morbidity. The aim of this study is to investigate good prognostic factors for an acute occlusion of a major cerebral artery using mechanical thrombectomy.

Materials and Methods

Between January 2016 to December 2017, 37 consecutive patients with acute occlusion of a major cerebral artery treated by mechanical thrombectomy with stent retrievers were conducted. We analyzed clinical and angiographic factors retrospectively. Collaterals were assessed by the TIMI, and recanalization was assessed by the TIC1 score. Outcome was assessed by NIHSS and mRS at 90 days.

Results

Most patients (27/37) demonstrated good recanalization (TIC1 2b or 3) after thrombectomy. At the 90-day follow up, 19 patients had good (mRS, 0-2), 14 had moderate (3-4) and four had poor outcomes (5-6). The mRS of older patients (≥ 75 years) were poor than younger patients. Early recanalization, high TIMI, and low baseline NIHSS were closely related to 90-day mRS, whereas high TIC1 was related to both mRS and the decrease in the NIHSS.

Conclusion

NIHSS decreased markedly when recanalization was successful. A good mRS was related to low initial NIHSS and good collateral and early and successful recanalization. However, the outcome of older patient was poor than younger patient.

ST012P

The Value Of Perfusion CT As A Prognostic Factor After Mechanical Thrombectomy In Anterior Circulation Large Vessel Occlusion Patients

SANG KYU PARK¹; BYEONG HOO MOON, BYEONG RAE CHO, DONG KYU JANG, KYEONG SOOL JANG
¹NEUROSURGERY/ INCHEON ST. MARY'S HOSPITAL/ Korea

Purpose

Mechanical thrombectomy is recommended as first line treatment for large vessel occlusion(LVO) patients. We conducted a study to determine whether recanalization was faster and whether perfusion CT could be used as a predictor of prognosis.

Materials and Methods

The cerebrovascular accident(CVA) protocol was activated when LVO was suspected, and non-enhance CT, perfusion CT, and CT angiography were performed. In these patients, 10 areas such as ASPECT score were designated and scores were given to the lowered areas of CBF, MTT, and CBV compared with the contralateral side, and scoring was performed at 10 points. We checked NIHSS at admission, mRS at discharge, and mRS at 90 days after discharge.

Results

In total, 94 patients met the inclusion criteria of this study. Of the total patients, 71 patients (75.53%) had a CBV score of 4points or less and 23 patients (24.47%) had a score of 5points or more. In patients with CBV 4 points or less, good outcome(mRS 0 ~ 2) was 34 patients (47.88%). In patients with CBV 5 points or more, good outcome(mRS 0 ~ 2) was 6 patients(26.08%). The mortality rate was 7.04%(5patients) in patient with CBV 4points or less, but there were 30.43%(7patients) in patients with CBV 5points or more.

Conclusion

But there is showed higher mortality rate in patients with CBV score of 5 points or more. Perfusion CT can be helpful in predicting the prognosis of the patient. Mechanical thrombectomy showed better prognosis in LVO patients with CBV score of 4 points or less.

ST013P

Clinical Analysis Comparing Efficacy Between A Distal Filter Protection Device And Proximal Balloon Occlusion Device During Carotid Artery Stenting

SEUNG YOUNG CHUNG¹; SE HUN CHANG¹; MOON SUN PARK¹
¹DEPARTMENT OF NEUROSURGERY/ EULJI UNIVERSITY HOSPITAL/ Korea

Purpose

The main concern during transfemoral carotid artery stenting (CAS) is preventing cerebral embolus dislodgement. We compared clinical outcomes and intraprocedural embolization rates of CAS using a distal filter protection device or proximal balloon occlusion device.

Materials and Methods

From January 2011 to March 2015, a series of 58 patients with symptomatic or asymptomatic internal carotid artery stenosis $\geq 70\%$ were treated with CAS with embolic protection device in single center. All patients underwent post-CAS DWI to detect new ischemic lesions. We compared clinical outcomes and postprocedural embolization rates.

Results

CAS was performed in all 61 patients. Distal filter protection success rate was 96.6% (28/29), whose mean age was 70.9 years, and mean stenosis was 81%. Their preprocedural infarction rate was 39% (11/28). Subsequent DW-MRI revealed 96 new ischemic lesions in 71% (20/28) patients. In contrast, the proximal balloon occlusion device success rate was 93.8% (30/32), whose mean age was 68.8 years and mean stenosis was 86%. Preprocedure infarction rate was 47% (14/30). DW-MRI revealed 45 new ischemic lesions in 57% (17/30) patients. Compared with distal filter protection device, proximal balloon occlusion device resulted in fewer ischemic lesions per patient ($p=0.028$). In each group, type of stent during CAS had no significant effect on number of periprocedural embolisms. Only 2 neurologic events occurred in the successfully treated patients.

Conclusion

Transfemoral CAS with proximal balloon occlusion device achieves good results. Compared with distal filter protection, proximal balloon occlusion might be more effective in reducing cerebral embolism during CAS.

ST015P

Correlation Of Risk Factors And Alberta Stroke Program Early CT Score (ASPECTS) In Patients With Middle Cerebral Artery Ischaemic Stroke In Hospital Universiti Sains Malaysia (HUSM)

YIN EIE TEO^{1,2}; WIN MAR @ SALMAH JALALUDDIN¹

¹DEPARTMENT OF RADIOLOGY/ HOSPITAL UNIVERSITI SAINS MALAYSIA/ Malaysia, ²DEPARTMENT OF RADIOLOGY/ HOSPITAL KENINGAU/ Malaysia

Purpose

To correlate the Glasgow Coma Scale (GCS) and risk factors with ASPECTS among patients with middle cerebral artery territory ischaemic stroke in HUSM.

Materials and Methods

A total of 148 samples were recruited. Patients with clinically proven stroke and underwent non-contrast enhanced CT brain were included. Fasting blood sugar (FBS) level and fasting lipid profile (including total cholesterol, triglyceride, Low Density Lipoprotein (LDL) and High Density Lipoprotein (HDL) levels) were obtained. CT brains were reviewed to obtain ASPECTS of each individual. Correlation and regression were applied to assess the association and prediction between GCS and various risk factors with ASPECTS.

Results

Malay ethnic was the majority in this study (n=140) with 48 males and 100 females. There was good positive correlation between GCS and ASPECTS ($r=0.615$, $p<0.001$). On univariate analysis, only GCS was statistically significant (OR 0.076; 95%CI 0.011 to 0.515, $r^2 = -2.58$, $p<0.05$). One unit increment in GCS has 92.4% lesser odds to have worse ASPECTS when other confounders were not adjusted. However, multivariate analysis showed none of the risk factors was statistically significant.

Conclusion

GCS can predict ASPECTS when other confounders were not added. Age, gender, FBS, total cholesterol, triglyceride, LDL and HDL levels have no correlation with the severity of stroke and are unable to predict ASPECTS.

MY001

The Correlation Of Arteriovenous Fistula Stenosis With Hemodialysis Parameters Before And After Angioplasty

ANI DARWINA ABD HALIM¹; AZREEN SYAZRIL²; JUHARA HARON¹

¹RADIOLOGY/ HOSPITAL UNIVERSITI SAINS MALAYSIA/ Malaysia, ²NEPHROLOGY/ HOSPITAL UNIVERSITI SAINS MALAYSIA/ Malaysia

Purpose

Angioplasty helps in maintaining AVF patency. However, the stenosis opening and improvement of hemodialysis function was still questionable. In this study, we aim to look for correlation between percentage of residual stenosis with hemodialysis success.

Materials and Methods

A total of 47 patients underwent angioplasty in AMIEN Unit, HUSM from June 2014 till October 2015; 14 were excluded and 19 lost to follow up leaving 14 subjects. Images were reviewed from PACS system with one radiologist. Three measurements taken (fig 4.9); (i) diameter of stenotic vessel pre angioplasty (the most stenosed segment taken), (ii) diameter of normal adjacent venous limb and (iii) diameter of stenotic vessel post angioplasty (same site as in (i)). At least three different measurements were taken at different time for each measured diameter and the calculated mean was taken as final measurement. Following that, percentage of stenosis for both pre and post angioplasty were calculated.

The last haemodialysis through AVF prior to angioplasty was taken as pre angioplasty parameters and the first haemodialysis after angioplasty through the intervened AVF was taken as post angioplasty parameters.

Results

All 14 subjects had significant stenosis in pre angioplasty. Technical success achieved in 57.1% subjects, post angioplasty. There is weak correlation between percentage of stenosis with blood pump flow rate. No correlation between percentage of stenosis with venous dialysis pressure.

Conclusion

There is weak correlation between degree of stenosis with blood pump flow rate (Qb) but not observed in venous dialysis pressure (Vp).

MY002

Extended Endovenous Laser Of The Long Saphenous Vein: A Safe Procedure That Reduces The Need For Additional Sclerotherapy

ERIC CHUNG¹; BASRI JOHAN JEET ABDULLAH¹; CHAI HONG YEONG¹

¹*BIO-MEDICAL IMAGING/ UNIVERSITY MALAYA/ Malaysia*

Purpose

The objective of this study is to examine the viability and safety outcome of extended saphenous laser ablation for varicose veins in our centre.

Materials and Methods

24 patients with a total of 41 limbs that has elected for endovenous laser therapy(EVLT) were recruited over a period of 3 years. Pre-procedural diagnosis of saphenojunction (SFJ) incompetence was established doppler examination. EVLT was performed with distal great saphenous vein above the ankle as key difference compared to conventional technique below the knee. Ablation is then executed following standard protocol. After the procedure the patient is then put on compression stocking and allowed ambulation. Patient is then discharged with pain killers and prophylaxis antibiotics. Survey follow up conducted for pain, swelling, numbness and recurrence at 1, 3, and 6 months. Any complications were also documented.

Results

Technical success was 100%. Immediate post procedural symptoms includes pain(95%), numbness(75%) and swelling(53%) which quickly tapered down to pain(46%), numbness(58%) and swelling(12%) at 1 month with only single patient with residual swelling (2 in 41 limbs) after 3 months. All patient that underwent EVLT show no evidence of recurrent varicosity after 6 months.

Conclusion

Extended EVLT of the saphenous vein proved to be a safe procedure with the benefit of perforator branch ablation reducing the need for additional sclerotherapy.

MY004

Selective Hepatic Arterial Embolisation Of Hepatic Arterio-Biliary Fistula Secondary To Lupus Vasculitis

KIA SING TAN¹; BENNY YOUNG²

¹RADIOLOGY/ SARAWAK GENERAL HOSPITAL/ Malaysia, ²RADIOLOGY/ BORNEO MEDICAL CENTRE/ Malaysia

Purpose

To highlight hepatic arterio-biliary fistula as a rare complication of lupus vasculitis that can be diagnosed with CT mesenteric angiography and treated with hepatic arterial embolisation.

Results

A 37 year-old lady with known systemic lupus erythematosus (SLE) presented with acute epigastric pain and melaena. She also had symptoms of anaemia with low haemoglobin requiring transfusion. Emergency OGDS revealed haemobilia. CTA mesentery showed gallbladder haematoma and arterial blush from the left hepatic artery. DSA was subsequently performed. The left hepatic artery run demonstrated immediate contrast drainage into the common bile duct from the segment 4 branch suggesting hepatic arterio-biliary fistula. The artery is irregular in appearance suggesting vasculitic changes. As this patient had no prior recent trauma or transhepatic procedure, the underlying SLE with vasculitis is the most likely cause of this fistula formation. Selective embolisation was then performed using gelfoam and the bleeding into the common duct was successfully controlled. Patient recovered without any serious sequelae. As patient showed clinical improvement and stable haemoglobin level, no follow-up imaging was done.

Conclusion

Transcatheter embolisation is a quick and effective method to treat both traumatic and non-traumatic causes of hepatic arterio-biliary fistula. The source and cause of the haemorrhage can be identified and haemostasis can be achieved in the same setting.

MY005

Selective Salpingography And Fallopian Tube Recanalisation: The UMMC Experience

MAN CHIN HAM¹; ANUSHYA VIJAYANANTHAN¹; OUZREIAH NAWAWI¹; KARTINI RAHMAT¹; CHAI HONG YEONG¹; GNANA KUMAR GNANASUNTHARAM¹; BASRI JOHAN JEET ABDULLAH¹
¹UNIVERSITY MALAYA RESEARCH IMAGING CENTRE/ UNIVERSITY OF MALAYA/ Malaysia

Purpose

To establish selective salpingography (SSG) and fallopian tube recanalisation (FTR) to treat proximal tubal obstruction (PTO) in University Malaya Medical Centre (UMMC) by evaluating the effectiveness, complication, pain intensity and radiation dose.

Materials and Methods

We conducted a prospective study on 9 patients aged 33.6 ± 3.17 years with the diagnosis of PTO by prior hysterosalpingography between October 2014 to December 2016 in UMMC. Fluoroscopic guided FTR performed by intervention radiologist using dedicated FTR set. Demographic data, recanalisation rate, post procedure complication, pregnancy outcomes, pain score, radiation dose and culture and sensitivity results were analysed. Patients were follow up for a period of 4–122 weeks.

Results

A total of 11 procedures including 2 repeated cases (4 unilateral and 7 bilateral) performed. 14/18 tubes were successfully recanalised providing technical success rate per tube was 77.8%; success rate per procedure was 90.9%. Post FTR pregnancy rate was 50%, 2 pregnancies achieved after a repeat procedure. Two live births were reported. Seven patients experienced mild discomfort during procedure. One case of tubal perforation occurred which required no treatment. Seven patients experienced mild discomfort during procedure. The mean fluoroscopic time was 8.6 ± 9.2 minutes. The range of dose area product recorded was 0.11–2.92 mGy². The mean estimated effective dose was 2.63 ± 2.42 mSv. No significant bacterial growth found.

Conclusion

SSG and FTR are relatively safe and effective in treating highly selected patient diagnosed with PTO with high technical success rate and pregnancy rate at a relatively low cost compared to other invasive and costly reproductive treatment.

MY006

Case Report: Common Iliac Vein Stenting For The Treatment Of Chronic Lower Limb Swelling Due To Preferential Drainage Of The Lower Limb Vein Into The Pelvic Arteriovenous Malformation

MOHD NAIM MOHD YAAKOB¹; NIK AZUAN NIK ISMAIL¹

¹RADIOLOGY/ NATIONAL UNIVERSITY OF MALAYSIA/ Malaysia

Purpose

We report a case of right common iliac vein occlusion with pelvic AVM, treated successfully with endovascular stenting. A 75-year-old, gentleman presented with diffuse right lower limb swelling extending to the right lower abdomen for 4 months duration. CT angiogram (CTA) lower limb and diagnostic angiogram showed evidence of short segment occlusion at the proximal right common iliac vein (CIV) with preferential flow to collaterals and drains to the arteriovenous malformation (AVM) in the right hemipelvis extending to the right gluteal region. CIV plasty and stenting was done with resolution of stenosis and further marked clinical improvement of the right leg swelling.

Conclusion

Subsequent follow up revealed good outcome with no evidence of recurrence or post stenting thrombosis. The initial presence of pelvic AVM may have perpetuated the iliac vein occlusion resulting in impaired venous drainage of the lower limb thus worsening of the swelling. The normal pathway was established by balloon plasty and stent was placed to prolonged the patency of the vein due to the presence of high flow drainage of the pelvic AVM, draining the lower limb.

MY007

Prostatic Artery Embolisation For Acute Urinary Retention Secondary To Benign Prostate Hyperplasia

MOHD NAIM MOHD YAAKOB¹; NIK AZUAN NIK ISMAIL¹; NUR YAZMIN YAACOB¹; ROZMAN ZAKARIA¹; LOO WEI KEONG²; GOH ENG HONG²

¹RADIOLOGY/ NATIONAL UNIVERSITY OF MALAYSIA/ Malaysia, ²SURGERY/ NATIONAL UNIVERSITI OF MALAYSIA/ Malaysia

Purpose

To assess the feasibility of prostatic artery embolisation (PAE) as an option of treatment for patient who failed TOWC (trial of without catheter) after acute urinary retention (AUR) caused by benign prostate hyperplasia

Materials and Methods

10 patients recruited from urology clinic and TWOC centre of PPUKM to undergo PAE. Assessment made using the international prostate symptoms severity score (IPSS) and quality of life (QoL) score, the international index of erectile dysfunction (IIEF) score, blood prostatic specific antigen (PSA) and uroflowmetry study of maximum flow rate (Qmax) and post void residual volume (PVR) in bladder. MRI measured prostate volume would be repeated at 3rd month post procedure as comparison.

Results

Median age of patients in the study was 70.5 years (IQR 66-79) with median duration of catheter in-situ of 8 months (IQR 4-18) and median of BPH medication usage of 15 weeks (IQR 1.75-48). Median MRI measured prostate volume of 62.25ml (IQR 34.08-80.59). 90% (9/10 patients) of technical success rate and 78% (7/9 patients) clinical success rate were achieved in the study. No complications related to procedure. 14.3% (1/7 patients) rate of AUR that required reinsertion of catheter was within 1 month. Significant improved of IPSS score and QoL was observed with $p < 0.003$ and $p < 0.03$ respectively. No significant change in patient's IIEF score during the follow up. Qmax and PVR were worsening for the first 3 months and subsequently started to improve.

Conclusion

Prostatic artery embolisation is feasible, safe and efficient, which can be an option of treatment for acute urinary retention caused by BPH.

MY008

Comparison Between Cone-Beam Computed Tomography (CBCT) With Multislice Computed Tomography (MSCT) In Identification Of Common Periprocedural Intracranial Pathologies

NUR YAZMIN YAACOB¹; IZZATUL AINI MOHAMAD IDRIS¹

¹DIAGNOSTIC IMAGING/ PUSAT PERUBATAN UNIVERSITI KEBANGSAAN MALAYSIA/ Malaysia

Purpose

To compare the sensitivity and specificity between cone-beam computed tomography (CBCT) with multi-slice computed tomography (MSCT) in the detection of common periprocedural intracranial pathologies in patients undergoing angiography.

Materials and Methods

A total of 40 patients were included in this study. All patients underwent CBCT and MSCT during angiographic evaluation and neurointerventional procedures. Each intracranial event encompassing haemorrhages, infarcts, hydrocephalus and external ventricular drains were assessed and the volumetric data were compared in both tomographic studies.

Results

Interobserver ratings were used. Preliminary results showed high interobserver correlation in the detection of the calculated volume of different intracranial pathologies (Verified data will be available soon prior to the conference).

Conclusion

CBCT is beneficial in the emergency management of periprocedural angiographic evaluation, as the detection of different intracranial events was found to be as reliable as in MSCT, with few exceptions. Technical limitations of this technology are image artefacts which may conceal paramount radiological findings. Further studies are thus warranted.

MY009

Comparing Central Line-Associated Bloodstream Infection Rate Between Tunneled And Cuffed Peripherally Inserted Central Catheter (PICC)

SZE YONG TEOH¹; ANUSHYA VIJAYANANTHAN¹; OUZREIAH NAWAWI¹; BASRI JOHAN JEET ABDULLAH¹; NUR ADURA YAAKUP¹

¹BIOMEDICAL AND DIAGNOSTIC IMAGING/ UNIVERSITY MALAYA (UMMC)/ Malaysia

Purpose

Peripherally inserted central venous catheter (PICCs) are widely used nowadays, serving as an alternative to conventional central venous catheters (CVCs) for providing intermediate and long term venous access in hospital, especially for long term antibiotics administration, parenteral nutrition and chemotherapy. Complications related to PICCs include phlebitis, thrombosis, premature dislodgement and central line-associated blood stream infection (CLABSI). Our goal was to determine technique of PICC insertion that can help to reduce the rate of CLABSI.

Materials and Methods

Fifty patients with cuffed PICC and 50 patients with non-cuffed tunneled PICC were randomly chosen and prospectively studied during a period of 18 months. The tunneled and cuffed catheters were placed by the same radiologist using a standardized technique. Patients were reviewed daily until a PICC-related complication necessitated removal, completion of therapy, death or defined end-of-study date.

Results

Non-cuffed tunneled PICC were shown to have lower rate of CLABSI with longer catheter dwell time compared to cuffed PICC (CLABSI: tunneled PICC 6% VS cuffed PICC 10%). Local infection rate of non-cuffed tunneled PICC was also proven to be lower compared to its counterparts. The cuffed PICCs, however, were superior at preventing catheter dislodgement.

Conclusion

This study showed that tunneling a PICC is more effective in increasing the catheter dwell time and reducing the rate of catheter removal caused by infection (local and CLABSI) compared to using cuffed PICC. In view of the ease of performing this procedure and the potential cost saving benefits, we would recommend this technique in patients requiring PICC especially those for longer duration use.

MS01

THIS ABSTRACT IS NOT AVAILABLE

Vascular Access Options In A Cancer Patient

ANUSHYA VIJAYANANTHAN¹

¹*UNIVERSITY OF MALAYA/ KUALA LUMPUR/ Malaysia*

Vascular access is an integral part in the treatment and care of cancer patients. There are many vascular access devices available today and each of them have their advantages and disadvantages. The choice of a vascular access device is very subjective to the individual needs of the patient, the length of treatment, lifestyle, chemotherapy drug etc. The list goes on. Suffice it to say that at the end of the day we are spoilt for choice where vascular devices are concerned. However, we as health care professionals, we need to also be aware of the available vascular access devices so that we can give sound advice to our patients. Cause of concern are the complications of vascular access devices.

Thrombosis and infection are the two main causes of removal of a vascular access device and care must be taken to avoid these complications as much as possible.

In recent years, the practice of Medicine has been revolutionized by the practice of Interventional Radiology. Using image guidance, catheters were inserted, biopsies were done and vessels were imaged like never before.

Vascular access devices are increasingly being inserted under image guidance by the interventional Radiologist.

The devices commonly inserted in the Interventional radiology suite are the PICCs and Chemoports, making the interventional radiologist an important player in the care of a cancer patient

GI Palliation Therapy In The Terminally Ill

BASRI JOHAN JEET ABDULLAH¹

¹*VISITING CONSULTANT RADIOLOGIST/ UNIVERSITY OF MALAYA MEDICAL CENTRE, KUALA LUMPUR/ Malaysia*

Interventional oncology is an evolving branch of interventional radiology, which relies on rapidly evolving, highly sophisticated treatment tools and precise imaging guidance to target and destroy malignant tumours. The development of this field has important potential benefits for patients and the health-care system, but as a new discipline, interventional oncology has not yet fully established its place in the wider field of oncology; its application does not have a comprehensive evidence base, or a clinical or quality-assurance framework within which to operate.

A strong collaboration between radiation oncology and interventional oncology, both of which aim to cure or control tumours or to relieve symptoms with as little collateral damage to normal tissue as possible, will have substantial advantages for both disciplines.

The wide range of minimally invasive procedures, which were previously performed in the terminally ill, have been now performed by other specialists .e.g gastrostomies, esophageal and colonic stenting, upper GI bleeding etc. In this rapidly changing and competitive environment, we need to explore newer techniques to stay relevant. Some of these will be discussed.

MS04

THIS ABSTRACT IS NOT AVAILABLE

HCC TACE: MILAN Experience

ANTONIO RAMPOLDI¹

*¹INTERVENTIONAL RADIOLOGY UNIT/ ASST Grande Ospedale Metropolitano Niguarda Ca' Granda -piazza Ospedale
Maggiore 3-20162 Milano/ Italy*

Hepatocellular carcinoma (HCC) is one of the most common malignant tumors in south Europe and in east Asia. In Niguarda hospital Milan, where takes place one of the most important liver transplant center in Italy, TACE continues to play an important role in the treatment of HCC above all in waiting time before OLT or as down-staging procedure.

In the setting of BCLC classification the two stages involved in TACE are the EARLY one (nodules not amenable to surgery or ablation for the dangerous position , residual tumor after RF or MW ablation) and the INTERMEDIATE (presence of multinodular lesions).

Several techniques to enhance the therapeutic effect of TACE have been reported. We use everytime superselective embolization with microcatheter advanced as distal as possible.

We have used different type of TACE, on demand after each CT or MR control:

60% of the procedure with conventional TACE (c-TACE) ,suspension of Lipiodol and Antracyclin

30% of Deb-TACE (well calibrated particles loaded with drug)

10% of Balloon-TACE.

The last technique is new in Europe and has the advantage of redistributing flow distal to the inflated ballon to allow better penetration of the embolic inside the nodule.

The choice of the type of TACE depends on size and vascularization of nodules, acceptable side effects , previous results and cost.

My presentation will share the experience of more than 200 TACE a year in a high volume liver transplant center.

MS06

THIS ABSTRACT IS NOT AVAILABLE

MS07

THIS ABSTRACT IS NOT AVAILABLE

Head And Neck Tumours: The RADPLAT Regime

NORIMITSU TANAKA¹

¹*DEPARTMENT OF RADIOLOGY/ KURUME UNIVERSITY SCHOOL OF MEDICINE, KURUME/ Japan*

RADPLAT is intensive targeted chemoradiation consisting of superselective intra-arterial cisplatin infusion concurrently with radiotherapy for advanced head and neck cancer. That was proposed by Dr,Robbis in 1994. In RADPLAT, surgery is performed only for salvage purpose.

We have treated over 400 patients with advanced head and neck carcinoma by RADPLAT for last 2 decades, and now main targeted diseases has integrated into three carcinomas, maxillary, laryngeal and external auditory canal carcinoma. In the treatment of these carcinomas, the management and local control of the primary tumor is important, because regional and distant metastases are rare on initial diagnosis and most of the treatment failure cause from local recurrence. Because of these characteristics, surgical resection remains the mainstay for patients with these carcinomas. However, extended surgery for patients with advanced disease severely compromises quality of life owing to sacrificing of organ function. Recently, several investigations have reported that high suicide risk was found for patients with head and neck cancer.

Our clinical results shows that introducing of RADPLAT improves eyeball preservation rate from 42% to 94% in T4 maxillary carcinoma and 5-year larynx preservation rate from 0% to 93% in T3 laryngeal carcinoma in our institution. Our experience and clinical results of RADPLAT have big impact upon head and neck surgeons in our hospital and altered their tendency for radical resection in these carcinomas. They wait for organ preserving results of RADPLAT and now recognize their role as salvage surgery in cases of RADPLAT failure in the treatment of these three carcinomas.

In this lecture, we focus on technical aspect of intra-arterial infusion of cisplatin in these three head and neck carcinomas, maxillary, laryngeal and external auditory canal carcinomas.

MS09

THIS ABSTRACT IS NOT AVAILABLE

Bone Tumour: Current Management Strategies

MARIO MUTO¹

¹*NEURORADIOLOGY UNIT/ AORN Cardarelli Hospital-9, Via A. Cardarelli - 80131 Naples/ Italy*

The presence of spine metastasis is a very crucial point in oncologic patients considering the consequence of a failure of this treatment. For this reason onco-hematologist are very quick deciding what to do in case of spine metastasis. Single lesions are quite uncommon, less than 12% of cases, and surgical indication is considered in reality only in case of spinal cord compression in which there is the need of a decompressive laminectomy. Actual options include as first approach RF ablation plus vertebroplasty; in this way we add antineoplastic action of RF ablation to the stabilization effect of cement. The patient can easily perform right after also radiotherapy and chemio-medical therapy to reinforce the antineoplastic and osteoblastic action.

The percutaneous treatment can be easily performed with a transpeduncular approach using the working cannula to insert the RF probe and injecting the cement after ablation. The procedure can be performed in local anesthesia and neuroleptoanalgesia.

The results of the treatment show a better pain relief and a better action in terms of antineoplastic effects.

MS11

THIS ABSTRACT IS NOT AVAILABLE

MS12

Pain Management For The Terminally Ill

MARIO MUTO¹

¹*NEURORADIOLOGY UNIT/ AORN Cardarelli Hospital-9, Via A. Cardarelli - 80131 Naples/ Italy*

Cryablation represent another percutaneous option to treat patients affected especially by soft tissue neoplastic extension. The treatments consist in the application of multiple needles able to obtain an iceball with certain dimension in terms of length and axial diameter able to freeze and kill neoplastic tissue.

Once the needles are in the target, it is important to perform two cycle of freezing and it is possible to check the formation of iceball through CT as an hypodense ovoid shape within neoplastic tissue.

The treatment as the advantage can be perform in multiple site in the same session, it is not painfull; disadvatages are represented by the cost and the length of the treatment.

The treatment can be perform at spine level such as peripheral level

The results are excellent especially of those patients in which there are no other treatment option such as radiotherapy or chemotherapy failure.

Interstitial Lung Disease HRCT Reporting: Clinicians Perspective

SYAZATUL SYAKIRIN SIROL AFLAH¹

¹*INSTITUTE RESPIRATORY MEDICINE, KUALA LUMPUR, Malaysia*

Interstitial lung disease (ILD) represents a diverse and challenging group of disorders with varied management approaches and prognoses. The HRCT reporting is really important to clinician in the management interstitial lung disease cases . High-resolution computed tomography (HRCT) may substantially narrow the differential diagnosis for most cases with clinically suspected interstitial lung disease (ILD). High-resolution computed tomography (HRCT) of the lung is a key component of the multidisciplinary approach to diagnosis in diffuse parenchymal lung disease (DPLD). HRCT has a central role in the diagnosis of diffuse parenchymal lung disease and has improved the ability to make a definitive diagnosis without the need for lung biopsy in some disorders, particularly idiopathic pulmonary fibrosis (IPF). HRCT has a high positive predictive value for the pathological diagnosis of UIP when the HRCT changes are classical (honeycombing in a basal and sub-pleural distribution). These classical findings as well as a greater extent of fibrosis predict a worse mortality, and thus HRCT has a prognostic as well as diagnostic role in IPF. Other important roles of HRCT include assisting in determining prognosis, monitoring for the efficacy of treatment, detecting progression of disease or complications, evaluating patients with worsening or acute symptoms and detecting other abnormalities or complications, such as lung cancer. The HRCT scoring system-based grading scale is useful for inferring the prognosis in patients with IPF and, particularly facilitates the extraction of patients with a poor prognosis who cannot be identified using only pulmonary function examinations. The HRCT patterns had a higher predictive value regarding patient survival than did the clinical and laboratory data. HRCT patterns may be useful for predicting patient prognosis in acute exacerbation of IPF.

MC02

Basic HRCT Pattern Of Lung Disease

MOHAMMAD HANAFIAH¹

¹*UNIVERSITI TEKNOLOGI MARA/ SELANGOR/ Malaysia*

Knowledge of lung anatomy is essential for the understanding of HRCT. Secondary pulmonary lobule in particular is the fundamental key to HRCT terminology. Familiarizations of the nomenclature and pattern recognition are crucial steps in HRCT interpretation in the attempt to arrive at a good and more accurate conclusion. A few important HRCT terms, their definitions and significance are discussed and illustrated.

Idiopathic Interstitial Pneumonias: Imaging Features

MOHAMMAD HANAFIAH¹

¹*UNIVERSITI TEKNOLOGI MARA/ SELANGOR/ Malaysia*

Idiopathic Interstitial Pneumonias (IIPs) are a heterogeneous group of non-neoplastic disorders resulting from damage to the lung parenchyma by varying patterns of inflammation and fibrosis. In 2013 Official American Thoracic Society/European Respiratory Society Statement, the major IIPs were grouped to 1) chronic fibrosing (Idiopathic Interstitial Pneumonia and Non-specific Interstitial Pneumonia), 2) smoking-related (Respiratory Bronchiolitis-Interstitial Lung Disease & Desquamative Interstitial Pneumonia) and 3) acute/subacute (Cryptogenic Organizing pneumonia and Acute Interstitial Pneumonia) IIPs. The rare IIPs are Idiopathic Lymphoid Interstitial Pneumonia and Idiopathic Pleuroparenchymal Fibroelastosis while the rest falls into unclassifiable IIPs. Correct diagnosis of IIPs can be achieved by means of interdisciplinary consensus and stringent correlation of clinical, imaging, and pathologic findings. Important imaging features of these IIPs will be discussed and demonstrated.

MC04

Radiopath Of The Lungs

LYNETTE TEO¹

¹DEPARTMENT OF DIAGNOSTIC IMAGING/ NATIONAL UNIVERSITY HOSPITAL/ Singapore

Radiologic/pathologic correlation plays an important role in Radiology Residency education. It is an Accreditation Council of Graduate Medical Education (ACGME) advanced specialty program requirement for Diagnostic Radiology which is adopted by US, Singapore, Abu Dhabi, Qatar and Beirut. Radiologic/pathologic correlation also plays a major role in the Royal Australian and New Zealand College of Radiologists (RANZCR) which states that the knowledge of pathology is essential to interpretation of radiological imaging. Accordingly, the Pathology Examinations are given equal emphasis with the Radiodiagnosis Examinations in the RANZCR syllabus.

This talk serves as an introduction to radiologic/pathologic correlation of the lungs and will cover broad groups of neoplasm, infection / inflammation, trauma and other lung parenchymal diseases.

MC05

Essential In Chest Radiography

ZUHANIS ABDUL HAMID¹

¹*INSTITUT KANSER NEGARA/ PUTRAJAYA/ Malaysia*

Chest radiography is a radiologist and clinician bread and butter investigation tool. It is simple radiographic examination but the hardest to be interpreted. This topic will discuss about the basics in reading chest radiograph from the anatomy, definitions, basic imaging findings and reporting of chest radiograph.

Objective:

To synchronise the way in reading chest radiograph to all residents and radiologist.

To create better understanding and reduce the variation in describing CXR so it will be more meaningful to clinic and others.

Imaging Of COPD And Asthma

LYNETTE TEO¹

¹*DEPARTMENT OF DIAGNOSTIC IMAGING/ NATIONAL UNIVERSITY HOSPITAL/ Singapore*

COPD is the presence of airflow limitation that is caused by combination of emphysema-induced loss of elastic recoil and small airways remodeling. Management of COPD depends on relative distribution and severity of these two processes. It is difficult to determine this distribution based on standard pulmonary function tests eg.in pts with a similar degree of air flow limitation, the CT appearances of the lungs could be different. Emphysema and airways modification better evaluated with quantitative analyses of CT data which can help differentiate COPD phenotype: (i) emphysema predominant, (ii) airway predominant and (iii) mixed.

Asthma is defined as reversible inflammatory airways disease. Although imaging of asthma has evolved over the last decade with sophisticated techniques, such as magnetic resonance imaging (MRI), positron emission tomography (PET) and single photon emission computed tomography (SPECT); this is not commonly practised. Practically, this talk will cover the radiographic and CT findings of asthma and its complications. This includes bronchial wall thickening, air trapping, cylindrical bronchiectasis, pneumothorax, pneumomediastinum, mucus plugging and pneumonia. Chronic complications of asthma include ABPA, eosinophilic pneumonia and eosinophilic granulomatosis with polyangiitis (EGPA) (Churg-Strauss syndrome). Mimics of asthma will be touched upon. The primary role of imaging is not to make a diagnosis of asthma, but to identify complications such as ABPA, or mimics of asthma, such as hypersensitivity pneumonitis.

Approach To Cystic Lung Disease

LYNETTE TEO¹

¹*DEPARTMENT OF DIAGNOSTIC IMAGING/ NATIONAL UNIVERSITY HOSPITAL/ Singapore*

Lung cysts are commonly seen on CT. An algorithm based on HRCT thorax findings is proposed – 1) Are they true cysts? (exclude cavitory disease, centrilobular emphysema, cystic bronchiectasis) 2) Where are the cysts located (parenchymal or subpleural (bullae, paraseptal emphysema, honeycombing)) ? 3) Are these parenchymal cysts solitary or diffuse (lung cysts, pneumatocoele, bronchogenic cyst versus lymphangioleiomyomatosis (LAM), pulmonary Langerhans cell histiocytosis (PLCH), lymphocytic interstitial pneumonia (LIP), infection, malignancy) ? 4) Are they associated with parenchymal (Pneumocystitis Jivorecii Pneumonia (PCP), desquamative interstitial pneumonia (DIP)) or ground glass nodules (LIP, PLCH)? Whilst the HRCT scan plays a major role in diagnosis, this should also be interpreted together with the patient's clinical history, physical examination and laboratory findings.

Pulmonary Infection In Immunocompromised Patients

AIDA ABDUL AZIZ¹

¹RADIOLOGY DEPARTMENT/ HOSPITAL SUNGAI BULOH, SELANGOR/ Malaysia

In the recent decade, population of immunocompromised hosts has expanded enormously reflecting the use of immunosuppressive agents (tumour, collagen vascular disease, post organ transplant) as well as emergence of Acquired Immunodeficiency syndrome (AIDS). Lung is the most frequently involved organ and infection is the most common complication. Rapid and accurate diagnosis of a pulmonary disease with clinical correlation is important to reduce the mortality and morbidity, due to the illness itself as well as due to the complication from the treatment itself. Clinical factors influencing radiological manifestation includes environmental factors, underlying immune defect as well as duration and severity of immunocompromised status.

Spectrum of pulmonary infection differs in duration of illness as example recent post transplant, usual bacteria pneumonia as immunocompetent host, while within 6 months are viral (CMV, HSV) and host opportunistic pneumonia (PCP, A.Fumingatus) will reside. In cancer patients, first few days would be the common bacterial infections, however, after few weeks will be fungal infection. Patients with HIV infection, radiological manifestation will differ in different CD4 count level, eg. PTB in CD4 more than 200 is similar to the immunocompetent host, however, in the lower CD4 count, other mycobacterium eg. M.Avium will be involved and radiological features will be as primary TB or miliary.

Recognizing the common features of the pulmonary infection is important to aid in diagnosis. For example, PCP infection, lagging in radiological manifestation, however, if present, the commonest findings are bilateral parahilar interstitial opacities (CXR) and ground glass densities (CT). Over time, cystic changes will occur and few may be complicated with pleural empyema. Knowledge of its chronic radiographic features also important to recognize as these patients will have repeated admissions for variety of illnesses, thus comparison with previous radiograph is crucial.

Therefore, in this lecture, I will provide real case examples eg, PCP with CCF, Klebsiella pneumonia with preexisting chronic lung changes, Klebsiella with lung abscess and bronchopleural fistulas, Rhodococcus pneumonia, etc and Atypical pulmonary TB radiological manifestations and complications including interventional treatment that radiology may offer.

MC09

THIS ABSTRACT IS NOT AVAILABLE

MC10

THIS ABSTRACT IS NOT AVAILABLE

MC11

MRI In Evaluation Of Anterior Cruciate Ligament Reconstruction

VICKNESVARAN RAJARATNAM¹

¹HOSPITAL TENGKU AMPUAN RAHIMAH/ KLANG, SELANGOR/ Malaysia

Anterior cruciate ligament (ACL) is the most commonly injured ligament of the knee. ACL reconstruction is also one of the most commonly performed orthopedic procedures in the world. Pre operatively, MRI plays an important role in the diagnosis of ACL tear and other related structures. However MRI is also used widely in post-operative cases when clinical assessment becomes a challenge. In patients who present with instability, post operative stiffness and following re-trauma MRI aids in the evaluation of the graft. MRI helps to identify graft integrity, graft impingement, tunnel positions and also complications related to the procedure such as tunnel cyst, tunnel widening, arthrofibrosis (focal or diffuse) and complications related to fixation devices. In cases of graft tear following trauma, MRI also provides additional information on related structures such as the cartilage and meniscus.

Approach To Ultrasound Of The Shoulder And Ankle

JAMES FRANCIS GRIFFITH¹

¹DEPARTMENT OF IMAGING AND INTERVENTIONAL RADIOLOGY/ THE CHINESE UNIVERSITY OF HONG KONG/ Hong Kong

SHOULDER:

Shoulder pain is poorly localised. As a result, systematic examination of the shoulder should be performed in all patients referred with shoulder symptoms.

There are many ways one can examine the shoulder. Find a technique you are comfortable with and follow this method pedantically. Consistently obtaining the same views will allow you to detect any abnormality with greater ease. You need to perform about 80 shoulder ultrasound examinations before you gain confidence with detecting abnormalities. A good way to start shoulder ultrasound is to ask patients coming for MRI to also have an ultrasound. You cannot reliably use the asymptomatic contralateral shoulder as a normal internal reference. Subclinical abnormalities are common so you must have a good idea as to what represents normal. Examine each tendon in turn in two planes. Know the maneuvers necessary to optimize visualization of each tendon. Grade tendinosis (mild, moderate, severe) and look for tears. If a tear is present, define as complete, full-thickness partial, bursal surface, articular surface or intrasubstance. Give the mediolateral and anteroposterior dimensions. Also routinely check for SA-SD bursitis, AC joint osteoarthrosis and any joint effusion.

ANKLE

Ankle pain is well localised. Therefore, to optimize examination efficiency, a full systematic examination of the ankle is not always necessary. For example, if pain is localised medially, one can examine the medial side as well as the ankle joint proper but you do not need to examine the lateral structures routinely. Always take a history and correlate your findings with symptoms. Lack of an ankle joint effusion or synovitis makes significant intra-articular pathology unlikely. You should include the tendon insertions in the midfoot in your examination. The ankle tendons and nerve are best followed on transverse sections. Follow one tendon or nerve at a time in transverse section around the ankle joint. Grade any tendinosis, ± tenosynovitis and look for tears and peritendinitis. All of the important ankle ligaments are well seen on ultrasound. The subtalar joints and joints of the midfoot, the Achilles tendon and the plantar fascia may need to be included depending on symptoms. Osteochondral lesions of the talar dome cannot be seen fully on ultrasound.

MC13

THIS ABSTRACT IS NOT AVAILABLE

MC14

Imaging Characteristics In Rheumatological Disorders

SUMITHRA SANNASEY¹

¹*HOSPITAL QUEEN ELIZABETH/ KOTA KINABALU/ Sabah*

My presentation will be on the sonographic features of rheumatological diseases. Radiologists are familiar with the conventional radiographic of the various rheumatological diseases; however, in Malaysia many of us are unfamiliar with ultrasound imaging unlike rheumatologists who use it in their daily practice. The advantages of ultrasound are that it's easily available, detecting changes earlier than conventional radiographs, guiding the clinician for determining patient's management and most importantly interacting with the patient.

The presentation will emphasise on the salient imaging features to assess on ultrasound and subsequently on each pathological process which includes rheumatoid arthritis, gouty arthritis, CPPD, psoriatic and reactive arthritis. I do hope that after this presentation, our radiologists will be more confident in performing more ultrasounds and helping the clinicians in their management of these disorders.

MC15

THIS ABSTRACT IS NOT AVAILABLE

MC16

Essential Reporting In Shoulder MRI

ANURADHA P.S JANARDHANAN¹

¹*GLENEAGLES KUALA LUMPUR/ Malaysia*

What I'll be presenting is just a short introduction to reporting of the shoulder MRI, basically meant for the non MSK trained radiologists. I will be showing them the basic anatomy of the shoulder and how to identify the different structures on the 3 main imaging planes in MRI.

MC17

THIS ABSTRACT IS NOT AVAILABLE

BD001

Quantification Of Apparent Diffusion Coefficient Values To Differentiate Hepatocellular Carcinoma And Liver Hemangioma In Diffusion Magnetic Resonance Imaging

ANDREW CHENG¹; YAN LIN LI¹; MABEL TONG²

¹RADIOLOGY/ QUEEN MARY HOSPITAL/ Hong Kong, ²RADIOLOGY/ NORTH DISTRICT HOSPITAL/ Hong Kong

Purpose

Differentiation of liver lesions remains difficult in MRI study. Quantification of ADC values with diffusion-weighted (DW) MR imaging can help to characterize liver lesions. The purpose of study is to evaluate the diagnostic value of ADC quantification in differentiating hepatocellular carcinoma (HCC) and liver hemangioma.

Materials and Methods

We retrospectively studied 35 patients with DWI/ ADC study performed within 3.8 years period in Queen Mary Hospital Hong Kong (January 2014 to October 2017). HCC was diagnosed either by hepatectomy or intraoperative exploration. Liver hemangioma was diagnosed by the classical signs of progressive contrast filling in enhancement pattern. The ADC values were calculated from the DWI images with different b values (50, 300, 800 s/mm²). The ADC values of hepatocellular carcinoma (HCC) and liver hemangioma were compared by two - tailed Mann-Whitney U test. A statistically significant difference was set at p- value < 0.05.

Results

14 and 21 patients were diagnosed with HCC and liver hemangioma respectively. The mean ADC value of patient diagnosed with hepatocellular carcinoma and liver hemangioma was 1.0539±0.3665 mm²/sec and 2.6775±1.0682mm²/sec respectively. The ADC values were statistically significantly lower in HCC when compared to liver hemangioma (p<0.05).

Conclusion

HCC shows reduced tissue diffusivity when compared with liver hemangioma on ADC map. Tissue diffusivity can be quantitatively assessed by ADC values and help to differentiate HCC and liver hemangioma. ADC quantification is a valuable tool in oncological practice to characterize and further distinguish different liver lesions, particularly in cases where administration of contrast is contraindicated.

NR002

CT And MRI Imaging Of The Brain In MELAS Syndrome- A Case Report

ANDREW CHENG¹; YAN LIN LI¹; MABEL TONG²

¹RADIOLOGY/ QUEEN MARY HOSPITAL/ Hong Kong, ²RADIOLOGY/ NORTH DISTRICT HOSPITAL/ Hong Kong

Purpose

MELAS syndrome (mitochondrial myopathy, encephalopathy, lactic acidosis, stroke-like episodes) is a rare, multisystem disorder caused by mitochondrial DNA mutation. MELAS typically occurs between 4 and 15 years of age. Early symptoms of the disease is varied and nonspecific, which complicates the diagnosis. The typical radiological findings of MELAS is discussed in our study.

Results

This was a 35 years old patient. She presented with recurrent headache and memory deficit, psychomotor retardation and cognitive impairment since the age of 15 years old. Later, she presented with repeated seizures, right hemiplegia and dysphasia. Symmetrical calcifications are noted at bilateral globus pallidus on CT scan. MRI showed generalized cerebral atrophy. Cerebral infarcts with non-vascular territories were noted at bilateral temporo- parietal – occipital lobes. Biochemical marker showed metabolic acidosis and lactic acidosis. Skeletal muscle biopsy findings was consistent with mitochondrial myopathy. Strongly succinate dehydrogenase- reactive blood vessels were noted, suggestive of MELAS. Genetic clinical report showed A3243G mutation.

She was diagnosed with MELAS based on the clinical, radiological and pathological findings. She was put on medications Co enzyme Q10, creatin and L- arginine. She had a dependent activities of daily living.

Conclusion

MELAS is a rare disease with young onset (before the age of 40). Brain imaging typically shows cerebral atrophy, cerebral infarcts within non-vascular territories and symmetrical basal ganglia calcifications. Final diagnosis can be assisted by skeletal muscle biopsy, MR spectroscopy for lactate peak at 1.3ppm, and positive point mutation for A3243G in genetic screening.

Breast MRI- Latest Indications

SHALEEN KAUR¹

¹*DEPARTMENT OF BIOMEDICAL IMAGING/ UNIVERSITY MALAYA, KUALA LUMPUR/ Malaysia*

Mammography is the only imaging study that has been proven to decrease breast cancer mortality. Mammography, however, has its limitations and, as such, other modalities that can complement it are being studied. One of these is dynamic contrast-enhanced breast MRI, which has emerged as an important adjunctive modality and is at present the most sensitive modality that we have to evaluate the breast. The American College of Radiology, in its revised 2013 practice guidelines, has outlined the 12 current indications for breast MRI.

The indications include screening for breast cancer (high risk screening, contralateral breast with new breast malignancy, patients with breast augmentation), extent of disease (to locate multifocality/multicentricity, invasion to deep fascia, postlumpectomy with positive margins, and to evaluate treatment reponse post neoadjuvant chemotherapy). Other additional evaluation include problem solving when mammogram and sonography are inconclusive, unknown primary with positive axillary lymph nodes, to evaluate recurrence in tissue flaps and to facilitate mri guided biopsies when lesions are occult on mammography or sonography.

Breast MRI Reporting: BI-RADS Lexicon And Image Interpretation

KARTINI RAHMAT¹

¹*BIOMEDICAL IMAGING/ UNIVERSITY OF MALAYA, KUALA LUMPUR/ Malaysia*

MRI is the most sensitive and advanced imaging technique for breast cancer detection. It has rapidly evolved into a highly valuable adjunctive imaging tool for breast cancer diagnosis, staging and management. However, due to its diverse techniques and various imaging protocols, standardized reporting is essential to allow radiologists to communicate breast imaging findings to referring physicians precisely and clearly. Accurate standardized reporting provides a quality assurance tool in clinical practice.

The ACR Breast Imaging Reporting and Data System (BI-RADS) lexicon provides standardized findings terminology, report organization, assessment structure and a classification system in breast imaging.

The latest BI-RADS 5th edition lexicon includes descriptors for fibroglandular tissue density, background parenchymal enhancement, terminology for describing lesion morphology, enhancement characteristics, kinetic analysis and extramammary abnormalities.

The aim of this article is to present an overview of the current MRI, fusion SPECT and PET examinations with special emphasis of imaging abnormalities and treatment options.

This article presents a general overview of the lexicon with appropriate illustrations of benign and malignant features in reporting breast MRI.

MRI Guided Interventional Procedures, Principals and Clinical Perspective

DONNA TAYLOR^{1,2,3}

¹ROYAL PERTH HOSPITAL DEPARTMENT OF RADIOLOGY/ PERTH/ Australia, ²BREASTSCREEN WA/ PERTH/ Australia,

³UNIVERSITY OF WESTERN AUSTRALIA MEDICAL SCHOOL/ CRAWLEY, PERTH/ Australia

Breast MRI is the most sensitive technique for breast cancer detection, however suboptimal specificity means that findings may require needle biopsy to avoid over treatment. Although many lesions can be found and sampled with ultrasound, it is essential to have the capacity to biopsy and mark for future surgery lesions only visible with MRI.

MRI directed procedures include: vacuum assisted biopsy, insertion of marker clips or hook-wires and MRI-guided lesion ablation. Insertion of clips into MRI lesions is a simple procedure that may allow future sampling using US or stereo or tomosynthesis guidance, potentially saving time and cost.

MRI guided procedures are not technically difficult, however the limited accessibility and high cost of magnet time mean they are reserved for specific scenarios e.g. lesion considered unlikely to be visible using an alternative technique, absence of correlating lesion on MRI directed ultrasound or tomosynthesis, or if an urgent diagnostic result is required.

The ability of MRI to delineate tumor margins in three dimensions and provide temperature mapping means it can be used to guide and monitor minimally invasive ablation techniques.

Considerations unique to MRI guided procedures include safety issues related to the magnetic field and IV gadolinium administration, transient visualization of lesion due to contrast wash-out, non-visualization of lesion at time of biopsy (lesion truly resolved or just due to technical factors e.g. reduced contrast inflow due to tissue compression in the biopsy coil) and inability to use specimen imaging to confirm adequacy of lesion sampling.

This presentation will review the principles of MRI guided interventions in the breast with special emphasis on their clinical utility in patient management.

MC21

THIS ABSTRACT IS NOT AVAILABLE

MC22

Vacuum Assisted Breast Biopsy Under Stereotactic And US Guidance - The Essentials

KARTINI RAHMAT¹

¹*BIOMEDICAL IMAGING/ UNIVERSITY OF MALAYA, KUALA LUMPUR/ Malaysia*

Vacuum assisted breast biopsy (VABB) is a minimally invasive breast biopsy procedure for breast disease and is commonly performed under stereotactic , ultrasound or MRI guidance It is highly accurate in obtaining diagnoses of variety of breast abnormalities . VABB has an advantage over conventional core needle biopsy by obtaining a larger volume of tissue for histopathological analysis and definitive diagnosis, thus decreasing re-biopsy rate, reducing open surgical biopsy and keeping underestimation rate to the minimum. Confirmatory non-operative diagnosis of breast cancer or high risk lesions allows rapid referral for treatment , ideally in one operative procedure. Conversely, definitive non-operative diagnosis of benign conditions is equally useful, usually leading to discharge from the primary care and return to routine surveillance.

This presentation aims to review the clinical applications , procedure guidelines as well as the changing role of VABB in management of breast conditions.

MC23

THIS ABSTRACT IS NOT AVAILABLE

MC24

THIS ABSTRACT IS NOT AVAIABLE

Contrast Enhanced Spectral Mammography, Current Indications and Future Prospects

DONNA TAYLOR^{1,2,3}

¹ROYAL PERTH HOSPITAL DEPARTMENT OF RADIOLOGY/ PERTH/ Australia, ²BREASTSCREEN WA/ PERTH/ Australia,

³UNIVERSITY OF WESTERN AUSTRALIA MEDICAL SCHOOL/ CRAWLEY, PERTH/ Australia

Contrast Enhanced Spectral Mammography (CESM) is a new technique in which IV iodinated contrast is given to the patient, followed by the acquisition of standard mammographic views using low energy (LE) and high energy (HE) Xray exposures, above and below the k-edge of iodine. Logarithmic subtraction of these images is then performed to produce a recombined image showing areas of iodine uptake in the breasts.

Like contrast enhanced MRI (CEMRI), CESM is able to show areas of neovascularity associated with malignancy, however it can also demonstrate microcalcifications and lesion morphology at significantly higher resolution. For detection of malignancy, the sensitivity of CESM has been shown to be similar to that of CEMRI, but with higher specificity.

CESM is considerably cheaper and more accessible than CEMRI, and is faster and easier to perform and interpret. Patients also prefer it. The only disadvantages of CESM are the exposure to ionizing radiation (an additional 20-50% over and above that of a standard mammogram) and the very small risk of a contrast reaction. It is important to note that the low energy image is technically and diagnostically equivalent to a standard mammogram, which means that if diagnostic mammography is planned, CESM can be used instead, helping to minimise any concerns relating to additional radiation dose.

Clinical indications for CESM are similar to CEMRI and include: problem solving, assessing local extent of malignancy, looking for tumour recurrence, axillary metastasis of unknown primary, and evaluating the response to neoadjuvant chemotherapy.

CESM overcomes the limitations of high breast density associated with standard mammography and it could potentially be used as a screening tool for selected patients e.g. women with significantly increased background risk, particularly those who are unable to tolerate or cannot access CEMRI.

This presentation will give an overview of the current clinical applications of CESM and discuss what the future might hold for this exciting technique.

BD002

Tongue Cavernous Hemangioma

HAIRUDDIN ACHMAD SANKALA¹; PICK YEEN LAI¹

¹*RADIOLOGY/ HOSPITAL TAWAU/ Malaysia*

Purpose

To recognise the clinical and imaging features of tongue cavernous hemangioma.

Report

A 36-year-old gentleman with no known medical illness presented with macroglossia, which was associated with discomfort. The tongue was progressively increasing in size since he was 7 years old. However, he was still able to tolerate orally. There was no bleeding episode or ulceration.

Clinically, there was a diffuse enlargement of tongue on the left side crossing the midline involving dorsal, ventral and lateral aspects. The tongue was purplish with irregular surface. Multiple hard nodules were palpated. It was non-tender and non-pulsatile with no ulceration.

A computed tomography (CT) angiogram of the tongue was ordered and showed a large left-sided tongue mass with multiple hyperdense phleboliths within. The mass had attenuation similar to the adjacent muscles. Linear peripheral enhancement is noted, likely to represent abnormal vascular channels. The mass occupied almost the entire oral cavity causing narrowing. Histopathological examination (HPE) revealed cavernous hemangioma. Patient is planned for surgical reconstruction of the tongue.

Conclusion

Recognition of the clinical and imaging features of tongue cavernous hemangioma is crucial to make a correct diagnosis and to avoid life-threatening biopsy.

Hughes-Stovin Syndrome: A Case Report

ISA AZZAKI ZAINAL¹; ZAHARUDIN HARON²; ZUHANIS ABDUL HAMID²

¹DEPARTMENT OF RADIOLOGY/ UNIVERSITY KEBANGSAAN MALAYSIA MEDICAL CENTRE (UKMMC)/ Malaysia,

²DEPARTMENT OF RADIOLOGY/ NATIONAL CANCER INSTITUTE (IKN)/ Malaysia

Intro

Hughes-Stovin Syndrome (HSS) is a very rare clinical disorder of unknown etiology, with infection and angiodysplasia are among possible causes. Clinically, patients with HSS will present with fever, cough, dyspnea, chest pain and hemoptysis. Radiological findings of HSS include thrombophlebitis and multiple pulmonary and/or bronchial aneurysms. It is treated either medically or surgically. Medical management includes steroids and cytotoxic agents. In cases of large pulmonary aneurysms, surgical approach such as lobectomy or pneumonectomy will be carried out. Transcatheter arterial embolization has emerged as a less invasive alternative to surgery in selected patient with HSS. Aneurysmal rupture is the leading cause of death. Therefore, early diagnosis and intervention is essential to improve the prognosis of patients with HSS.

Report

We report a case of 24 year-old man presented with prolonged fever, joint pain, oral ulcers, headache and blurring of vision. He was treated as Behcet's disease and received high dose steroids. CECT brain showed extensive dural sinus thrombosis involving the superior sagittal sinus, straight sinus, both transverse and both sigmoid sinuses. US Doppler of Lower Limb showed thrombosis within the mid and distal right superficial femoral vein. CECT Thorax performed a week later in view of non-resolving fever revealed two fusiform aneurysms within the posterobasal branch of right pulmonary artery, which were confirmed in CTPA later.

BD004

Troubleshooting The Implementation Of Dual Energy Computed Tomography Pulmonary Angiography For The Diagnosis Of Pulmonary Emboli At A Large Level 1 Trauma Centre

JAMES LING¹; JOHN COUCHER¹

¹RADIOLOGY/ PRINCESS ALEXANDRA HOSPITAL/ Australia

Purpose

The aim of this study was to evaluate the implementation dual-energy (DE) computed tomography pulmonary angiography (CTPA) at Princess Alexandra Hospital, Australia.

Materials and Methods

All CTPAs performed at the Princess Alexandra Hospital during December 2016 and May 2017 were identified. Signal intensity in Hounsfield units (HU) was measured at the largest axial image of the main pulmonary artery by a circular region with a diameter of 50%. A HU level <210 was considered suboptimal. We compared the image quality of dual energy(DE) compared to single energy(SE) scans using the chi-square test and a two-sided *t* test. A p-value less than 0.5 was considered significant.

Results

A total of 246 CTPAs (DE: n = 175, 71%; SE: n = 71, 29%) were identified. In December 2016, mean pulmonary artery HU of DE CTPAs was significantly lower than that of SE CTPAs (323 HU vs. 364 HU; p = 0.02) and the suboptimal scan rate was higher in DE CTPAs than in SE CTPAs (11% vs. 7%; p = 0.58). Following these poor results, we identified that the radiographers chose the SE contrast protocol for DE CTPAs. After education was provided to the radiographers, improvements to the quality of DE CTPAs were seen in May 2017 – mean pulmonary artery HU improved from 323 HU to 344 HU (p = 0.70) and the suboptimal scan rate decreased from 14% to 3% (p = 0.04). Both SE and DE CTPAs were of equal quality when evaluated in May 2017 (344 HU vs. 364 HU; p = 0.26).

Conclusion

Human factors should always be considered in troubleshooting quality issues, particularly when implementing new technologies in a hospital.

BD005

The Effect Of Modified Alternate Day Calorie Restriction (MADCR) On Non-Alcoholic Fatty Liver Disease (NAFLD)

KHAIRIAH MAT YUSOFF¹; JUHARA HARON¹; LEE YONG YEE¹; MUHAMMAD IZZAT JOHARI¹; CHANDRAN NADARAJAN¹;
KHAIRUN NISAH IBRAHIM¹

¹RADIOLOGY/ HOSPITAL UNIVERSITI SAINS MALAYSIA/ Malaysia

Purpose

NAFLD is a serious medical issues worldwide. Various diet modifications had been implemented to improve liver steatosis. SWE is an emerging technique that offers non-invasive method of liver steatosis assessment. In this study, we aimed to compare the liver steatosis grading and liver elasticity among NAFLD patients who underwent 8 weeks of MADCR.

Materials and Methods

Using the Aixplorer® ultrasound, liver ultrasound of 39 subjects (30 interventional and 9 control subjects) were performed. Liver steatosis grading, fibrosis grading and shear wave elastography of all patients were acquired. Liver steatosis and liver elasticity level pre and post pre intervention were compared. Correlation of the liver steatosis and gradings were analysed using Kendall b tau analysis.

Results

The mean liver steatosis grade and fibrosis level of the 30 participants in the intervention group were significantly reduced after MADCR modified alternate day calorie restriction programme. Our result showed that 10 patients had improved liver steatosis grading, whereby 8 patients improve from grade 2 to grade 1 and 2 patients from grade 1 to grade 0. Our study showed significant mean difference of liver elasticity in intervention group after MADCR (p value <0.001). From the analysis of the readings from all the participants (n=78), the SWE values showed significant weak correlation with the steatosis grading (0-3) of the fatty liver (P value 0.013).

Conclusion

MADCR is beneficial to improve liver steatosis. SWE is a useful and reliable method to assess liver elasticity after intervention.

Undescended Testes—Not The End Of Story, But The Beginning.

KHOR FOO KIANG¹; HANAE NOMA HARON²; FIRDAUS HAYATI³; CONSTANCE LIEW SAT LIN¹

¹DEPARTMENT OF MEDICINE BASED DISCIPLINE/ FACULTY OF MEDICINE AND HEALTH SCIENCES, UNIVERSITI MALAYSIA SABAH/ Malaysia, ²DEPARTMENT OF RADIOLOGY/ HOSPITAL QUEEN ELIZABETH, / Malaysia ³DEPARTMENT OF SURGERY/ FACULTY OF MEDICINE AND HEALTH SCIENCES, UNIVERSITI MALAYSIA SABAH./ Malaysia

Purpose

To highlight the important of radiology investigation for undescended testis and highlight its complications.

Materials and Methods

Abdomino-scrotal hydrocele (ASH) is characterized by a fluid-filled mass within inguino-scrotal and abdominal region, which also known as herniated hydrocele. It is more common in paediatric population with 3.1% incidence[1]. Risk of carcinoma for undescended testis is 40 times greater than normal descended testis. The type of carcinoma for undescended testis more likely to be seminoma. Ultrasounds scan would be a choice of imaging modality for paediatric population whereas Computed Tomogram (CT) abdomen is the mode of investigation for adult. Early orchidoplexy does not eliminate the risk of malignancy, however it enable early diagnosis of malignancy. We presenting a case of 32-year-old men with left sided undescended testis since birth with no further imaging was perform to locate the undescended testis. Patient presented with 2-years history of left sided inguinal swelling which was progressively worsening. Ultrasounds abdomen and CT abdomen were performed.

Results

Ultrasound scan shows a large left side hydrocele which unable to locate the left testis. CT abdomen revealed a large retroperitoneal mass with foci of calcifications and central necrosis. The mass encases the main branches of abdominal aorta. An abdomino-scrotal hydrocele demonstrated immediate inferior to the retroperitoneal mass, which extended out to the left inguinal region. Biopsy was not performed as patient defaulted clinic review subsequently.

Conclusion

Radiology investigation to locate undescended testis is crucial for early surgical orchidoplexy and early detection of malignant changes.

BD007

Focal Chronic Pyelonephritis Mimicking A Renal Cell Carcinoma; A Case Report

MANJU T RAJA¹ ; WAN MUHAMMAD NAZIEF¹ ; MALINDA ABDUL MAJID¹
¹*RADIOLOGY/ HOSPITAL KUALA LUMPUR/ Malaysia*

Intro

Focal pyelonephritis is demonstrated in computed tomography (CT) as an ill-defined focal wedge- shaped area of low attenuation, which distinguishes it from renal cell carcinoma that appears as an enhancing renal mass. Variations of radiologic findings are likely due to dynamic changes of the inflammatory process.

Report

We report a case of a 65-year-old female patient with underlying diabetes who was admitted with a complaint of gross hematuria for a week. Flexible cystoscopy showed cystitis changes.

A 4 phase CT Renal showed heterogeneously enhancing left midpole renal mass with within. It was associated with perinephric fat stranding and thickening of the pararenal fascias. Pre operative diagnosis of renal cell carcinoma was made. Operative findings revealed a renal mass and histopathologic examination demonstrated chronic glomerulonephritis with heterogenous areas of infarction and necrosis.

Conclusion

The conclusion in this case is to consider an inflammatory renal pseudotumor as a differential diagnosis in findings of renal mass on CT scan.

BD008

A Cross-Sectional Study To Assess The Agreement Between Doppler Ultrasound And Non Enhanced MRA In Diagnosing Significant Main Renal Artery Stenosis And Its Influencing Factors

MAZEDA MURAD¹; NURUL AKHMAR OMAR¹; BEE YEN OOI¹; ROSLINA ABD HALIM¹

¹RADIOLOGY/ HOSPITAL SEBERANG JAYA/ Malaysia

Purpose

Doppler Ultrasound (DUS) has been selected as the screening tool to detect Renal Artery Stenosis (RAS). In indeterminate cases or when discrepancy exists, Magnetic Resonance Angiography (MRA) is performed. DUS is operator and skill dependent. Thus we conducted this study to evaluate the agreement between Doppler Ultrasound (DUS) and Non-enhanced MRA (NEMRA) in diagnosing significant renal artery stenosis. Secondary objective is to determine the factors (BMI, waist circumference and creatinine levels) affecting the agreement.

Materials and Methods

A prospective study of 89 patients (55 males, 34 females) with suspected RAS were investigated (age 20-89 years). DUS was performed using 3.5MHz transducer. Non Enhanced MRA was performed using 1.5 T machine, reviewed by a radiologist blinded to DUS result. A Peak Systolic Velocity (PSV) of > 200cm/s within main renal artery, Acceleration Time (AT) of > 0.07s and Acceleration Index (AI) of <300cm/s within the segmental renal arteries are considered as RAS by DUS. Main renal arteries were categorized as normal or significantly stenosed (> 70%) on MRA.

Results

69 patients with 138 main renal arteries were evaluated. There is 98.8% agreement between DUS and NEMRA for right renal artery and 96.5% for the left renal artery. 70.1% were either overweight or obese, 36.8% have abnormal waist circumference and 36.8% have abnormal serum creatinine. BMI, waist circumference and creatinine level do not affect the agreement.

Conclusion

There is high agreement between Doppler Ultrasound and Non Enhanced MRA, thus supporting DUS as a reliable screening examination for RAS.

BD009

Vanek's Tumor Causing Ileoileal Intussusception In An Adult Lady: A Case Report.

NORAIN TALIB¹; WAN AIREENE WAN AHMED¹; MOHD SHAFIE ABDULLAH¹
¹RADIOLOGY DEPARTMENT/ UNIVERSITI SAINS MALAYSIA/ Malaysia

Intro

Adult presentation of small bowel obstruction caused by intussusception is relatively rare. It is one of a diagnosis to consider particularly with a patient who presented to Emergency department for recurrent abdominal pain.

Report

Here, we present a 49-year-old lady presented with progressive abdominal pain and dilated small bowel on abdominal radiograph. CT abdomen revealed a bowel-within-bowel appearance of ileo-ileal intussusception and proximal small bowel feces sign. Intraoperatively, confirmed telescoping of ileal to ileal bowel segment with a nodular mass at the antimesenteric border as the leading point. Resection and anastomosis were performed. Histopathological study showed the leading point mass is a rare inflammatory fibroid polyp known as Vanek's tumor.

BD010

Association Of CT Thorax Findings With Galactomannan And *Aspergillus* - Specific Polymerase Chain Reaction For Diagnosis Of Invasive Aspergillosis In Patient With Febrile Neutropenia

NURUL AIN MAT IDRIS¹; JUHARA HARON¹
¹RADIOLOGY/ UNIVERSITY SAINS MALAYSIA/ Malaysia

Purpose

The CT features of invasive pulmonary Aspergillosis (IPA) include of airway or angio invasive type. However those features are non specific and diagnosis should be made in conjunction with EORTC-MSG criteria. In this study, we evaluated the association between the CT findings , Galactomannan and *Aspergillus* specific PCR in patient with febrile neutropenia.

Materials and Methods

Patients with hematological malignancy who had persistent febrile neutropenia of 3 days or more despite of antibiotic underwent CT thorax within 2 weeks of clinical diagnosis of IPA. Galactomannan and *Aspergillus* specific PCR were taken. Changes of CT thorax were documented and association between mycological finding were analysed using Fisher exact test. Significant association taken at p value of < 0.05.

Results

A total of 26 subjects were recruited ; CT findings was positive in 17(65.4%), 8(30.8%) was positive for Galactomannan and 9(34.6%) for PCR.

There was significant association between PCR and CT thorax finding (p value 0.009, 95% CI) but not between Galactomannan and CT Thorax (p value 0.667, 95% CI).

Conclusion

Combination of PCR and CT thorax promised reliable noninvasive tools for early diagnosis of IPA. The *Aspergillus* specific PCR might to be consider as one of the mycological criteria in EORTC-MSG for diagnosis of IPA in the future.

Pancreatic Head Mass: Now You See It, Now You Don't

PHYLLIS WAN CHUN HO¹; POH SEN TAY²

¹RADIOLOGY DEPARTMENT/ BINTULU HOSPITAL/ Malaysia ²RADIOLOGY DEPARTMENT/ SARAWAK GENERAL HOSPITAL/ Malaysia

Intro

Despite the high prevalence of tuberculosis (TB) worldwide, pancreatic TB is rare. It may present as solid mass on imaging, mimicking malignancy. Consequently, it represents a diagnostic challenge. This case suggests that clinicians should have a heightened suspicion when faced with discrete pancreatic lesion, especially in patients from areas where TB is endemic.

Report

A 43 year-old lady presented with 1 month history epigastric discomfort and anorexia. Ultrasound abdomen revealed a lobulated, hypoechoic pancreatic mass with multiple liver lesions. Subsequent CT abdomen with pancreatic protocol showed a solid, hypovascular pancreatic head mass with multiple liver lesions. There is however, no biliary or pancreatic duct obstruction despite the size. Working diagnoses of pancreatic or cholangiocarcinoma with liver metastases was made. The patient was subsequently lost to follow-up, only to present again a year later with fever, cough in addition to the existing abdominal discomfort. Chest radiograph during this presentation revealed extensive airspace opacities in both upper lobes and widely scattered miliary nodules. Work-up for tuberculosis was carried out, which the sputum was tested strongly positive for acid fast bacilli. 5 months following anti-TB treatment, repeat CT abdomen showed resolved pancreatic head mass; with partial resolution of liver lesions and new finding of gross ascites. Unfortunately, the patient succumbed to respiratory failure.

Conclusion

The possibility of TB should be considered in the differentials of pancreatic mass and an endoscopic, ultrasound-guided biopsy might help to clinch the diagnosis of this potentially curable disease.

Erosive Juvenile Polyarticular Tophaceous Gout With Hyoid Bone Involvement

SHING NING CHOU¹; PHYLLIS WAN CHUN HO¹; TEIK BENG CHUAH¹

¹*RADIOLOGY/ HOSPITAL BINTULU/ Malaysia*

Intro

Making the correct, early diagnosis of juvenile gouty arthritis is challenging. To the unwary, the symptoms of recurrent, persistent joint pain may be attributed to the commoner aetiologies. We present a case of adolescent male patient with delayed diagnosis of gouty arthritis and tophaceous involvement of hyoid bone; which is extremely rare.

Report

A moderately built 13 year-old boy presented with long standing history of asymmetric polyarthropathy involving small and large joints of upper and lower extremities. He was treated as RF negative polyarticular juvenile idiopathic arthritis. Despite adequate treatment, he developed multiple painless subcutaneous nodules over the extensor joint surfaces; interpreted as rheumatoid nodules. Subsequently, he defaulted follow up until two years later when he presented with left second toe ulceration with semisolid-whitish discharge. Serum uric acid was then taken, revealed significantly raised level. Concomitantly, he complained of anterior neck swelling, hard in consistency mimicking neoplasia and chronic infection. Laryngoscopy was unremarkable. Plain x-ray showed osteolytic involvement of hyoid bone. Ultrasound neck showed a heavily calcified neck mass. CECT neck disclosed large lobulated non-enhancing calcified anterior midline neck mass surrounding the hyoid bone with associated bony erosion. He underwent surgical excision of the mass, histopathological examination showed gouty tophus.

Conclusion

Diagnosis of gout should be considered for refractory painful joint in a patient regardless of age, and pre-existing diagnosis. Presentation of tophi can be unusual, in unexpected locations. Hence, in a patient with co-existing joint pain, differential of gouty tophus should be considered when presented with neck mass.

BD013

Measurement Of Middle Ear Volume In Adults Using Three- Dimensional (3D) Reconstruction Multi-Detector Computed Tomography (MDCT) Scan

SITI KHAIRUNNISAAK ABDUL RAHMAN¹ ; JUHARA HARON¹ ; MOHD EZANE AZIZ¹ ; NIK ADILAH NIK OTHMAN²
¹RADIOLOGY/ UNIVERSITI SAINS MALAYSIA/ Malaysia, ²OTORHINOLARYNGOLOGY/ UNIVERSITI SAINS MALAYSIA/
Malaysia

Purpose

The purpose of this study is to determine middle ear volume of adults using Three- Dimensional (3D) reconstruction Multi-Detector Computed Tomography (MDCT) in different age and gender.

Materials and Methods

A total of 140 adult CT brains images were retrieved from Picture Archive Communication System (PACS). The CT brains were performed on Siemens SOMATOM Definition AS+ CT machine with a slice thickness of 1mm and high kernel bone algorithm. Images with complete mastoid air cells were included. Only good quality images were analysed. Images with abnormality of the skull, brain or ear were excluded. Ear Review of 3D application (GE PACS Universal Viewer Version 5.0 SP6) was used to measure the middle ear volume.

Results

Mean right MEV was 3.845 cm³ (SD 1.833) and left MEV was 3.855 cm³ (SD 1.843). The difference between the means was not statistically significant (95% CI -0.035 to 0.016; p = 0.460). There was also no statistical difference in mean MEVs between male and female patients (right MEV: 95% CI -0.658 to 0.571; p = 0.889; left MEV: 95% CI -0.644 to 0.592; p = 0.934). Weak negative correlation between MEV and age was observed (right MEV: r = -0.101; p = 0.233; left MEV: r = -0.102; p = 0.232).

Conclusion

This study can contribute to provide baseline data for further studies on mastoid pneumatization. MEV measurement using 3D reconstructed MDCT is easily available and reproducible.

Comparison Of HepaFat-Scan And Fibroscan With Controlled Attenuation Parameter In The Estimation Of Hepatic Steatosis In Patients With Non-Alcoholic Fatty Liver Using Histology As The Reference Standard

SYAMAN HARRY¹; ANUSHYA VIJAYANANTHAN¹; CHAN WAH KHEONG¹; YANG FARIDAH¹; KARTINI RAHMAT¹
¹RADIOLOGY/ UNIVERSITY MALAYA/ Malaysia

Purpose

We aimed to compare HepaFat-Scan, an MRI-based technology for the measurement of liver fat, with Fibroscan (CAP) for the estimation of hepatic steatosis in patients with (NAFLD)

Materials and Methods

Consecutive NAFLD patients who underwent liver biopsy at the University of Malaya Medical Centre were enrolled in this study, and had MRI and Fibroscan examinations on the same day. Histopathological examination of liver biopsy specimen was performed by a single expert pathologist who was blinded to clinical data and reported according to Non-alcoholic Steatohepatitis Clinical Research Network scoring system. Area under receiver operating characteristic curve (AUROC) was used to evaluate the diagnostic accuracy of HepaFat-Scan and CAP for the estimation of hepatic steatosis using liver histology as the reference standard.

Results

Data for 72 patients were analyzed (mean age 58.3 ± 9.8 years, males 45.8%, mean body mass index 29.9 ± 4.0 kg per m², central obesity 95.8%).

	≥ S2	S3
HepaFat-Scan		
AUROC (95% confidence interval)	0.90 (0.80 – 0.96)	0.85 (0.74 – 0.93)
Optimal cut-off, %	12.08	16.23
Sensitivity, %	84.1	27.3
Specificity, %	81.8	72.9
Positive predictive value, %	90.2	27.3
Negative predictive value, %	72.0	97.7
Controlled attenuation parameter		
AUROC (95% confidence interval)	0.71 (0.58 – 0.81)	0.60 (0.47 – 0.71)
Optimal cut-off, dB/m	268	280
Sensitivity, %	95.6	100
Specificity, %	18.2	15.1

Conclusion

The HepaFat-Scan has higher accuracy for the estimation of hepatic steatosis in NAFLD patients compared with the CAP.

A Rare Case Of Biopsied Proven Renal Synovial Sarcoma In A Young Adult Patient: A Case Report And Review Of Literatures

WONG SHEAU NING¹; AIDA WIDURE MUSTAPHA BT MOHD MUSTAPHA¹; ZAHARUDIN HARON¹; MALINDA ABD MAJID¹
¹*JPD RADIOLOGY/ HKL/ PPUKM/ Malaysia*

Intro

Primary renal synovial sarcoma (PRSS) is very rare and difficult to diagnose. It comprises only 1% of all renal tumours and has a poor prognosis. Despite of its rarity, it should be suspected as one of the differential in the setting of solid-cystic renal masses. Early diagnosis of PRSS is crucial for favorable outcome. Multiphase CT renal is important diagnostic tool prior to surgical intervention.

Report

In this case report, we highlighted a case of a PRSS in a 27-year-old male who presented with painless gross hematuria. Preoperative multiphase CT renal showed heterogeneous mass at the upper pole of the right kidney. It has predominantly cystic component, with relatively hyperdense areas within it, which represents hematoma. Solid component at the peripheral margin of the mass was depicted, which showed significant enhancement in all phases. The preoperative diagnosis was cystic renal cell carcinoma whereby PRSS was not suspected. Intraoperative findings showed a cystic-tumor in the upper pole of kidney with areas of hemorrhage and solid growth. Histologically and immunohistochemical features were compatible with the diagnosis of synovial sarcoma of kidney. We will discuss the importance of recognizing PRSS as one of the crucial diagnosis based on multiphase CT renal study supported by review of previous literatures.

Effect Of Reduction In Administered Dosage Of Radiopharmaceutical Activity On Contemporary Nuclear Cardiology Practices And Services In Hospital Kuala Lumpur

AHMAD ZAID ZANIAL¹; SITI ZARINA AMIR HASSAN¹

¹NUCLEAR MEDICINE DEPARTMENT/ KUALA LUMPUR GENERAL HOSPITAL/ Malaysia

Purpose

Despite currently using non-cardiac dedicated gamma cameras, measures to enhance nuclear cardiology practices in HKL were proposed including reduction in administered radiopharmaceutical activity. Hence, we aimed to determine the effect of reduction in injected radiopharmaceutical dosage on patients' estimated radiation level and scintigraphic image quality.

Materials and Methods

Patients who underwent both stress and rest myocardial perfusion studies were included and assigned into 2 groups (A and B). Group A (n=22) was administered with usual radiopharmaceutical activity based on standard departmental protocol. Group B (n=22) received reduced radiopharmaceutical activity of approximately 15 mCi for each stress and rest scan. Scan acquisition for both groups was maintained at similar duration and same camera settings. Estimated radiation levels in effective dose (ED) were calculated with ED \leq 9 millisievert (mSv) as the recommended level. Image quality was also documented.

Results

Mean total injected radiopharmaceutical activities were 42.08 mCi and 31.09 mCi for Group A and B respectively. Mean ED for Group B (7.21 mSv) was significantly lower than Group A (9.76 mSv) with 26.1% decreased in the mean ED following reduction in administered radiopharmaceutical dosages ($p < 0.05$). All patients in Group B achieved recommended ED level as compared to only 4 patients in Group A. Image quality for all scans in both groups were satisfactory. Overall, 50% of patients demonstrated findings of preserved myocardial perfusion.

Conclusion

Reduction in administered radiopharmaceutical activity to approximately 15 mCi for each myocardial scans caused significant decrease in ED levels without compromising scintigraphic image quality.

MS001

The Unique “Dot-In-Circle” Sign On Magnetic Resonance Imaging In A Case Of Madura Foot

APSARA PANICKER¹; JOHN GEORGE²

¹RADIOLOGY/ HOSPITAL KUALA LUMPUR/ Malaysia, ²BIOMEDICAL IMAGING/ UNIVERSITY MALAYA MEDICAL CENTRE/ Malaysia

Purpose

Mycetoma or Madura foot is a chronic subcutaneous granulomatous infection caused by fungi or aerobic bacteria. The disease commonly affects the feet and spreads to involve the deeper structures and bone resulting in destruction, deformity and loss of function. We report a case of histologically proven mycetoma foot in a Malaysian Indian lady with severe infection requiring amputation, and the associated specific “dot-in-circle” sign seen on pre-operative magnetic resonance imaging (MRI) scan.

Results

A 61-year old Indian female presented with complaints of a progressive painful swelling of right foot with recurrent discharge. Symptoms began 8 years prior, initially presenting as a painless nodular growth on the sole of her foot, which worsened. She received numerous in- and out-patient treatments for recurrent discharges, soft tissue infection and osteomyelitis. Initial tissue and culture samples were negative. However 4 years ago, pus culture and histopathology report of skin biopsy confirmed diagnosis of Madura foot. She did no significant history of trauma to her foot prior to her initial symptoms. Laboratory tests were unremarkable except for a raised ESR. We further describe the plain radiograph and MRI findings of this patient's foot, the latter of which demonstrates the characteristic "dot-in-circle" sign.

Conclusion

This case represents a severe case of actinomycetoma that required amputation. Early diagnosis is therefore essential. MRI with the unique, pathognomonic and easily recognisable “dot-in-circle” sign, allows early diagnosis and should therefore be performed in cases of chronic non-healing foot infections or suspected cases of mycetoma without positive biopsy or microbiology.

Multiple Enchondromatosis (Ollier Disease): A Rare Case In The Philippines

ERNIE BAUTISTA II¹

¹DEPARTMENT OF RADIOLOGY/ QUEZON CITY GENERAL HOSPITAL/ Philippines

Purpose

To present a case of Ollier's disease (enchondromatosis), which is an extremely rare nonhereditary sporadic disorder where intraosseous benign cartilaginous tumors (enchondroma) develop close to growth plate cartilage. Prevalence is estimated at around 1 in 100,000 worldwide [1]. Due to paucity of peer-reviewed research and because of the rarity of Ollier's disease in the Philippines, incidence rate was rarely documented. This is a case of a 23-year old male presented to the Quezon City General Hospital (QCGH) Emergency Department due to vehicular (motorcycle) accident. Patient sustained some limitation in the range of motion on his right shoulder. Radiographic examinations were done and revealed no evidence of radiologic fracture with an incidental finding of multiple well-defined, osteolytic, expansile lesions with bony outgrowth in both upper and lower extremities.

Results

A radiologic diagnosis of multiple enchondromatosis (Ollier's disease) was made based on the morphology and location of bone lesions on plain radiographs of this patient. The patient was managed conservatively and advised with serial radiologic follow-ups.

Conclusion

The current case report of Ollier's disease signifies the importance of early diagnosis, timely intervention and treatment. Also, this case report represents one of the very rare cases reported in Philippine literature.

MS003

Case Report : Uncommon Presentation Of Giant Cell Tumour

HON KEONG CHANG¹; ALEX, FOOK SENG LEE²; NORZAILIN ABU BAKAR¹

¹JABATAN RADIOLOGI/ HOSPITAL UKM/ Malaysia, ²JABATAN RADIOLOGI/ HOSPITAL KUALA LUMPUR/ Malaysia

Purpose

Giant Cell Tumour (GCT) is a benign but locally aggressive tumour. This often raised challenges to ascertain the diagnosis especially in the case of atypical presentation. GCT of the talus or multicentric GCT are rare. We reported a case of a 19-year-old lady with GCT of the left talus associated with multicentricity. No abnormality detected in blood investigations. The diagnosis was made with correlation with the radiological and HPE findings. She underwent curettage and bone grafting for the left talar lesion and was recovered well. However, multiple lesions had developed later and she may required for wide excision and prosthesis insertion. We emphasized on role of imaging and importance of correlation with HPE findings in this case.

MS004

A Correlation Between Ultrasonographic Dynamic Evaluation And Clinical Laxity Grading Of Anterior Talofibular Ligament And Calcaneofibular Ligament Tears Among Athletes

INDAR RAHINI HAIRI¹; JOHN GEORGE¹; ZULKARNAIN JAAFAR²

¹BIOMEDICAL IMAGING/ UNIVERSITY OF MALAYA MEDICAL CENTER/ Malaysia, ²SPORT MEDICINE/ UNIVERSITY OF MALAYA MEDICAL CENTER/ Malaysia

Purpose

To find correlation between clinical grading and ultrasound dynamic grading of ATFL and CFL tears.

Materials and Methods

Total of 35 cases were recruited for sport induced lateral ankle sprain injury. The patients were first assessed clinically by sport medicine specialist. The anterior drawer test is used to assess the integrity of the ATFL and the talar tilt test is used to assess the CFL clinically. Clinical grading are divided into 3 grades with grade I - no ligament laxity (normal), grade II - some degree of laxity but with firm end point (partial tear) and grade III - gross laxity without end point (complete tear).

Subsequently, ultrasound assessment are done by radiologist who is blinded from the clinical grading results. Ultrasound grading is given from "I to III" scale with grade I being normal, grade II for partial thickness tear and grade III for complete tear.

Statistical analysis (Spearman correlation) used to correlate both group findings.

Results

There is strong correlation between clinical grading (Anterior Drawer Test) with dynamic ATFL ultrasound grading (Spearman's Correlation Coefficient 0.58) as well as Talar Tilt Test with dynamic CFL ultrasound grading (Spearman's Correlation Coefficient 0.69).

Conclusion

There is strong positive correlation between clinical and ultrasound grading in evaluating ATFL and CFL tears. ADT and TTT are useful clinical screening tests to evaluate lateral sprain injury. Dynamic ultrasound is a precious diagnostic tool in assessing ligament tear as it's proven to show high resolution of lateral ankle ligaments anatomy and pathology.

A Case Of Osteogenesis Imperfecta

JERIK YUMOL¹

¹RADIOLOGY/ QUEZON CITY GENERAL HOSPITAL/ Philippines

Purpose

Osteogenesis imperfecta (OI) is a rare inherited disorder of connective tissue with a broad spectrum of medical and genetic variability. The inherent diversity in majority of the cases, involves mutations in the type I collagen protein (*COL1A1* and *COL1A2*). The progressive deforming type is OI type III. The author presents a case of a 43-year-old female who presented with diarrhea with an incidental note of severe dwarfism and body disproportion associated with impairment in mobility. Radiological examinations reveal generalized osteopenia, marked kyphoscoliosis of the spine, protrusio-acetabulae, multiple pathologic fractures, and long bone deformities, all of which are suggestive of OI type III. The atypical presentation of this condition in adulthood necessitates early diagnosis for prompt intervention. However, treatment for OI is not curative and focuses on improving the quality of a patient's life.

Conclusion

JV, 43-year-old female afflicted with osteogenesis imperfecta type III. The clinical sequelae of this anomaly are brittle bones, which predispose the patient to recurrent fractures even after trivial trauma. Clinical and radiographic findings of short stature, white sclerae, hearing loss, severe kyphoscoliosis as well as roentgen images revealing generalized osteopenia, multiple pathologic fractures, long bone deformities, and thin ribs are vital findings in diagnosing this rare condition. This is among the few medical conditions that can be satisfactorily diagnosed based on the history and x-ray imaging. A multidisciplinary approach to treatment is valuable to improve patient's quality of life since there is no cure yet for OI.

MS006

MDCT Arthrography Of Shoulder, A Better Cost Saving Modality In Suburban Hospitals: A Pictorial Essay

MING HUAN CHENG^{1 2}; EUN KYUNG KHIL²; JUNG-AH CHOI²

¹RADIOLOGY/ KENINGAU HOSPITAL/ MALAYSIA, ²RADIOLOGY/ HALLYM UNIVERSITY DONGTAN SACRED HEART HOSPITAL/ Korea

Purpose

CT arthrography of shoulder has been underutilised in suburban hospitals as well as major hospitals due to higher preference towards MRI over CT scan by the clinicians. In many hospitals, this results in long patient awaiting list and some patients from rural area are not able to undergo the MRI due to accessibility problems. Studies have shown that MDCT arthrography of the shoulder is as sensitive as MRI in diagnosing shoulder rotator cuff injury. In this pictorial essay, we revealed the MDCT imaging findings of the shoulder arthrography and compared with MRI findings.

Materials and Methods

We selected 20 cases of MDCT arthrography of shoulder, including arthrography techniques and MRI findings. Images demonstrated findings of rotator cuff injury, glenoid labrum pathology and associated degenerative features. All cases were performed in Radiology Department, Hallym University Dongtan Sacred Heart Hospital, South Korea between January 2014 and December 2016.

Conclusion

MDCT arthrography of the shoulder is good in diagnosing rotator cuff injuries, superior labral anteroposterior (SLAP) lesions and instability. It is a preferred modality in suburban hospitals without MRI facility as it is cost saving and provides faster examination time. In addition, more patients from rural area are able to receive the scan from the nearby hospitals.

MS007

Thrower's Fracture – A Rare Injury From A Rare Sport In Malaysia

MOHD SHUKRY MOHD KHALID¹; SABRILHAKIM SIDEK¹

¹*MEDICAL IMAGING UNIT/ FACULTY OF MEDICINE UNIVERSITI TEKNOLOGI MARA/ Malaysia*

Purpose

To report a rare sports injury in an amateur dodgeball player and awareness of this entity will avoid unnecessary investigations.

Conclusion

Dodgeball is a relatively new sport in Malaysia. The game started gaining its popularity recently with both the men's and women's national teams won medals in the World Dodgeball Championship in Australia in 2016. We report a rare sports injury in a 23-year-old amateur dodgeball player who sustained a spontaneous fracture of the right humerus after throwing a dodgeball during his training session. We discuss the mechanism of injury, radiological investigation as well as the management of this rare sport injury.

Cadaveric Stature Estimation Using Postmortem Computed Tomography (PMCT) Among Malaysians

SABRILHAKIM SIDEK¹; MANSHARAN KAUR CHAINCHEL SINGH^{1,2,3}; AFRINA AQILAH ABD SHUKOR¹; NUR NAJLA AQILAH JAMIL¹; MAS AINA MOHD NASIR¹; MUHAMMAD AZRUL TALIB¹; LAI POH SOON³; SAIFUL NIZAM ABDUL RASHID^{3,4}; MOHAMAD HELMEE MOHAMAD NOOR³; SIEW SHEUE FENG³

¹FACULTY OF MEDICINE/ UNIVERSITI TEKNOLOGI MARA (UiTM)/ Malaysia, ²INSTITUTE OF PATHOLOGY, LABORATORY AND FORENSIC MEDICINE (I-PPerForM)/ UNIVERSITI TEKNOLOGI MARA (UiTM)/ Malaysia, ³NATIONAL INSTITUTE OF FORENSIC MEDICINE/ HOSPITAL KUALA LUMPUR/ Malaysia, ⁴PARKCITY MEDICAL CENTRE/ SIME DARBY HEALTH CARE SDN. BHD./ Malaysia

Purpose

Post-mortem Computed Tomography (PMCT) plays an established role in forensic investigation of dead bodies. Previous published studies estimated stature for Black and White Americans as well as Japanese populations using skeletal spine length from post-mortem cases. However, there was no published study to estimate stature for other population or races. Therefore, this study was performed to assess correlation between skeletal spine length and actual height and to derive novel regression formulas for stature estimation among dominant races in Malaysia.

Materials and Methods

Total of 115 post-mortem cases were obtained retrospectively from the year 2015. These cases were scanned using multislice CT scanner. The Actual Heights (AH) were obtained from PMCT database. Curved MPR and 3D image reconstruction were performed followed by measurement of the whole spine length (WSL), as well as the length of cervical (CL), thoracic (TL) and lumbar (LL) spine segments using OsiriX software. All statistical analyses were performed using SPSS version 22.0.

Results

Statistical analyses showed positive correlation between WSL, CL, TL, LL and the actual height. WSL showed the highest correlation with actual height followed by CL, TL and LL. For specific spine segment groups, CL yielded a better correlation with actual height compared to TL and LL. Separate regression formulas were obtained respectively.

Conclusion

Skeletal spine length can be used as an alternative tool for stature estimation. The remaining cervical spine length may be utilized for stature estimation when the whole spine length is not retrievable.

MS009

Morphologic Changes Of Rotator Cuff Muscles Following Fast Isokinetic Training In State-Level Weightlifters Using MRI

SITI SALWA MOHAMAD ZAINI¹; KHAIRIL AMIR SAYUTI¹; MOHD EZANE AZIZ¹

¹*RADIOLOGY/ UNIVERSITI SAINS MALAYSIA/ Malaysia*

Purpose

To evaluate the size of rotator cuff muscles and muscle fiber angle of supraspinatous muscle in two different types of exercise which are fast isokinetic training and traditional isotonic training in state-level weightlifters.

Materials and Methods

Subjects (n=16) were recruited through Majlis Sukan Negeri Kelantan. They were gender- and weight- matched and randomly assigned into traditional isotonic training group (TOT) and fast isokinetic training (FIT) group. Both groups went through 24 sessions of training programme three times per week for 8 weeks. MRI done before the commencement of the training and after the training. MRI of rotator cuff muscles were performed and measurement of CSA and PA were done.

Results

CSAs of the four rotator-cuff muscles increased after the intervention programme with significant improvements ($p < 0.05$) were found in CSA of SS and ISTM, but not in SC. Significant increment in CSAs were found in all rotator-cuff muscles of subjects underwent FIT but for subjects underwent TOT, significant increment in CSA was only found in SS, but not that of SC and ISTM. PA of the supraspinatous muscle significantly increased after the intervention programme. Significant increment in PA was found in all rotator-cuff muscles of subjects underwent either FIT or TOT.

Conclusion

Fast isokinetic training show significant increment of CSAs of the four rotator cuff muscles. Significant increment in PA was found in all rotator cuff muscles of subjects who underwent either FIT or TOT.

Establishing Reference Value For Normal Liver Stiffness Among Healthy Children Assessed By Point Shearwave Elastography Imaging

KUAN SIONG SIM¹; ROZIAH MURIDAN¹; ANUSHYA VIJAYANANTHAN¹
¹RADIOLOGY/ UNIVERSITY MALAYA MEDICAL CENTER/ Malaysia

Purpose

Ultrasound shearwave examination using ElastPQ system® by Philip® is a new non-invasive method for the assessment of liver fibrosis by measuring liver stiffness. We aimed to determine the reference value of normal liver stiffness among healthy children in Malaysia via point shearwave elastography and to correlate between normal liver stiffness with age, gender and ethnic group. We also assessed the feasibility and limitation of shearwave elastography in the paediatric population.

Materials and Methods

A total of 115 healthy children between the ages of 0 and 12 years were examined with the ElastPQ system® for the measurement of liver stiffness. Ten ElastPQ measurements were obtained in both lobes of the liver through the intercostal space for every subject. Median of 10 measurements of ElastPQ were analysed and correlated between age group, gender and ethnic group. Potential information regarding the limitation for this examination was also collected.

Results

Medians, standard error of means, and correlation between median liver stiffness and other study variables were calculated. There were statistically significant differences of median liver stiffness between different age groups with 0.69 ± 0.12 kPa (0–2 years), 2.61 ± 0.30 kPa (3–5 years), 3.44 ± 0.19 kPa (6–11 years) and 4.33 ± 0.44 kPa (12 years). The normal liver stiffness increased with age ($r = 0.644$, $p < 0.01$). Gender and ethnic group had no significant effect on liver stiffness values.

Conclusion

ElastPQ shearwave elastography examination is an easy non-invasive method for liver stiffness measurement among paediatric population and a promising tool in the diagnosis of liver fibrosis in the future.

PD002

Orbital Manifestations Of Langerhans Cell Histiocytosis: - A Case Report

NUR ASMA SAPIAI¹; JUHARA HARON²

¹RADIOLOGY, HOSPITAL KUALA KRAI/ MINISTRY OF HEALTH/ Malaysia, ²RADIOLOGY/ UNIVERSITY SAINS MALAYSIA/ Malaysia

Purpose

Langerhans Cell Histiocytosis (LCH) is a spectrum of disorders characterized by accumulation of histiocytes in various tissues. It is rarely encountered in ophthalmic practice.

Results

A 6 months old malay boy complaint of swelling and redness over right eye upper orbital ridge for 1 week. It associated with right eye discharge and feverish. The swelling subside after taking antibiotic.

Clinically, swelling over right upper outer orbital ridge, which is firm in consistency, not mobile, not tender and the underlying skin is normal. He was treat as right upper lid abscess. The swelling progressively increase in size 1 week after completed antibiotic for 2 weeks.

Skull radiograph shows erosion of the superolateral aspect/wall of right orbital rim. Computer tomography of the brain and orbit showed lobulated homogenously enhancing hyperdensity soft tissues mass occupying the superolateral aspect/wall of right orbital rim. It associated with lytic destructive of these bone and also right greater wing of sphenoid. No calcification or cystic component within.

Differential diagnosis of neuroblastoma metastasis or Langerhan cell histiocytosis are given for superolateral aspect/wall of right orbit mass. Proceed with right superotemporal orbital mass incisional and tru cut biopsy. The histopathological examination report was langerhan's cell histiocytosis.

Conclusion

Diagnosis of LCH should be considered in the presence of craniofacial and skull base osteolytic lesions with soft tissue components in pediatric patients.

Biliary Rhabdomyosarcoma: A Diagnostic Challenge

SEE KHIM SIM¹; NIK FATIMAH SALWATI NIK MALEK¹; MOHAN ARUNASALAM A. NALLUSAMY²

¹DEPARTMENT OF RADIOLOGY/ HOSPITAL SULTANAH BAHYAH/ Malaysia, ²DEPARTMENT OF PAEDIATRIC SURGERY/ HOSPITAL SULTANAH BAHYAH/ Malaysia

Purpose

Rhabdomyosarcoma is a rare cause of obstructive jaundice in children. However, it is considered the most common biliary tract tumour in children. We describe the case of a 1 year 4 months old girl who presented with obstructive jaundice and referred for biliary tree tumour. Intraoperative and histological features confirmed the diagnosis of rhabdomyosarcoma. Post operatively, the patient was referred to oncology team for further treatment.

The diagnosis of biliary rhabdomyosarcoma solely base on radiological features remains challenging. The diagnostic imaging modalities including ultrasound (US), computerized tomography (CT) scan and magnetic resonance cholangiopancreatography (MRCP) have its own advantages in the diagnosis of rhabdomyosarcoma. The imaging modalities are important to establish the accurate diagnosis and evaluate the extend of the disease involving the biliary tree for different surgical approaches. Multidisciplinary treatment with appropriate surgical intervention, chemotherapy and radiotherapy have improved the prognosis and long term survival.

NR001

Neuroimaging Abnormalities In Anti-NMDA Receptor Encephalitis

ALAN BASIL PETER^{1,2}; NORLISAH RAMLI²; KARTINI RAHMAT²; LI KUO TAN²; CHONG TIN TAN³; SUHAILAH ABDULLAH³;
KHENG SENG LIM³

¹DEPARTMENT OF MEDICAL IMAGING, FACULTY OF MEDICINE/ UNIVERSITI TEKNOLOGI MARA/ Malaysia, ²DEPARTMENT OF BIOMEDICAL IMAGING, UNIVERSITY MALAYA RESEARCH IMAGING CENTRE/ UNIVERSITY OF MALAYA/ Malaysia,

³DIVISION OF NEUROLOGY, FACULTY OF MEDICINE/ UNIVERSITY OF MALAYA/ Malaysia

Purpose

To identify pathognomonic changes, in neuroimaging of patients with anti-NMDAR encephalitis. To look for subtle changes in serial imaging of these patients. To determine if there is any loss of brain volume during the course of the illness. To evaluate the usefulness of diffusion tensor imaging (DTI) in detecting damage to the tracts within the brain.

Materials and Methods

Four patients with anti-NMDAR encephalitis and four age-matched normal subjects underwent clinical functional assessment, and two serial MRIs in a 3.0T scanner; at time of presentation and three months later. Whole brain volumes were calculated using voxel-based morphometry (VBM) analysis. The DTI dataset was post-processed by MRIConvert, FSL and AFNI to obtain mean fractional anisotropy (FA), mean diffusivity (MD), axial diffusivity (AD) and radial diffusivity (RD).

Results

One anti-NMDAR encephalitis patient showed mild functional impairment while the rest showed no functional impairment at nine months follow up. Our study did not show any specific pattern of brain volume change in patients. We observed trends of lower mean FA values and higher mean MD, AD and RD values for the majority of the 50 tracts studied in the anti-NMDAR encephalitis patient group. However, only a few were statistically significant.

Conclusion

Our four patients recovered well. Whole brain volumes did not demonstrate significant temporal changes from control groups. DTI assessment showed trends that suggest damage to the neuronal integrity in the patient group. Serum antibody tests remain essential in diagnosing anti-NMDAR encephalitis patients. However, DTI may shed light in grading the severity and also assessing response to treatment.

NR004

Regional Diffusion Tensor Imaging-Derived Tensor Metrics Obtained From White Matter Tracts For The Characterisation Of Gliomas

POHCHOO SEOW¹; ADITYA HERNOWO²; VAIRAVAN NARAYANAN²; JEANNIE, HSIU DING WONG¹; NORLISAH RAMLI¹
¹BIOMEDICAL IMAGING/ UNIVERSITY OF MALAYA/ MALAYSIA, ²SURGERY/ UNIVERSITY OF MALAYA/ Malaysia

Purpose

To investigate the DTI-derived tensor metrics obtained from white matter (WM) tracts in intratumoural and peritumoural regions for grading of gliomas.

Materials and Methods

A total of 24 histologically proven glioma patients underwent a standard magnetic resonance (MR) imaging tumour protocol with DTI. The intratumoural, peritumoural and tumour subregion masks were delineated using the snake model (ITK-SNAP) with structural MR images (T1-weight, T2-weight and fluid-attenuated inversion recovery sequence) as reference. Data derived from DTI processing and diffusion tensor fitting generated the DTI metric maps. Tractography was performed to delineate the white matter tracts in both regions. The mean values of the DTI metrics such as FA (fractional anisotropy), MD (mean diffusivity), AD (axial diffusivity), RD (radial diffusivity), p (pure isotropic diffusion), q (pure anisotropic diffusion), L (total magnitude of diffusion tensor), Cl (linear tensor), Cp (planar tensor), Cs (spherical tensor), and RA (relative anisotropy) were obtained from mapping of the WM tracts on the DTI metric maps.

Results

Significant differences were demonstrated in few DTI metrics in the solid enhancing subregions (MD, AD, RD and p) and solid nonenhancing subregions (MD, AD, RD, p and L) between different tumour grades.

Conclusion

Our study suggested that the WM tracts were not completely destroyed but were still intact inside the tumour, even glioblastoma multiforme, as opposed to the common belief that tracts are completely destroyed. DTI tensor metrics provide insights on regional white matter tracts impairment in the presence of tumour while preoperative identification of WM tracts can improve neurosurgical planning.

Malignant Melanoma Of The Nasal Cavity

ROFIAH ALI¹; TAN CHAI HOONG¹
¹*RADIOLOGY/ HOSPITAL SG BULOH/ Malaysia*

Purpose

Nasal cavity and paranasal sinuses cancer are rare and account for approximately 0.2% to 0.5% of malignant tumours which squamous cell carcinoma is the commonest histology. Malignant melanoma comprises less than 1% of nasal cavity and paranasal sinuses tumours. Patients usually present with nasal obstruction, epistaxis or nasal discharge and rarely pain. Malignant melanoma of the nasal cavity is a challenge to diagnose due to non-specific clinical features and obscure location. We report a case of intranasal melanotic malignant melanoma for its rarity and unusual age of presentation.

Materials and Methods

A 35-year-old woman with no known medical history, presented with sudden onset of painless epistaxis for 2 days. Urgent Computed Tomography (CT) of the paranasal sinuses showed a large soft tissue mass with peripheral enhancement filling the right nasal cavity. Endoscopic examination revealed a dark mass at the posterior one third aspect of the right inferior turbinate. A repeat CT for preoperative staging revealed a markedly enhancing, superficial small lesion at the right inferior turbinate after careful scrutinization and adjustment of CT windowing.

The patient underwent endoscopic medial right maxillectomy. Subsequently, patient was referred for oncology treatment. However, she defaulted treatment and presented later on with metastases to chest wall, breast and retroperitoneum.

Conclusion

This case illustrates the challenge in diagnosing a small nasal mucosal melanoma in the presence of surrounding haematoma and obscure location. Endoscopic examination and histological diagnosis are complimentary to imaging and are all essentials to diagnose early stage tumour.

NR006

Microstructural Integrity Of The Peripheral Nerves In Charcot Marie Tooth (CMT) Disease; An MRI Evaluation Study

THIAGU KRISNAN¹; FAIZATUL IZZA ROZALLI¹; FARHANA FADZLI¹; NORLISAH RAMLI¹; KARTINI RAHMAT¹
¹RADIOLOGY/ PPUM/ Malaysia

Purpose

CMT is a common inherited neurological disorders which results in peripheral neuropathy. Our goal to investigate microstructural integrity in CMT using DTI as well as to evaluate muscle atrophy severity in CMT using MRI.

Materials and Methods

9 CMT patients and 9 age-matched healthy controls, were prospectively recruited. CMT patients was compared with healthy control. MRI DTI were performed to evaluate sciatic and peroneal nerves. Post processing images was done to obtain DTI values . Axial in-out phase of the calf were used to classify muscle atrophy on the tibialis anterior muscle.

Results

Significant difference was obtained in DTI values (FA and RD) in CMT patients in both sciatic and peroneal nerve. The FA value was significantly reduced and RD was significantly increased in both sciatic and peroneal nerve in CMT patients ($p < 0.001$ in FA and $p = 0.04$ in RD values respectively). Mean muscle atrophy of tibialis anterior muscle was significantly reduced in CMT patients ($p < 0.001$). We also found association between neuropathy severity and muscle atrophy grading, with the highest correlation between sciatic and peroneal nerve FA ($r = -0.7$, $p < 0.001$).

Conclusion

MRI-DTI was able to detect degenerative and demyelination changes in CMT, which corresponds to the nature of the disease. MRI also supports that there was significant muscle atrophy in CMT patients as compared to normal controls. In the future MRI-DTI could be useful screening tool for asymptomatic high risk patient with family history of CMT for early detection of neuropathy and early intervention of progressive neuropathy.

NR007

Vein of Galen Aneurysmal Malformation (VGAM): Case Report Of An Uncommon Intracranial Vascular Malformation And Literature Review

YEONG HUEI YIAW¹; TECK CHONG YAP¹; AIDA MASTURA MUSTAPHA¹; AUN NEE LIM¹; BEE SHUANG LEE²; ANN CHENG WONG²

¹DIAGNOSTIC RADIOLOGY/ SARAWAK GENERAL HOSPITAL/ Malaysia, ²PAEDIATRICS/ SARAWAK GENERAL HOSPITAL/ Malaysia

Purpose

Vein of Galen Aneurysmal Malformation (VGAM) is a rare form of vascular malformations in neonate. In this report, we present a case of a premature newborn with incidental finding of intracranial vascular malformation.

Results

An antenatally uneventful premature neonate with gestation of 34 weeks and 3 days was presented to the hospital for severe neonatal jaundice and required exchange transfusion. Upon screening bedside ultrasound cranium, intracranial vascular malformation was detected, thus the patient was suspected with vein of Galen malformation. Cardiac echogram showed a structurally normal heart with a good cardiac function. However, dilated coronary sinus was present. Diagnosis was then reaffirmed with magnetic resonance angiography and venography (MRA/MRV). Currently, the patient is treated in neonatal intensive care unit (NICU) for congenital pneumonia and severe neonatal jaundice with acute kidney injury. Since the patient has no significant cardiac failure symptoms, cerebral digital subtracted angiography (DSA) and therapeutic embolization are being withheld.

Ultrasound cranium and magnetic resonance imaging of the brain will be presented here, followed by literature review of this unusual vascular malformation.

Conclusion

Knowledge of this rare entity, with the use of ultrasound and MRI are beneficial in helping to diagnose this infrequent intracranial vascular malformation and future planning for further management.

NR008

A Rare Case With Typical Presentation; Tectal Plate Glioma With Obstructive Hydrocephalus.

YUH YANG LEONG¹; HAMZAINI ABDUL HAMID¹; SHAHIZON AZURA MOHAMED MUKARI¹

¹RADIOLOGY/ PUSAT PERUBATAN UNIVERSITI KEBANGSAAN MALAYSIA/ Malaysia

Purpose

Tectal plate lesions are rare, and aetiology varies from neoplastic, vascular, infectious, or inflammatory in nature. Lesions at this location could cause significant mass effect leading to obstructive hydrocephalus even though they are still small in size due to its proximity to the aqueduct of Sylvius. The subtlety of the radiological appearance might escape the untrained and unsuspecting eyes. Quoted as the “no man’s land”, HPE confirmation via surgical biopsy from the brainstem is not without its risks.

Results

We presented a case in which a male adolescent presented with headache, fever and behavioural change, symptoms mimicking meningoencephalitis. Subsequent imaging showed a small tectal plate lesion, which radiological features were supportive of a tectal plate low-grade glioma, causing acute obstructive hydrocephalus. The patient recovered well after a CSF diversion procedure via shunt placement. A conservative approach was taken in this case in view of the benign radiological appearance of the lesion. The patient was discharged well. Follow up imaging showed radiological stability of the lesion, further supporting the diagnosis of a low-grade tumour.

Conclusion

Detail scrutiny with high index of suspicion is required as low-grade tectal gliomas tend to demonstrate subtle radiological findings, and could be missed especially when it is small. Radiological diagnosis plays a significant role in such cases as the risk of surgical biopsy with HPE confirmation may outweigh the benefits.

BR002

Diagnostic Accuracy And Clinical Feasibility Of Vacuum-Assisted Breast Biopsy (VAB) Of Non-Palpable Breast Lesions- A Single Centre Experience

MARLINA TANTY RAMLI¹; KARTINI RAHMAT²; SHALEEN KAUR KIRAT SINGH²; CARISSA CHAN WAI YEE²; ANUSHYA VIJAYANANTHAN²

¹MEDICAL IMAGING UNIT/ FACULTY OF MEDICINE UiTM/ Malaysia, ²BIOMEDICAL IMAGING DEPARTMENT / UNIVERSITY MALAYA RESEARCH IMAGING CENTRE/ Malaysia

Purpose

This study presents our initial experience in utilizing VAB in the diagnosis and treatment of breast pathology.

Materials and Methods

All VAB carried out in the University Malaya Medical Centre, from March 2017 to November 2017, were retrospectively reviewed. The types of procedures and histopathology results were documented. All VAB were performed using Mammotome and BARD biopsy device using 10-Gauge biopsy needle

Results

There were 33 stereotactic, 16 ultrasound-guided and 2 MRI-guided VABs performed.

Of the 33 stereotactic VAB, 29 were for suspicious microcalcifications, 3 spiculated densities and 1 lobulated lesion not seen on US. The number of specimens obtained ranging from 5-12. There were 30 benign, 2 borderline (sclerosing adenosis) and 3 malignant lesions (2 intermediate and 1 low grade DCIS).

15 out of 16 US-guided VAB were performed as therapeutic excision on 25 lesions that were diagnosed as benign on core needle biopsy. One patient with invasive lobular cancer but was deemed high risk for surgery had US-guided VAB. All lesions were less than 2.5cm. The number of specimens obtained ranging from 1-24. Of the benign lesions the majority were fibroadenomas (8).

MRI VAB were done on BIRADS 4 lesions neither seen on mammography nor ultrasound. 12 specimen were obtained for each. Both lesions were benign

Conclusion

The results obtained from our study confirms high efficiency of VAB in breast diagnosis. The diagnosis and treatment with VAB eliminates the need for open surgical procedure, decreasing the cost of breast disease management and morbidity

BR003

The Usefulness And Diagnostic Accuracy Of Tomosynthesis In Characterizing Mammographic Abnormality

VITHYA VISALATCHI SANMUGASIVA²; MARLINA TANTY RAMLI^{1,2}; KARTINI RAHMAT²; FARHANA FADZLI²; CAROLINE JUDY WESTERHOUT²; YEONG CHAI HONG²; FAIZATUL IZZA ROZZALI²; NG KWAN HOONG²; NAZIMAH ABDUL MUMIN^{1,2}
¹MEDICAL IMAGING UNIT/ FACULTY OF MEDICINE UiTM/ Malaysia, ²BIOMEDICAL IMAGING DEPARTMENT / UNIVERSITY MALAYA RESEARCH IMAGING CENTRE/ Malaysia

Purpose

This study aimed assess the combined performance of digital breast tomosynthesis (DBT) and two-dimensional full field digital mammography (2DFFDM) in the characterisation of suspicious mammographic abnormalities.

Materials and Methods

A retrospective study from September 2014 to May 2017 involving 390 patients with BIRADS 4 and 5 lesions who underwent DBT+2D FFDM and biopsy was conducted. BIRADS 3 lesions that were biopsied were also included. Characterization of lesions were based on mass, asymmetry, calcification and associated features included architectural distortion, skin thickening, nipple retraction and lymphadenopathy. Histopathological examination (HPE) results were the gold standard. Sensitivity, specificity, negative and positive prediction values (PPV) were calculated.

Results

Of the 390 patients, 243 (62.3%) were in the diagnostic group, 110 (28.2%) in the opportunistic screening group and 37 (9.5%) in the targeted screening group. There were 182 cancer detected – 154 in the diagnostic group, 19 in the opportunistic screening group and 9 in the targeted screening group. Of the 182 cancer, 76.0% presented as mass, 4.0% as microcalcification only and 20.0% as asymmetric density. Sensitivity, specificity, PPV and NPV for cancer in the detected mass were 93.8%, 85.1%, 88.8% and 91.5%, respectively. PPVs were 61.6% for cancer presenting as microcalcification and 60.7% for focal asymmetric density. PPV of cancer in BIRADS category 4 and 5 lesions was 32.2% and 93.1% respectively. The PPV of BIRADS subcategories 4a, 4b and 4c were 6.0%, 38.3% and 68.9% respectively.

All BIRADS category 3 lesions that were biopsied were non-carcinoma

Conclusion

DBT+2DFFDM is an effective tool in cancer diagnosis of BIRADS 4 and 5 lesions, especially those presenting as mass with PPVs simulating ACR BIRADS 2013 guidelines. Characteristics of benign appearing lesions on DBT+2DFFDM are a strong indicator of non-malignancy.

BR004

The Impact Of Multimodality Imaging In Clinical Decision Making In Breast Cancer Patients Selected For Intraoperative Radiotherapy (IORT)

WAI YEE CHAN¹; KARTINI RAHMAT¹; SHALEEN KAUR KIRAT SINGH¹; WAI KEONG CHEAH¹; MARLINA TANTY RAMLI²; FARHANA FADZLI¹; MEE HOONG SEE³; JOANNE AISHA MOSIUN³

¹BIOMEDICAL IMAGING/ UNIVERSITY MALAYA RESEARCH IMAGING CENTRE, UNIVERSITY OF MALAYA/ Malaysia, ²MEDICAL IMAGING UNIT/ UNIVERSITY TEKNOLOGI MARA UiTM/ Malaysia ³SURGERY/ UNIVERSITY MALAYA/ Malaysia

Purpose

Correlate the accuracy of lesion size on tomosynthesis, ultrasound and MRI with operative findings. We also aim to compare the detection of multifocal, multicentric and contralateral breast synchronous cancer in standard conventional imaging with MRI and its impact on IORT eligibility.

Materials and Methods

23 patients underwent IORT over 18-month period. All had pre-surgical tomosynthesis and ultrasound. 5 patients had MRI as an addition. The operative outcome and histopathological findings were documented and compared with imaging.

Results

5 of 18 (28%) patients who underwent conventional imaging only were subjected to external beam radiotherapy EBRT post-surgery; 3 patients had lymphovascular invasion and 2 had involved margins (the sizes were underestimated by 7mm and 14mm on imaging). The mean size difference was 2.4mm.

1 of 5 patients (20%) who underwent pre-operative MRI was subjected to EBRT due to involved margins with discrepancy between pathological and MRI size being 13mm. IORT were not suitable for two patients due to the detection of multicentric disease in the breast and axillary tail; the former underwent mastectomy while the latter did not undergo surgery. The mean MRI and pathological size difference was 0.5mm.

No additional satellite nodules were found intraoperatively in all patients.

Conclusion

Standard conventional imaging shows good lesion size correlation with operative findings. Pre-operative MRI is a useful adjunct and has an impact on IORT eligibility decision-making.

MY001P

Percutaneous Gastrocystostomy Stent Removal As A Viable Alternative To Conventional Endoscopic And Surgical Removal: A Case Report Of An Intra-Abdominal Stent Migration

ERIC CHUNG¹; NUR ADURA YAAKUP¹; NORSHAZRIMAN SULAIMAN¹

¹BIO-MEDICAL IMAGING/ UNIVERSITY MALAYA/ Malaysia

Intro

Gastrocystostomy stent insertion is a popular treatment of choice for enlarging pancreatic pseudocyst. We described a case of percutaneous removal of a dislodged gastrocystostomy stent.

Report

A 39-year-old lady was diagnosed with pancreatitis in 2016. Subsequent CT scan showed resolved pancreatitis with a large pancreatic tail pseudocyst. She was then admitted for an elective endoscopic gastrocystostomy stent placement. The procedure was uneventful and she was discharged home with antibiotics. She later presented with abdominal pain and vomiting. CT scan showed persistent pancreatic pseudocyst with dislodged gastrocystostomy stent into the abdominal cavity.

Retrieval of the stent via percutaneous route was performed. A 6F pigtail catheter was inserted into the pseudocyst under ultrasound guidance. This was to allow saline infusion to maintain the pseudocyst cavity. A 14F peel away sheath was subsequently introduced into the pseudocyst. A modified snare was made using a 0.018" Terumo guidewire and a 5F Bern catheter. The stent was then removed under fluoroscopy guidance. The 6F pigtail catheter was removed. The 14F sheath was then exchanged to a 14F pigtail drainage catheter to drain the pseudocyst. Post-procedure, patient has no abdominal symptoms. Follow-up ultrasound showed resolved pseudocyst. She was subsequently discharged home with antibiotic.

Conclusion

Percutaneous gastrocystostomy stent removal is a viable alternative to conventional endoscopic removal and surgical removal especially in cases where there is intra-abdominal stent migration.

MY002P

The Brain Don't Know The Eyes Don't See-Incidental Findings Of Right Subclavian Arterio-Venous Fistula (AVF)

KHOR FOO KIANG¹; OOI XI YI²; CONSTANCE LIEW SAT LIN¹; FAIRRUL KADIR¹

¹DEPARTMENT OF MEDICINE BASED DISCIPLINE/ FACULTY OF MEDICINE AND HEALTH SCIENCES, UNIVERSITI MALAYSIA SABAH/ Malaysia, ²DEPARTMENT OF RADIOLOGY/ HOSPITAL QUEEN ELIZABETH, / Malaysia

Intro

To highlight the symptoms and signs of subclavian artero-venous fistula and the radiology modality for its diagnosis.

Report

Dilated neck vein is a physical sign indicates central venous obstruction. Superior vena cava obstruction and subclavian or internal jugular vein stenosis are the commonest causes. Unilateral or bilateral side neck vein dilatation can help to located the site of venous obstruction. Artero-venous fistula(AVF) is a rare cause for neck vein dilatation especially in an adult. It could be due to neck mass, penetrating trauma and rarely medical procedure. We presenting case of a 64-year-old lady with neck swellings for years came for outpatient ultrasound of the thyroid gland. She had prior four hospitalizations with history of line insertion at right sided neck. Prior ultrasound scanning, physical examinationrevealed distended neck veins. Ultrasound scan was performed subsequently.

Duplex ultrasound of the neck revealed dilated right internal jugular vein (IJV) with Yin-Yang sign on colour Doppler and arterialised waveform of the IJV. Previous Computed Tomogram(CT) Thorax, Abdomen and Pelvis for investigation of bilateral leg swelling, ascites and raised CA-125 revealed pulmonary arterial hypertension (PAH).

Conclusion

Acquired subclavian AVF is rare, early detection of this AVF would prevent further complication of high output state such as PAH in this case.

MY003P

An Atypical Cause Of Extensive Lower Extremity DVT: May-Thurner Syndrome

MELISSA SOK LIN TING¹; PHYLLIS WAN CHUN HO¹
¹*RADIOLOGY DEPARTMENT/ HOSPITAL BINTULU/ Malaysia*

Intro

May-Thurner Syndrome (MTS) is an anatomical variant in which the left common iliac vein compression by an overriding right common iliac artery that leads to deep venous thrombosis. Even though the anatomical variant is common, not all patients will develop symptoms.

Report

A 41 year-old, para 4 lady with underlying hyperthyroidism, presented with acute left lower limb swelling and pain for a week. Clinical examination were significant for non-pitting oedema of the left lower limb. She has regular pulse rate, no stigmata of connective tissue disease. No palpable abdominal or pelvic mass.

Doppler ultrasound revealed long segment thrombosis extending from deep veins in the calf to the common femoral vein. A further ultrasound scan of the abdomen and pelvis was negative for mass that may compress on the venous outflow. A subsequent CECT abdomen revealed compression of left common iliac vein against the lumbar vertebra by the overlying, crossing right common iliac artery.

Conclusion

This case highlight the importance of heightened suspicious for unexplained left lower limb deep venous thrombosis. As opposed to deep venous thrombosis due to underlying system illnesses, May Thurner syndrome is potentially reversible with appropriate endovascular treatment.

MY004P

Case Report: Prostate Artery Embolization Using Embozene Microsphere On A 75 Year Old Man With Bleeding Benign Prostate Hyperplasia Complicated With Long Standing Indwelling Bladder Catheter

MOHD NAIM MOHD YAAKOB¹; RIDZUAN ABDUL RAHIM²

¹RADIOLOGY/ NATIONAL UNIVERSITY OF MALAYSIA/ Malaysia, ²RADIOLOGY/ KUALA LUMPUR GENERAL HOSPITAL/ Malaysia

Purpose

Prostate artery embolization (PAE) is suitable for patient with benign prostate hyperplasia (BPH) who are unresponsive to oral medication and poor candidate for surgery. Embolization materials used in the procedure include Polyvinyl Alcohol (PVA) and microspheres. Microspheres have been suggested as more superior embolic material for PAE than PVA. This is a case of PAE procedure using Embozene microsphere in patient with bleeding BPH on long term indwelling bladder catheter.

Materials and Methods

Embolization done using a single vial of Embozene (Boston Scientific) microspheres (200-300 micron) mixed with contrast. Administration of the microspheres was done using the technique of slow particle delivery followed by slow saline and fast saline injections respectively. This embolization technique maximizes particle impaction into the deep prostate gland arteries thus covering as much prostate gland as possible.

Results

Post treatment, the patient reported no hematuria and indwelling catheter was removed after 1 week. The patient was able to void normally at 10 days post procedure.

Conclusion

In conclusion, prostate artery embolization is a promising treatment modality for patients who are poor surgical candidates. The use of microspheres have been proven to be superior to PVA particle in achieving good results of PAE. Further studies with larger patient group need to be done to address the question of which size embolic agent is the best in prostate artery embolization.

MY005P

Staged Embolization Of Vein Of Galen Aneurysmal Malformation: A Case Report

MOHD SHAFIE ABDULLAH¹; FAROUK HAJI JALIL¹
¹*RADIOLOGY/ UNIVERSITI SAINS MALAYSIA/ Malaysia*

Intro

Vein of Galen aneurysmal malformations (VGAMs), are also known as median prosencephalic arteriovenous fistulas. These are uncommon intracranial vascular anomalies that usually present dramatically during early childhood with features of a high-output cardiac failure. Imaging tools such as CT, MRI and cerebral angiography are essential in establishing the diagnosis and depicting the complexity of the malformation as well as planning of management.

Report

We report a case an 8 years old boy who first presented at 4 years old with recurrent seizure requiring ICU admission. CT cerebral angiography and MRI showed aneurysmally dilated mid line venous pouch representing dilated vein of Galen measuring 2.8 x 3.6 cm in maximum diameters. A successful coiled embolization of the feeding vessels to the aneurysm was performed at 5 years old of age. The procedure was uneventful with minimal residual lesion. The patient had good recovery post procedure with the severity and frequency of seizure significantly reduced.

Conclusion

Vein of Galen aneurysmal malformations (VGAMs) are uncommon intracranial vascular anomaly. An early diagnosis with prompt referral is essential in planning of the treatment strategies of this life-threatening condition. Multidisciplinary approach are crucial in patient's management. Endovascular treatment using coils and glue have been shown to increase the odd of successful treatment of these lesions.

MY006P

Incidence Of Cement Leakage In Vertebroplasty Of Metastatic Spine Disease Using High Viscosity PMMA

MUHAMMAD FADLI EMBONG¹, MARIO MUTO²

¹DEPARTMENT OF RADIOLOGY/ HOSPITAL SUNGAI BULOH/ Malaysia, ² DIAGNOSTIC AND INTERVENTIONAL NEURORADIOLOGY / AORN CARDARELLI HOSPITAL/ Italy

Purpose

Vertebroplasty is a common minimally invasive procedures performed for the treatment of many painful spine conditions which arises from fractures, malignant or aggressive lesion infiltration and many others. The most commonly used cement is polymethylmethacrylate (PMMA) due to its excellent biocompatibility. Nevertheless, the procedures are associated with several complications; the most common is leakage of cement into extra-vertebral compartments. The aim of our study is to assess the incidence of high viscosity PMMA leakage in a particular subset of patients; the metastatic spine disease. There were only few studies done previously to address this issue.

Materials and Methods

This is a cross-sectional retrospective study of about 2.5 years involving 93 vertebral levels, involving 64 patients (30 males, 34 females; 30.4 – 92.6 years old, average 66.7 years old). All the patients had undergone percutaneous vertebroplasty in AORN Cardarelli Hospital, Italy under fluoroscopic or CT guidance. The cements used are of high viscosity PMMA.

Results

There were only 5 levels (5.4%) that had positive findings for epidural leakage. This finding is lower in comparison to available literatures.

Conclusion

Percutaneous vertebroplasty using high viscosity PMMA is a safe procedure with a low risk profile for the treatment of painful metastatic spine disease

MY007P

Association Between Ankle-Brachial Index, Pulse Oximetry Gradient Index And CT Angiogram Of Lower Limb Among Diabetic Type 2 Patient For Detecting Peripheral Arterial Disease

NORAIN TALIB¹; MOHD SHAFIE ABDULLAH¹; WAN MOHD IZANI WAN MOHAMED¹
¹RADIOLOGY DEPARTMENT/ UNIVERSITI SAINS MALAYSIA / Malaysia

Purpose

To determine the association between the clinical apparatus and CTA lower limbs for detecting PAD among Type 2 Diabetic patients.

Materials and Methods

Patients who attended Diabetic Specialist Clinic HUSM were eligible for the study. Adult patients with Type 2 DM has HbA1c more than 6.5% in 3 months were recruited. Symptoms of claudication were assessed using ECQ. The lower limb perfusion was evaluated by ABSI and PO gradient. Radiologically the perfusion was assessed using CTA LL as a gold standard. The severity percentage of stenosis was categorized (<50% and ≥50%). The site of stenosis were analysed.

Results

A total of 22 limbs were analysed. A strong association between abnormal ABSI and PO gradient ($r = 0.818, p = <0.001$) in this study was obtained. There was fair association between ABSI findings and history of lower limb claudication ($r = 0.378, p = 0.076$) between patients. Significant association between the present of stenosis and abnormal ABSI or PO gradient in the univariate logistic regression ($p = 0.016$) noted. The odd of having abnormal ABSI or PO gradient value is 12 times higher in patient with stenosis than those without stenosis (ORc, 95% CI). In multiple logistic regression, the odd of having abnormal ABSI or PO gradient value is 8 times higher in patient with moderate to severe below knee arterial stenosis (≥ 50% stenosis) than those with minimal to mild (<50%) arterial stenosis of lower limbs.

Conclusion

In our study, we had proved the severity of CTA is strongly associated with abnormal ABSI and PO.

MY008P

Systemic Air Embolism Post Transthoracic Lung Biopsy

SHALEENE SUBRAMANIAM¹; GANESHWARA DURAI RAJA LINGAM¹

¹*RADIOLOGY/ HOSPITAL SELAYANG/ Malaysia*

Intro

Percutaneous transthoracic lung biopsy is a common diagnostic procedure that is known to be associated with various complications. Most commonly encountered complications are pneumothorax and pulmonary haemorrhage. Systemic air embolism however is a known but rare occurrence. We report a fatal case of air embolism post transthoracic lung biopsy with brief review of the pathophysiology, risk stratification and treatment.

Report

This is a case of a 72 year old male who presented with chronic limb ischemia with a background history of right sided heart failure and Type 2 respiratory failure. His initial workup which included a chest radiograph incidentally revealed a solitary lung nodule which is confirmed by contrast enhanced CT scan. Hence he underwent transthoracic lung biopsy with suspicion of malignancy. Post procedure plain CT of thorax revealed air embolus within the left pulmonary vein, left ventricle of the heart and arch of aorta. Concurrently patient had cardiorespiratory arrest. Resuscitative efforts were successful and patient was transferred to CCU. However, he passed away after 72hours.

Conclusion

Systemic air embolism is a rare and potentially fatal complication. Despite the rarity of this dangerous and possible fatal complication, interventional radiologist should be aware of it, take precautions to reduce the risk and be able to provide emergent management to improve the outcome of the patient.

BD002P

Rare Case: Right Pulmonary Agenesis With Isolated Dextrocardia In Late Adulthood

CHIA YIN CHONG¹; TRISTAN HILARY THOMAS ¹

¹DEPARTMENT OF RADIOLOGY/ HOSPITAL AMPANG/ Malaysia

Purpose

Pulmonary agenesis is a rare congenital anomaly, with its prevalence of 1 out of 100,000 births. This diagnosis is usually made during childhood with approximately 50% of survival rate due to concomitant anomalies. It is suggested that patient with agenesis of the right lung has a shorter life expectancy as there are greater incidence of mediastinal shift and great vessels distortion.

Conclusion

Hereby, we present a rare case of right pulmonary agenesis with isolated dextrocardia diagnosed in late adulthood.

Left Portal Vein Aneurysm - A Rare Entity

GAYATHRI LETCHUMANAN¹; MUHAMMAD ARIF BASIRAN¹; FARAH NAZ SALEEM¹

¹DEPARTMENT OF RADIOLOGY/ HOSPITAL SELAYANG/ Malaysia

Intro

Portal vein aneurysms (PVAs) are rare occurrence with incidence of less than 3% of all venous aneurysms. It was first reported by Barzilai and Kleckner in 1956. PVAs can be intrahepatic or extrahepatic and are either congenital or acquired. According to literature, an extrahepatic diameter of > 2.0 cm and intrahepatic diameter of > 0.9 cm is considered aneurysmal. We report a case of an incidental finding of a left portal vein aneurysm diagnosed via multidetector computed tomography.

Report

A 52 years old Malay man presented with history of right upper quadrant abdominal pain with intermittent jaundice. Initial blood investigations showed pancytopenia. Ultrasound revealed only liver cirrhosis with splenomegaly. Patient was then subjected to contrast enhanced computed tomography which showed liver cirrhosis with fusiform dilatation of left portal vein (measuring 3.0cm in diameter). Other findings included portal hypertension as evidenced by splenomegaly along with perigastric and splenic varices. Diagnosis of left portal vein aneurysm with underlying liver cirrhosis and portal hypertension was made. In view that patient is currently asymptomatic, decision was made to follow up with repeat ultrasound doppler.

Conclusion

Most of PVAs are usually asymptomatic and detected incidentally during diagnostic work-up. However, these can sometimes develop complications such as mass effect on adjacent structures, acute thrombosis or rupture which has increased risk in patients with portal hypertension. Recognition of this finding is crucial to help with complication control.

Septic Azygous Vein Thrombosis: A Case Report

HAIRUDDIN ACHMAD SANKALA¹; MOHAMMAD IHAB ISMAIL¹

¹RADIOLOGY/ HOSPITAL TAWAU/ Malaysia

Intro

Septic azygous vein thrombosis is extremely rare. However, it is a potential source of pulmonary embolism and sudden death. We report a case of 46-year old gentleman presented with a history of back pain.

Report

A 46 year-old gentleman presented with lower back for 1 week. It was associated with paraplegia. He also gave unspecific complaints of generalised lethargy with loss of appetite. There was paravertebral tenderness at the lower thoracic region with associated lax anal tone and absence of sensory-motor function from the level of T9 downwards. Reduced air entry was heard over the lower zone of right lung. Significant leukocytosis was evident on blood counts. A computed tomography (CT) scan of the thorax, abdomen and pelvis showed a peripherally enhancing thoracic paravertebral collection, extending from the T7 - T10 vertebral levels. There were bilateral pleural empyema with adjacent consolidation in bilateral lower lobes. A long filling defect was noted in the azygous vein, adjacent to the aforementioned collection. The arch of the azygous vein and hemiazygous vein remained patent.

Patient was initiated on antibiotic and was sent for an urgent drainage of bilateral pleural empyema as well as the paravertebral collection. The blood culture grew Methicillin-resistant *Staphylococcal aureus* (MRSA). He underwent drainage of the paravertebral collection. However, there was no growth from the culture of the collection.

Conclusion

Septic azygous vein thromboses are possible complications in posterior thoracic infection. It is always worthwhile for radiologists to scrutinize these vessels on CT images to rule out thrombosis.

BD005P

A Rare Case Of Double Inferior Vena Cava With Duplicated Right Inferior Vena Cava

HAIRUDDIN ACHMAD SANKALA¹; SITI SALIHAN MOHD SAFIAN¹

¹*RADIOLOGY/ HOSPITAL TAWAU/ Malaysia*

Intro

To highlight the variants of inferior vena cava (IVC) and the importance of recognizing the anomalies.

Results

A 22-year-old lady presented with right flank pain for 6 months. She denied any urinary tract infection symptoms. Urine Full Examination, Microscopic Examination (UFEME) revealed persistent microscopic hematuria. X-ray KUB revealed no radio-opaque calculus. However, ultrasound KUB showed right mild hydronephrosis with no evidence of nephrolithiasis. A Computed Tomography (CT) urography was later performed which confirmed the findings of mild right hydronephrosis with no evidence of urinary tract calculus. In view of persistent haematuria, she was also sent for a flexible cystoscopy which did not reveal any calculus or mass in the urinary tract. Urine cytology showed no malignant cells.

A CT renal 4-phase showed a complex venous drainage of the abdomen. There was double IVC with duplicated right IVC. The duplicated right IVC communicated with each other at the distal and proximal parts. Together, these venous structures drain the right common iliac, inferior mesenteric and bilateral renal veins. The left IVC drains the left common iliac, ascends superiorly and drains into the left renal vein. The aforementioned duplicated right IVC compressed onto the proximal right ureter which passes the right IVC posteriorly resulting in mild right hydronephrosis. There was no renal, ureteric or urinary bladder lesion detected on the CT.

Conclusion

IVC anomalies may be symptomatic due to the compressive effect to the adjacent structure. The knowledge on IVC anomalies is essential as to avoid diagnostic pitfalls.

Retropharyngeal Abscess With Extension To The Mediastinum

HAIRUDDIN ACHMAD SANKALA¹; JAYARUBANY KODIAPPAN¹

¹RADIOLOGY/ HOSPITAL TAWAU/ Malaysia

Intro

To learn the imaging findings of retropharyngeal abscess and its possible complication. To highlight the role of imaging modalities in diagnosing and managing patient with retropharyngeal abscess.

Report

A 45-year-old gentleman presented with history of fever, dysphagia, odynophagia and limited neck movement with hoarseness of voice. Oral examination showed enlarged non-exudative tonsils. Flexible nasopharyngolaryngoscope revealed edematous and inflamed oropharynx and hypopharynx with pooling of pus at posterior pharynx. Lateral neck x-ray showed widening of soft tissue at the C6 level. Blood glucose levels and white blood cell counts were high with the blood gases showing metabolic acidosis. Patient was electively intubated for airway protection and started on antibiotics and insulin infusion. A computed tomography (CT) neck and thorax showed a collection anterior to the nasopharynx and oropharynx extending down along the retropharyngeal space to the posterior mediastinum until T7 level. Exploration under anaesthesia and needle aspiration were done. A repeated CT scan 5 days later showed worsening retropharyngeal abscess extending to the posterior mediastinum with concurrent lung infection. Pus and swab cultures grew *Klebsiella pneumoniae*. Tracheostomy, neck exploration, drainage and washout of the abscess were performed and intravenous Meropenam. A repeated CT scan showed resolving retropharyngeal abscess with right lung pleural effusion which was later drained percutaneously. Patient was discharged after a 50-day hospital stay.

Conclusion

Retropharyngeal abscess in adults is a potentially life-threatening illness that requires prompt diagnosis. Lateral X-ray and CT scan of the neck play important vital role in diagnosing the illness and its possible complications.

Traumatic Abdominal Hernia Post Motor Vehicle Accident

AILEEN TEO¹; HANIM MOHD TAHA²

¹RADIOLOGY/ HOSPITAL BINTULU/ Malaysia, ²RADIOLOGY/ HOSPITAL SELAYANG/ Malaysia

Intro

Traumatic abdominal wall hernia (TAWH) is an uncommon injury despite the high prevalence of blunt abdominal trauma, and only constitute 1% of all abdominal traumas. The clinical diagnosis is not usually straightforward and the hernia is often discovered at the time of surgical exploration for intraabdominal injuries or by imaging studies. Most cases occur in children, following an injury from the bicycle handle bar. In adults, it usually results from motor vehicle accident as described in this report.

Report

48 year old gentleman had motor vehicle accident and discharged from the first hospital as the FAST scan and blood investigations were normal. He presented to emergency department again 4 days later due to worsening of abdominal pain and distension with faeculant vomiting. Horizontal pattern bruises (seat belt pattern) and abrasion wound seen on his lower abdomen with associated tenderness. CT abdomen showed generalised small bowel dilatation with small bowel herniation through anterior abdominal wall. He underwent emergency surgery of sigmoid colectomy, primary anastomosis and repair of anterior abdominal wall.

Conclusion

Although traumatic abdominal hernia is rare in trauma patients, it has been found to be associated with significant mortality and morbidity. Thus, a high index of suspicion is required for the diagnosis of this condition as delay in the diagnosis and intervention can significantly affect the outcome of these patients. Contrast-enhanced CT remains the modality of choice to diagnose traumatic abdominal hernias as CT is able to identify the hernia defect and associated injuries.

BD009P

Lingual Thyroid: Incidental Find In A Patient Presenting With Right Submandibular Abscess Of Dental Origin. A Case Report

JEREMIAH SUNDERAJ PETER¹; FATIMAH HUSSIN¹
¹RADIOLOGY/ QUEEN ELIZABETH HOSPITAL/ Malaysia

Intro

Lingual thyroid is a rare find and most often seen during investigations for other neck pathology. They are categorized as a thyroid dysgenesis and may present with complaints of dysphagia, dysphonia, stomatolalia, upper airway obstruction, haemorrhage or remain completely asymptomatic.

More commonly seen in females; these symptoms usually present during puberty, pregnancy and menopause. Patients are usually hypothyroid.

Report

A 27 year old female presented with right sided neck swelling and pain for a duration of 2 weeks. The swelling was increasing in size despite being on oral antibiotics. She complaint of toothache 1 week prior to onset of the neck swelling and pain.

A contrasted CT scan of the neck was performed to assess the extent of the abscess. An incidental find of lingual thyroid was described. Multidisciplinary team approach was of an ultrasound guided abscess aspiration followed by dental extraction. A subsequent ultrasound 5 days post aspiration showed absence of collections, inflammatory changes of the right parotid with multiple subcentimeter cervical lymph nodes. Thyroid function test showed a sub clinical hypothyroid picture.

Conclusion

Correctly diagnosing a lingual thyroid and communicating its finding to the primary team resulted in a change of approach in managing a submandibular abscess. A multidisciplinary team discussion was essential in determining the best therapeutic approach. Ultrasound guided aspiration with local anaesthesia negated the need for a tracheal intubation which would have proven to be catastrophic.

BD010P

A Case Of Small Bowel Obstruction Secondary To Santol (*Sandoricum koetjape*) Seed In Kuala Krai, Kelantan

KOON SUAN WEE¹; NORHAIZAM MD NOR¹
¹*RADIOLOGY/ HOSPITAL KUALA KRAI/ Malaysia*

Intro

Bowel perforation secondary to santol seeds are rarely being published since it is a tropical fruit grown in Southeast Asia. By swallowing the seeds can cause premature death due to perforated bowels. Creation of awareness of the danger of swallowing the seeds and promote a habit not to swallow the seeds at all cost to prevent surgical abdomen should be done.

Report

62 years old Malay male, presented with sudden severe abdominal pain. Associated with abdominal distention. Upon reviewed by surgery team, noted blood pressure 176/100mmHg, tachycardic, tachypnoeic and feverish. Per abdomen generalised tenderness with rebound and guarding.

Ultrasound done noted only minimal ascites. CECT abdomen noted multiple large oval shaped hyperdensity lesions seen in the bowels and outside the bowel with pneumoparitoneum.

Urgent laparotomy revealed 2 foreign bodies seen at pelvis, perforation seen at distal sigmoid colon and feculent peritoneal fluids in all quadrants.

In this case, according to radiological findings, we had diagnosed this patient for gallstones ileus. On further questioning, patient claimed he had eaten santol and swallowed the seeds the night before. *Sandoricum koetjape* is a famous local tropical fruit among Kelantanese. Early diagnosis can be promoted by the knowledge that surgical abdomen can be caused by swallowed santol seeds occurring during the season months of Santol, July till October.

In normal bowels, obstruction cause by the santol seeds causing dilatation of colon then pressure necrosis and puncture of the bowel walls by the sharp end of the seeds.

Conclusion

Perforated sigmoid colon secondary to foreign body (seeds).

BD011P

Atypical Appearance Of Invasive Lung Adenocarcinoma With 'Crazy Paving' At The Periphery Of A Solid Mass

MOHAMMAD HANAFIAH¹; BUSHRA JOHARI¹; LILY DIANA ZAINUDIN²; DIANA KATIMAN³

¹MEDICAL IMAGING UNIT/ FACULTY OF MEDICINE, UNIVERSITI TEKNOLOGI MARA/ Malaysia, ²RESPIRATORY UNIT/ FACULTY OF MEDICINE, UNIVERSITI TEKNOLOGI MARA/ Malaysia, ³PALLIATIVE UNIT/ FACULTY OF MEDICINE, UNIVERSITI TEKNOLOGI MARA/ Malaysia

Intro

Crazy paving refers to the appearance of ground glass opacity with superimposed interlobular and intralobular septal thickening

Report

A 69-year-old female was presented with a 3-month history of prolonged cough associated with haemoptysis, loss of weight and loss of appetite. Her chest x-ray revealed a suspicious mass-liked consolidation in the right lower zone. The CT scan revealed a heterogeneous mass in the right lower lobe. The mass was associated with surrounding crazy paving appearances. A CT-guided-biopsy was performed and revealed a diagnosis of invasive moderately differentiated lung adenocarcinoma. She also had a bone metastasis. A repeat CT scan showed further increase in the tumour size. The whole aforementioned area of crazy paving appearance was completely replaced by solid tumour, confirming that the 'crazy paving' was tumour infiltration

Conclusion

Crazy paving is observed in many pulmonary conditions. We highlight a recognized atypical manifestation of lung adenocarcinoma on CT demonstrating both solid and crazy paving appearances.

BD012P

Non-Confluent Micronodules In Peribronchovascular Distribution: Atypical Radiologic Appearance Of Pulmonary Tuberculosis In An Immunocompetent Patient

MOHAMMAD HANAFIAH¹; BUSHRA JOHARI¹; ROQIAH FATMAWATI ABDUL KADIR¹; LILY DIANA ZAINUDIN²
*¹MEDICAL IMAGING UNIT/ FACULTY OF MEDICINE, UNIVERSITI TEKNOLOGI MARA/ Malaysia ²RESPIRATORY UNIT/
FACULTY OF MEDICINE, UNIVERSITI TEKNOLOGI MARA/ Malaysia*

Intro

Non-confluent micronodules in peribronchovascular distribution is a rare atypical radiological appearance of pulmonary tuberculosis on HRCT

Report

An immunocompetent 56-year-old male patient was presented with chronic cough and gradual weight loss for two years. The contrast-enhanced CT with HRCT reconstruction showed extensive scarring in both apical regions, more on the left. In addition, there were non-confluent clusters of micro-nodules in striking peribronchovascular distribution in the right lung. There were also incidental findings of partial duplex system of the left kidney with moderate hydronephrosis in the lower moiety secondary to stricture. Further work-up revealed positive urine culture for mycobacterium tuberculosis hence he was commenced on anti-tuberculous medications. A repeated CT scan revealed significant improvement of the aforementioned clusters of micronodules and left hydronephrosis.

Conclusion

Awareness of the existence of this rare atypical radiological manifestation of pulmonary tuberculosis on HRCT is utmost importance.

BD013P

Pulmonary Langerhans Cell Histiocytosis With Recurrent Inguinal Abscess

MOHAMMAD HANAFIAH¹; KAMARUL NAIM MOHD HIRMIZI²; NURUL YAQEEEN MOHD ESA²; MARDIANA ABDUL AZIZ¹;
NOR SALMAH BAKAR BAKAR¹

¹MEDICAL IMAGING UNIT/ FACULTY OF MEDICINE, UNIVERSITI TEKNOLOGI MARA/ Malaysia ²RESPIRATORY UNIT/
FACULTY OF MEDICINE, UNIVERSITI TEKNOLOGI MARA/ MALAYSIA ¹PATHOLOGY DISCIPLINE/ FACULTY OF MEDICINE,
UNIVERSITI TEKNOLOGI MARA/ Malaysia

Intro

Langerhans cell histiocytosis is a rare histiocytic disorder characterized by histiocytes infiltration, which may infiltrate nearly every organ, including lungs and lymph nodes.

Report

We present an interesting case of a 30-year-old man who was treated as recurrent right inguinal abscess following a 2-month-history of right inguinal swelling and intermittent fever with no respiratory symptoms. Resection of his right inguinal lymph node and the histopathological analysis revealed the diagnosis of Langerhans cell histiocytosis. In addition, the CT of the thorax showed presence of bilateral cystic lung changes consistent with pulmonary Langerhans cell histiocytosis.

Conclusion

Langerhans cell histiocytosis may be presented as inguinal lymphadenopathy and complicated with inguinal abscess.

Incarcerated Bochdalek Hernia: A Rare Case Report In Adult Age

MOHD ANUAR AWANG¹; DAHLIA MOHAMED¹; KHATRULNADA MD SAAD¹; RUBEN GREGORY XAVIER²
¹RADIOLOGY/ HOSPITAL SULTAN HAJI AHMAD SHAH/ Malaysia, ²SURGERY/ HOSPITAL SULTAN HAJI AHMAD SHAH/ Malaysia

Intro

Bochdalek hernia is usually diagnosed in the neonatal age. Rarely it presents late and is often undiagnosed. Although diaphragmatic hernia is a known medical condition, it is a very rare cause of intestinal obstruction in adult. We report a case of incarcerated bowel through Bochdalek hernia in an adult patient for its rarity.

Report

A 66-year-old gentleman presented with generalized abdominal pain and altered bowel habit for one-month duration. His symptoms worsened and associated with vomiting for two days prior to his admission. No previous history of trauma. Physical examination was unremarkable.

Chest and abdominal radiographs demonstrated air-filled loop at left hemithorax and small bowel obstruction respectively. We proceeded with CT Abdomen which showed a defect at posterolateral part of left diaphragm with herniation of the splenic flexure into left thoracic cavity causing acute intestinal obstruction.

The patient underwent emergency exploratory laparotomy which revealed a constriction band at transverse colon which herniated into posterolateral part of left diaphragm. Surgical intervention included large bowel resection, double barrel stoma creation and repair of the diaphragm defect. The patient had uneventful postoperative course.

Conclusion

Bochdalek hernia is a congenital diaphragmatic defect resulting from failure of posterolateral diaphragmatic foramina to fuse in utero. Adult Bochdalek hernia is extremely rare with an incidence of 0.17% detected in previous study. The first line imaging such as chest radiograph is useful as a screening tool. CT is a gold standard modality to accurately visualize focal defect in the diaphragm and can definitively diagnose herniation in comparison to chest radiograph.

BD015P

Spontaneous Internal Hernia And What To Look For In CT Imaging. A Case Report Of Rare Cause Of Small Bowel Obstruction In Adults And Literature Reviews

MOHD FARID BOLHI¹; YEONG HUEI YIAW¹; AIDA MASTURA MUSTAPHA¹

¹*DIAGNOSTIC RADIOLOGY/ SARAWAK GENERAL HOSPITAL/ Malaysia*

Intro

There is vast causes of small bowel obstruction in adults. Here we will be discussing internal hernia as a rare cause of small bowel obstruction. In these report, we present to you a case of a 53 years old presented with small bowel obstruction secondary to internal hernia.

Report

53 years old, gentlemen, no prior history of trauma or surgery, presented with abdominal distention for 1 day with associated symptoms vomiting, no bowel output and flatus. On examination noted the patient abdomen is distended, tender at the left iliac fossa however no mass was palpable and bowel sound were present. Digital rectal examination reveals no mass in the rectal region.

Imaging of abdominal xray reveals loops of small bowel dilatations. Proceed with computer tomography study of the abdomen and concluded as clumping of small bowels in the right paracolic gutter likely pericecal internal hernia. He subsequently underwent exploratory laparotomy and intra-operative findings reveals loops of small bowel herniated into the right paracolic gutter with adhesions over the duodenal-jejunal flexure to the right paracolic gutter. Post operatively, patient was well and discharged.

Plain radiography and computer tomographic imaging of the abdomen will be presented here, followed by literature reviews of spontaneous internal hernia, a rare cause of small bowel obstruction in a virgin abdomen.

Conclusion

Knowledge of the disease and its rare occurrence, with the help of plain radiography and computer tomography imaging are extremely helpful in diagnosing these rare cause of small bowel obstruction and further management of the illness.

BD017P

Leiomyomatosis Peritonealis Disseminata: A Rare Smooth Muscle Tumor

SITI SALWA MOHAMAD ZAINI¹; MOHD EZANE AZIZ¹
¹*RADIOLOGY/ UNIVERSITI SAINS MALAYSIA/ Malaysia*

Intro

To present a rare case of smooth muscle tumor with non specific imaging findings making the imaging diagnosis difficult.

Report

A 56-year-old female patient with previous history of total abdominal hysterectomy with bilateral salpingo-oophorectomy (TAHBSO) for multiple uterine fibroid presented with left lower quadrant abdominal mass for 2 months. The condition progressed with increasing size of the mass. Ultrasound and computed tomography were performed and showed multiple interloop soft tissues density lesions, with no aggressive features. Biopsy of tissue collected during exploratory laparotomy confirmed the diagnosis of leiomyomatosis peritonealis disseminata.

Conclusion

The patient was within the age range expected for this disease and with history of operated multiple uterine fibroid that is characteristically reported association in most of recorded cases. However, the imaging findings were non-specific as those described in the literature, making the radiological diagnosis non specific.

BD018P

Capsule Endoscope Retention In Duodenal Metastasis Secondary To Sigmoid Adenocarcinoma – A Rare Complication

WAI YEE CHAN¹; GNANA KUMAR
¹*BIOMEDICAL IMAGING/ UNIVERSITY OF MALAYA/ Malaysia*

Intro

Capsule endoscopy is used to investigate upper gastrointestinal tract and small bowel. Capsule endoscope (CE) retention is defined as a CE remaining in the GIT for more than 2 weeks or one requiring intervention or therapy to assist its passage out.

Report

A 70-year old lady with past history of operated sigmoid tumor was investigated for recurrent UGIB using capsule and presented two weeks later with non-passing out of CE. AXR showed presence of CE at the right hypochondrium region with no pneumoperitoneum or bowel dilatation. CT scan revealed CE lodged at duodenum with surrounding wall thickening of the gastric antrum and duodenum suggestive of tumor metastasis/recurrence. Urgent OGDS successfully retrieved the CE with net at D2 segment.

One of the most significant capsule endoscopy complications is retention necessitating surgical removal or capsule aspiration. Contraindication to capsule endoscopy includes known or possible small bowel obstruction or stricture, pregnancy or significant dysphagia. The rate of capsule retention has varied in literature from 0% to 13%. Studies have also shown that CE retention can occur despite a normal follow-through study. Once a retained CE is suspected based on clinical history and AXR, CT is warranted to delineate the anatomy of the bowel, site of retention and assist in surgical planning.

Conclusion

Capsule retention is rare and commonly happens in patients with pre-existing abnormal bowel anatomy due to surgery or known bowel related disease. Hence, thorough screening of patient prior to capsule endoscopy is crucial to predict possibility of retention and informed consent of possible surgical removal is recommended.

Atypical Breast Lump

GAYATHRI LETCHUMANAN¹; SEE PENG WONG¹; PREMILA KANAGASABAI¹

¹DEPARTMENT OF RADIOLOGY/ HOSPITAL SELAYANG/ Malaysia

Intro

Primary breast lymphomas; a rare subtype of non-Hodgkin's lymphoma, represents 0.5% of all breast cancers, almost 0.7% of all lymphomas, and 2% of extranodal lymphomas. The treatment of choice is chemotherapy. Surgery is usually reserved for diagnostic purposes. The role of radiotherapy is as adjuvant therapy, particularly in patients with negative nodes.

Report

We report on a case of 53 years old Chinese woman who presented with a history of indurated breast and overlying skin redness. Physical examination revealed right breast lump with erythematous skin and palpable right axillary lymph nodes. Mammography showed dense mass occupying almost entire right breast with enlarged right axilla lymph nodes. Complementary ultrasound confirmed of an irregular, heterogenous mass with internal vascularity and right axillary lymphadenopathies. Hence, patient underwent core biopsy of the mass to rule out breast carcinoma. Histology and immunophenotyping of the biopsy samples were in accordance with non-Hodgkin's diffuse large B-cell lymphoma. The patient has been since planned for chemoradiation.

Conclusion

Primary lymphoma of the breast is a rare entity. The management and outcome of primary breast lymphoma and carcinoma are totally different. Early and prompt diagnosis is of utmost importance to avoid unnecessary surgeries.

BR002P

MRI Of Breast Lymphoma: A Report Of Two Cases With Emphasis On Diffusion Weighted Imaging (DWI) And Apparent Diffusion Coefficient (ADC) Value

MARLINA TANTY RAMLI HAMID¹; SHAMSIAH ABDUL HAMID¹; KARTINI RAHMAT²; NOOR LAILY SYAKIMAH SAIDI³; FATIMAH KAMILA ABU BAKAR¹; SHARON TAN LING LING³; VIJAYALAKSHMI KRISHNAPILLAI³

¹MEDICAL IMAGING UNIT, FAKULTI PERUBATAN UiTM/ UiTM/ Malaysia, ²DEPARTMENT OF BIOMEDICAL IMAGING / UNIVERSITY MALAYA / Malaysia, ³RADIOLOGY DEPARTMENT/ TENGKU AMPUAN RAHIMAH HOSPITAL/ Malaysia

Purpose

Breast lymphoma (BL) is a rare neoplasm that accounts for approximately 0.04% to 0.5% of breast malignancies. The imaging features of BL on mammography and ultrasound are non-specific. Herein, we describe the MRI findings, with emphasis on DWI and ADC sequences, of two cases of BL.

Materials and Methods

Case series of 2 women with breast lymphoma, where a dynamic contrast enhanced MRI (DCE-MRI), DWI and ADC value were obtained.

Results

Breast lymphoma (BL) can occur as a primary breast tumour or as an extranodal manifestation in systemic disease. Most breast lymphomas (BL) are B-cell type non-Hodgkin lymphoma.

MRI features of BL has been reported in a few case series and single case reports. However, few included features on DWI or the ADC value. The morphological and enhancement patterns of BL on MRI are non-specific and variable which limit its specificity. Recent studies have demonstrated the role of DWI and ADC value. Malignant lesions usually demonstrate high signal on DWI with low ADC value as the increased cellular density and reduced extracellular space restrict water diffusion.

We report the findings of dynamic contrast enhanced MRI (DCE-MRI), DWI and ADC value of breast lymphoma where high intensity signals on DWI and consistently low ADC values were observed in all the masses in our cases, reflecting the high cellularity of the lesions, consistent with malignant lesions.

Conclusion

The addition of DWI and ADC values in combination with DCE-MRI in the assessment of the breast lymphoma is helpful in increasing the specificity for breast lesions classification on MRI.

Desmoid-Type Fibromatosis Of Both Breasts.

SZE YONG TEOH¹; ANUSHYA VIJAYANANTHAN¹; KARTINI RAHMAT; SHALEEN KAUR KIRAT SINGH
¹*BIOMEDICAL AND DIAGNOSTIC IMAGING/ UNIVERSITY MALAYA (UMMC)/ Malaysia*

Intro

Desmoid type fibromatosis of the breasts is a rare benign stromal tumour of the breast that constitutes less than 0.2% of all breast tumours. Bilateral and multi-centric lesions are extremely rare, with only less than 10 cases reported in literatures. Although benign, it is locally aggressive with recurrence in up to almost one-third of the cases. This case of bilateral multi-centric breast fibromatosis was among the first case in our centre. We described the clinical presentation and the imaging findings of mammary fibromatosis with histopathological correlation.

Report

A 19 years old lady, with a strong family of breast cancer, presented to our institution with the chief complaint of retracted nipples for 1 year. Physical examination revealed bilateral nipple retraction with bilateral breast lumps which were firm, mobile and non tender.

Sonography showed bilateral suspicious hypoechoic masses with irregular margins and posterior shadowing. Dynamic breast MRI performed revealed enhancing masses with Type 2 curves with no infiltration to the underlying pectoralis major muscle. Sonographically guided hookwire biopsy was performed on these 3 lesions, in which histopathologically were confirmed as desmoid type fibromatosis.

Conclusion

Desmoid tumours of the breast are an unusual but distinct entity. Importantly, they tend to present as palpable masses mimicking malignancy clinically. There are also indistinguishable from breast carcinoma by imaging alone, while the histopathological differential diagnoses are broad and encompass reactive processes to malignant ones. Triple assessment should therefore, be completed for an accurate diagnosis to give the best definitive management.

BR004P

Spindle Cell Metaplastic Carcinoma Of The Breast In An Elderly Female

VITHYA VISALATCHI SANMUGASIVA¹; SHALEEN KAUR¹; MARLINA TANTY RAMLI HAMID²; FARHANA FADZLI¹; KARTINI RAHMAT¹

¹DEPARTMENT OF BIO-MEDICAL IMAGING/ UNIVERSITY OF MALAYA/ Malaysia ²MEDICAL IMAGING UNIT/ UNIVERSITY TEKNOLOGI MARA/ Malaysia

Intro

Metaplastic breast carcinoma is an uncommon malignancy which constitutes < 5% of all breast cancers. There are 5 subtypes which are spindle cell, squamous cell, carcinosarcoma, matrix-producing and metaplastic with osteoclastic giant cells. Spindle cell carcinoma represents approximately <0.3% of invasive breast carcinomas. It is typically a triple negative cancer with distinct pathological characteristics.

Report

An elderly lady presented with an enlarging painful left breast lump for the past 1 year. On clinical examination, there was a palpable lump in her left breast. A combo of 2D Full Field Digital Mammography and tomosynthesis demonstrated a high density, oval lesion with partially circumscribed and partially indistinct margin associated with fine pleomorphic calcification and architectural distortion. Corresponding ultrasound showed a large irregular heterogenous lesion of indistinct margin with cystic areas and internal vascularity. The lesion was categorized as highly suspicious for malignancy (BIRADS category 5, ACR BIRADS 2013). An ultrasound guided core biopsy was performed. Histopathology showed atypical spindle shaped cells which stained positive for cytokeratins and negative for ER, PR and HER2-neu. These features favoured spindle cell metaplastic carcinoma. Left mastectomy and axillary dissection was performed and final diagnosis was consistent with metaplastic spindle cell carcinoma.

Conclusion

Spindle cell carcinoma of the breast is a rare aggressive histological type of carcinoma and imaging characteristics are often similar to that of invasive ductal carcinoma. It present as a solid-cystic lesion on ultrasound and will be positive for at least one keratin. The prognosis of the disease depends upon its clinical stage at diagnosis.

BR005P

Myofibroblastoma Of The Breast In An Elderly Male

VITHYA VISALATCHI SANMUGASIVA¹; SHALEEN KAUR¹; MARLINA TANTY RAMLI HAMID²; FARHANA FADZLI¹; KARTINI RAHMAT¹

¹DEPARTMENT OF BIO-MEDICAL IMAGING/ UNIVERSITY OF MALAYA/ Malaysia, ²MEDICAL IMAGING UNIT/ UNIVERSITY TEKNOLOGI MARA/ Malaysia

Intro

Myofibroblastoma is a rare benign mesenchymal tumour of the breast which has non-specific imaging features. Histopathological variants such as classic, cellular, collagenous / fibrous, lipomatous, infiltrative, myxoid and epithelioid have been identified. Definitive diagnosis is made by histopathology examination.

Report

An 80-year-old man presented with two-month history of enlargement of the right chest wall. Upon clinical examination, there was a painless solitary lump in the right chest wall. A combo of 2D Full Field Digital Mammography and tomosynthesis was performed which demonstrated a well circumscribed, oval, high density lesion in the right retroareolar region with a focus of round calcification within. Corresponding ultrasound showed a well-defined, oval, hypoechoic mass in the right retroareolar region measuring 3.1 x 1.3 x 3.6 cm which demonstrated posterior acoustic shadowing and internal vascularity. The lesion was classified as suspicious for malignancy (BIRADS 4A as per the American College of Radiology Breast Imaging-Reporting and Data System (ACR BIRADS 2013). An ultrasound guided core biopsy was performed and histopathological diagnosis was myofibroblastoma. The lesion was removed via a wide local excision. Histopathology of the surgical specimen showed proliferating spindle cells which stain negative for keratin with no evidence of malignancy. The final pathological diagnosis was myofibroblastoma.

Conclusion

Non- specific characteristics of myofibroblastoma on imaging necessitates histopathological analysis for an accurate diagnosis. Due to the benign imaging characteristics, myofibroblastoma are often confused with fibroadenomas and hamartomas. Differential diagnosis with malignant neoplasia of the breast is important because of their wide morphological spectrum. Surgical excision is considered curative.

MI001P

Finding Of Suspicious Lesion On DMSA (V) Scintigraphy Supplemented With SPECT-CT In A Rare Case Of Recurrent Medullary Thyroid Cancer

AHMAD ZAID ZANIAL¹; SITI ZARINA AMIR HASSAN¹

¹NUCLEAR MEDICINE DEPARTMENT/ KUALA LUMPUR GENERAL HOSPITAL/ Malaysia

Purpose

Current role of pentavalent DMSA or DMSA (V) scintigraphy in the management of medullary thyroid carcinoma (MTC) is rather limited due to availability and preference for FDG PET-CT. However, it may still be performed in centres without PET-CT facility and noted to have advantages in cases with negative FDG PET-CT findings. We report and discuss current utilisation of DMSA (V) scintigraphy aided with SPECT-CT in a rare case of recurrent MTC

Materials and Methods

Review of clinical records, imaging findings and the literature was performed.

Results

31 years old lady with MTC underwent total thyroidectomy in December 2011 and right anterior neck dissection in February 2014 for recurrence. FDG PET-CT (17.7.2014) showed no FDG avid disease. However, serial serum calcitonin level was increasing in trend. CECT scan (26.6.2015) demonstrated right lower lung focal pleural thickening and subcentimeter deep cervical nodes with no evidence of local recurrence. Repeat FDG PET-CT (15.7.2015) showed only subcentimeter cervical nodes with no significant FDG avid malignancy. Her calcitonin level in June 2016 was 302.8ng/L. Hence, a DMSA (V) scan supplemented with SPECT-CT was performed. Although planar scintigraphy demonstrated almost equivocal findings, hybrid images revealed a mild focal tracer uptake at right thyroid bed with a corresponding subcentimeter right paratracheal node, suspicious of recurrence. She was then closely monitored and scheduled for further evaluation.

Conclusion

DMSA (V) scintigraphy supplemented with SPECT-CT was able to identify a suspicious lesion in our patient with MTC and rising serum calcitonin level but negative FDG PET-CT.

Combined Radionuclide Imaging Techniques Versus Standard Posterior Acquisition Dynamic Renal Scintigraphy In A Patient With Hydronephrotic Right Pelvic Kidney: A Case Report

AHMAD ZAID ZANIAL¹; FATIN HAYYANI MOHAMAD NAJIB¹; SITI ZARINA AMIR HASSAN¹

¹NUCLEAR MEDICINE DEPARTMENT/ KUALA LUMPUR GENERAL HOSPITAL/ Malaysia

Purpose

Radionuclide examinations are useful in assessing function and urinary outflow status of ectopic kidneys. We report and briefly discuss the combined radionuclide evaluation techniques using anterior acquisition dynamic renal scintigraphy and static cortical imaging compared with standard posterior acquisition dynamic renal scintigraphy in a patient with hydronephrotic ectopic pelvic kidney.

Materials and Methods

Review of clinical records, radionuclide scan findings and the literature was performed.

Results

22 years old lady with underlying right ectopic pelvic kidney developed intermittent lower abdominal pain and recurrent symptoms of urinary infection over the past one year. She underwent dynamic renal scintigraphy with standard posterior image acquisition (30.6.16) that demonstrated good functioning left kidney with no urinary outflow obstruction. Right ectopic kidney was noted to show moderately reduced function and contribute about 18% of the differential function with no significant urinary outflow obstruction. She was monitored closely with no active surgical intervention. Her recent sonographic examination (6.9.17) revealed mild hydronephrosis of right pelvic kidney. Repeat of dynamic renal scintigraphy was then requested. However, combined radionuclide evaluation techniques were advised instead. Anterior acquisition dynamic renal scintigraphy (16.11.17) revealed mildly reduced right pelvic kidney function with no urinary outflow obstruction. Correlation was done with static renal cortical scintigraphy (26.10.17) that showed right differential function to be 31% based on the more accurate geometric mean calculation. Additionally, small mild renal scarring was seen in the right pelvic kidney.

Conclusion

Combined radionuclide evaluation techniques provide more reliable and informative findings in assessing hydronephrotic pelvic kidney.

MI003P

Scintigraphic Evaluation Of Chronic Lower Limb Swelling And Features Of Lymphoedema: Early Experience From HKL

AHMAD ZAID ZANIAL¹; NOOR AZILAH AHMAD TAJUDIN¹; SITI ZARINA AMIR HASSAN¹
¹NUCLEAR MEDICINE DEPARTMENT/ KUALA LUMPUR GENERAL HOSPITAL/ Malaysia

Purpose

Although seldom being requested, scintigraphy of lymphatic system or lymphoscintigraphy is a relatively simple functional imaging to evaluate lymphoedema. Objective of this study was to ascertain clinical characteristics of patients referred for lower limb lymphoscintigraphy, their scan findings and presence of lymphoedema.

Materials and Methods

Retrospective study of lower limb lymphoscintigraphy cases performed in HKL between 2014 and 2017. Overall, 7 patients were included (unilateral limb, n=5 and bilateral limbs, n=2). All patients received 0.5 millicurie of nanocolloid radiotracer injections at first and second web-spaces of each foot. Dynamic imaging done for 15 minutes followed by delayed whole body scanning at 1 hour and 3 hours post injection and if required supplementary SPECT-CT of lower limb. Information comprising clinical parameters and scan findings obtained from database records were analysed.

Results

Chronic limb swelling duration was between 1–4 years with 3 patients were previously treated for cellulitis. All patients demonstrated findings suggestive of lymphoedema. Dynamic and delayed images of 2 patients with unilateral swollen limb showed no radiotracer progression and non-visualisation of inguinal nodes. Remaining 5 patients (unilateral limb, n=3 and bilateral limbs, n=2) revealed radiotracer accumulation in inguinal nodes at delayed images. Only 1 patient demonstrated popliteal nodes seen at the swollen limb. Majority of affected limbs (7/9) showed dermal back flow. SPECT-CT was done only in 1 patient whom had abnormal mid-calf radiotracer accumulation. Every patient subsequently received conventional lymphoedema treatment.

Conclusion

Lower limb lymphoscintigraphy is a simple valuable investigation tool to evaluate lymphoedema.

A Case Report Of Partial Anomalous Left Pulmonary Artery Sling

NURUL AKHMAR OMAR¹; WOOL KOK LIM¹; MAZEDA MURAD¹; HANIZA WAHED¹; MOHAMMAD TAMIM JAMIL²
¹RADIOLOGY/ HOSPITAL SEBERANG JAYA/ Malaysia, ²PAEDIATRIC/ SARAWAK HEART CENTRE/ Malaysia ³PEDIATRIC/
HOSPITAL PULAU PINANG/ Malaysia

Intro

Stridor in infants is quite common with most of the acute onset caused by laryngotracheobronchitis and chronic stridor is usually secondary to laryngomalacia. Congenital tumour or anomaly such as haemangioma and vascular ring are uncommon, however need to be excluded. This rare case report of partial anomalous left pulmonary artery sling which happened in the presence of normal left pulmonary artery with another artery arising from the right pulmonary artery supplying the left lung.

Report

A 10-month-old boy with history of imperforate anus and colostomy done, and at least three admissions that needed intubation in paediatric intensive care unit due to loud stridor with pneumonia. In his latest admission, he presented again with fever, rapid and noisy breathing. Physical examination showed the patient had audible biphasic stridor with rhonchi on auscultation. Echocardiogram which was done without sedation was suspicious of left pulmonary artery sling. Contrast enhanced CT thorax performed revealed that the main pulmonary artery gave off a proximal branch of left pulmonary artery supplying the left upper lobe. The right pulmonary artery continued from the main pulmonary artery supplying the right lung. An anomalous artery noted arising from mid part of right pulmonary artery at the level of carina and supplied the left lower lobe. It crossed the spine and aorta and formed an incomplete ring like structure encircled and compressing the distal trachea. There was also an aberrant right subclavian artery which traversed behind the oesophagus towards the right. No lung trapping or collapsed seen.

PD003P

Superior Mesenteric Artery Syndrome: A Rare Cause Of Upper Gastrointestinal Obstruction

SITI SALWA MOHAMAD ZAINI¹; KHAIRIL AMIR SAYUTI¹; AHMAD TARMIZI MUSA¹
¹RADIOLOGY/ UNIVERSITI SAINS MALAYSIA/ Malaysia

Intro

The aim of this case is to study the radiological features of gastric superior mesenteric artery (SMA) syndrome.

Report

Superior mesenteric artery syndrome is a rare cause of upper gastrointestinal obstruction with the incidence to be 0.013 and 0.3%. It was first described in 1861 by Von Rokitansky, who proposed that its cause was obstruction of the third part of the duodenum as a result of intermittently compressed between the aorta and the SMA. We report a case of a 10 year-old-girl presented with short history of abdominal distension, vomiting and no bowel opening. She underwent upper gastrointestinal study showed partial duodenal obstruction and proceeded with CT angiography (CTA) of mesentery artery which the findings consistent with the diagnosis of SMA syndrome.

Conclusion

Based on imaging, SMA syndrome can be diagnose to differentiate from other cause of duodenal obstruction. Upper gastrointestinal study with CTA mesentery can establish definite diagnosis and can further provide information about the underlying cause giving the basis for appropriate treatment.

Osteopetrorickets – A Rare Phenotype In Paediatrics Not To Be Missed

WAI YEE CHAN¹

¹*BIOMEDICAL IMAGING/ UNIVERSITY OF MALAYA/ Malaysia*

Intro

Osteopetrosis causes abnormally dense bone and failure of resorption of calcified cartilage. Rickets is a childhood metabolic bone disorder. Rickets is a paradoxical complication of osteopetrosis, presenting as osteopetrorickets.

Report

Diffuse bone sclerosis was found incidentally on a CXR of a 4-months old boy with pneumonia. Skeletal survey revealed diffuse sclerosis and bone-within-bone appearance involving the long bones, thoracolumbar spine and pelvis. Metaphyseal flaring with cupping, increased physeal distance and indistinct physis were seen. CT scan of the head revealed sclerosis and cortical thickening. There was obstructive hydrocephalus due to narrowed craniocervical junction. Post rickets treatment showed restoration of normal growth plates.

In osteopetrosis, there is osteoclast dysfunction causing failure of bone resorption leading to impaired bone modeling and remodeling. Unopposed osseous tissue accumulation increases bone density causing progressive marrow and neural foramina obliterations. Despite positive total body calcium balance, more than 99% of total body calcium is sequestered in osteopetrosis causing persistently low serum calcium level, leading to rickets. Bone marrow transplantation will provide hematopoietic stem cells that can differentiate into normal osteoclasts. However, osteoclasts cannot resorb hypomineralised osteoid in rickets. Hence, it is crucial to identify osteopetrorickets and correction of underlying rickets prior to transplantation.

Conclusion

The association of rickets in patients with osteopetrosis is not uncommon and should not be missed. Correction of underlying rickets will provide a better prognosis where bone marrow transplantation is feasible.

MS001P

A Case Report Of Symmetrical Bilateral Parietal Bone Thinning

ERIK YEW HOCK TAN¹; TEIK BENG CHUAH¹
¹RADIOLOGY DEPARTMENT/ HOSPITAL BINTULU/ Malaysia

Intro

Incidental finding of a rare symmetrical bilateral parietal bone thinning in a 82 years old lady who presented with sudden onset of left sided body weakness. She has pre-existing painless depression over bilateral parietal region . Images from both skull radiograph and computed tomography of the brain were described

Report

Skull radiograph was taken showed a symmetrical absence of diploid bone. Outer layer of bilateral parietal region and inner layer were intact in anterior posterior view. In lateral view , there were radiolucent areas seen at the parietal region. No other radiolucent areas noted.

Computer tomography showed a large infarct in the right MCA territory in keeping with her acute presentation of left sided body weakness. Apart from that ,there were symmetrical thinning and loss of diploid in bilateral parietal bone with intact inner layer. From the 3 D reconstructed image, it shows shallow symmetrical depressions of the skull vault at bilateral parietal region. No suspicious lytic or sclerotic bone lesion seen to suggest for bone malignancy. No features of recent or old skull vault fracture.

Conclusion

Bilateral parietal osteodystrophy is a relatively rare disease. This report highlights the radiographic features of the condition. Further larger study is required to establish the possible etiology of the condition. Patient with bilateral parietal osteodystrophy have to be extra vigilant as there are were cases of trivial fall resulting in intracranial bleed.

Possibility Of Acoustic Radiation Force Impulse For Assessment Of Hardness In Lymphedema; A Case Report

HEE KYUNG CHO¹

¹DEPARTMENT OF REHABILITATION MEDICINE/ CATHOLIC UNIVERSITY OF DAEGU SCHOOL OF MEDICINE/ Korea

Purpose

Lymphedema is a chronic condition caused by lymphatic dysfunction. Left untreated, it will grow progressively worse with stiffness. The following case describes an assessment of acoustic radiation force impulse (ARFI) imaging before and after treatment in secondary lymphedema.

Materials and Methods

The patient complained of left arm discomfort with edema and stiffness. He was undergone total scapulectomy for chondrosarcoma in left shoulder. Lymphoscintigraphy revealed secondary lymphedema in left arm with International Society of Lymphology (ISL) stage 2. ARFI imaging was performed at 10 cm proximal and distal of the antecubital fold. Two trials of ARFI imaging were performed at each site and three ROIs were randomly placed along the subcutaneous tissue (Fig 1). After initial examination, complete decongestive therapy (CDT), including bandaging, manual lymphatic drainage, and exercise were done for 10 days daily.

Results

After 10 days of CDT, we found decreased arm volume and arm circumferences in affected arm compared to pre-CDT. Shear wave velocities in affected arm was decreased in 3.98 m/sec compared to pre-CDT in 5.19 m/sec on ARFI imaging (Table 1).

Table 1 Arm circumference, volume, ISL stage, and shear wave velocity before and after 10 days of CDT

Region	Before CDT		After CDT	
	Affected	Unaffected	Affected	Unaffected
Arm circumference (cm)				
AE-10	31.0	28.5	30.0	28.5
BE-10	30.0	25.8	27.0	25.8
Volume (ml)	3300	2400	2600	2400
ISL stage	2		2	
Shear wave velocity (m/s)				
AE-10	3.28	3.94	2.86	3.86
BE-10	5.19	2.52	3.89	3.71

Conclusion

This case report emphasized that possibility of ARFI imaging for assessment of hardness in lymphedema.

MS003P

Inferior Vena Cava - Right Heart Chambers Thrombus In A Malignant Pelvic Bone Tumor. A Case Report

INDAR RAHINI HAIRI¹; ANUSHYA VIJAYANANTHAN¹

¹BIOMEDICAL IMAGING/ UNIVERSITY OF MALAYA MEDICAL CENTER/ Malaysia

Intro

Chondrosarcoma is a malignant tumor arising from cells that produce cartilage matrix, accounting for approximately 25% of all primary bone malignancy. It has a male predominance and commonly presents between the 4th and 5th decade with the lungs being the most common site for metastases. In this case report, we discuss a unique case of left hip extraskeletal myxoid chondrosarcoma with direct tumor invasion into the IVC and right heart chambers in a young male patient.

Report

A 21 year old man presented with history of left hip pain and swelling for one month, associated with difficulty in ambulation and constipation. Clinically, there was a firm left hip swelling with limited left hip range of motions.

Computed tomography scan of the Thorax , Abdomen & Pelvis confirmed a destructive left iliac soft tissue tumour with extensive calcifications and bony destruction. There was intraabdominal extension causing mass effect onto the urinary bladder and rectum. Associated dilatation of the IVC with filling defect seen within its entire length, extending to the iliac veins caudally and right heart chamber cranially in keeping with tumor thrombus.

Histological features were of extraskeletal myxoid chondrosarcoma, evidenced by the surrounding loose connective tissue and absence of bone.

Conclusion

There's limited data regarding direct intravascular extension of bone sarcomas. This case is unique and warrants attention to an underlying diagnosis that is probably under-reported. We have to be mindful that pelvis sarcomas can invade the main vessels more frequently than thought and this definitely alters the prognosis and treatment.

MS004P

Does Radiographically Determined Femur And Tibia Length Correlate With Forearm Length?

JAMES LING¹; SIMON JOURNEAUX¹; RINO OLIVOTTO¹

¹RADIOLOGY/ MATER HOSPITAL/ Australia

Purpose

The purpose of this study was to evaluate whether different measurements of the length of a person's forearm correlates with the length of their femur and tibia.

Materials and Methods

Fifty patients have been recruited to date from the Mater Hospital (Brisbane, Australia). Measurements were taken from the tip of the olecranon to the tip of each finger, and also to the tip of the metacarpal heads. Radiographic measurements for the femur was taken from the tip of the greater trochanter to the distal femoral epiphyseal scar. Radiographic measurements for the tibia was taken from the centre of the proximal knee joint to centre of the ankle joint. The femur length was compared to the tip of the olecranon to the tip of each finger. The tibia length was compared to the tip of the metacarpals. The association was assessed by Pearson's correlation coefficient. A p value less than 0.05 was considered significant.

Results

The mean femur length was 41cm and the little finger was 41.36cm. The Pearson's correlation coefficient was very strong at 0.85, $p < 0.001$. The mean tibial length was 36.4cm and the 2nd MC was 36.93. The Pearson correlation coefficient was also very strong at 0.87, $p < 0.001$.

Conclusion

These measurements are a simple and radiation free method to estimate tibia and femur length which can be applied in day to day practice.

MS005P

Correlation Of Plasma Glycosylated Hemoglobin Level And Resistive Index Of Central Retinal Artery Through Color Flow Doppler Imaging Technique In Type 2 Diabetes Mellitus Patients, With And Without Retinopathy

IERIK YUMOL¹

¹RADIOLOGY/ QUEZON CITY GENERAL HOSPITAL/ Philippines

Purpose

This study targets to identify the prognostic value of glycosylated hemoglobin (HbA1c) in correlation with vascular status of patients with Type 2 Diabetes Mellitus (DM), with and without retinopathy. In addition, it aims to establish the role of Color Doppler Imaging (CDI) technique in detecting changes in the resistive index (RI) of central retinal artery (CRA) in Type 2 diabetic patients and its significance in identifying who are at risk of developing retinopathy.

Materials and Methods

The researcher used CDI in 8 normal subjects and 58 Type 2 diabetic patients with elevated and normal HbA1c level. These patients were further classified whether they were clinically diagnosed with or without retinopathy.

Results

The RI of diabetic patients with elevated HbA1c level was significantly greater ($P > 0.005$) than those diabetic patients with normal HbA1c level. The odds of having diabetic retinopathy is 5.26 times higher in patients with elevated HbA1c level as compared to diabetic patient with normal HbA1c level. The RI of the CRA in patients with diabetic retinopathy was significantly greater ($P < 0.001$) than that in normal subjects and in patients without diabetic retinopathy.

Conclusion

This study showed that the RI of CRA was increased in patients with DM and was further increased in the presence of retinopathy. Moreover, an elevated HbA1c level among DM patients is an indicator of developing its ocular vascular complication and warrants screening procedure through CDI technique.

Hirayama Disease: A Rare Neurological Disorder

NATASHA MOHD NASRAN¹; SITI SALWA MOHAMAD ZAINI¹

¹*RADIOLOGY/ HOSPITAL QUEEN ELIZABETH/ Malaysia*

Purpose

The aim of this case is to study the radiological profile of Hirayama disease.

Results

Hirayama disease is a rare neurological disease named after its founder, Dr Hirayama, who recognized it in Japan in 1959. It is a slowly progressive self-limiting assymetrical disease involving the upper limb, mainly seen amongst young men and most prevalent in Asean countries. There are many postulated causations with the widely accepted being due to imbalance growth between the vertebra and spinal cord, resulting in short and tight dura matter. This leads to anterior displacement of the posterior wall of cervical dura during neck flexion causing spinal cord compression.

We report a case of an 18 year old gentleman who presented to us with a six month history of progressive weakness and atrophy of the right upper limb. He underwent a nerve conduction study which showed findings of a preganglionic lesion either from cervical polyradiculopathy or anterior horn cell disease. He was then subjected to a dynamic MRI cervical spine, which showed typical features of Hirayama disease, thus confirmed the diagnosis.

Conclusion

Although Hirayama Disease is a self-limiting disorder, a prompt diagnosis is crucial to institute early collar therapy to arrest its progression.

MRI is important for definitive diagnosis as there are many other forms of upper limb neuropathy to be considered, leading to different treatment modalities.

MS008P

A Case Of Paget's Disease Of Spine And Pelvis With MRI, CT And Plain Radiograph Appearances: A Rare Entity In Asia

WAI YEE CHAN¹; VIKNESWARY PANIANDI¹; WAI KEONG CHEAH¹; GNANA KUMAR GNANASUNTHARAM¹
¹DEPARTMENT OF BIOMEDICAL IMAGING/ UNIVERSITY OF MALAYA/ Malaysia

Intro

Paget's disease of bone is a common bone remodeling disorder in Western countries. However, it is very rare in Asia with unknown prevalence in Malaysia. We would like to present a case of Paget's disease found incidentally in a Malaysian individual who has spinal and pelvic involvement with radiograph, CT and MRI features.

Report

An 80 year-old man underwent MRI of the lumbosacral spine for lumbar spondylosis. Clinical examination noted no focal neurology and laboratory investigations were unremarkable. On MRI, there was incidental finding of a generalized expanded L3 vertebra with patchy speckled high T2w/STIR signal and isointense signal on T1w images. The vertebral body shape was maintained with no destruction, enhancement or extra-vertebral mass. Spine radiograph and CT spine showed diffuse expansion of L3 vertebral body with mild diffuse sclerosis and prominent vertebral trabeculations and cortical thickening along the margins of vertebral body. Pelvic radiograph showed typical appearance of Paget's disease with enlargement of left public ramus and ischium with thickening of iliopectineal line and coarse trabecular pattern of left ischium and acetabulum.

Conclusion

Paget's disease of the bone is rare in local setting. Presence of such findings in the MRI should raise consideration of Paget's disease, and hence correlation with plain radiograph is essential. In the presence of symptoms, further investigation would be warranted to exclude malignant transformation.

NR002P

MR Imaging In Acute Anterior Spinal Artery Syndrome, A Case Report

MOHD NADZRI MISNI¹; SARINA SALIM¹; BAIZURA KADIR¹; TARANJIT KAUR¹
¹RADIOLOGY/ HOSPITAL SULTANAH NORA ISMAIL/ Malaysia

Intro

Anterior spinal artery infarct is a rare clinical diagnosis which characterized by acute paraplegia or quadriplegia, bladder and bowel dysfunction, loss of pain and temperature sensation with relative sparing of proprioception and vibratory sensation.

Magnetic resonance (MR) imaging play an important role in diagnosis of acute spinal cord ischemia. The MR demonstrates T2 weighted hyperintensity involving the central territory of anterior spinal artery. There have typical an 'owl eye' appearance which represent anterior grey matter involvement. Diffusion weighted imaging (DWI) has been use in diagnosis of acute spinal cord ischemia and particularly important in normal MR findings. Presence of restricted diffusion in the affected cord are highly suggestive of acute ischemia and would exclude other possible diagnosis such as demyelinating, transverse myelitis and even spinal cord tumour.

Report

We report two cases of acute anterior spinal cord syndrome. These elderly patients presented with acute quadriplegia, hyporeflexia and reduced sensation from thoracic level and below. The MR imaging shows characteristic T2 weighted hyperintensity of the anterior cervical cord, with corresponding restricted diffusion in diffusion weighted images (DWI) sequence.

Conclusion

MR imaging with Diffusion weighted imaging (DWI) are potentially useful in detection of acute ischemia or infarction of the spinal cord.

NR003P

Pituitary Haemorrhage: A Rare Complication Of Cavernous Sinus Thrombosis

FARAH SOFIA TARMIZI THAYAPARAN¹; ALAN BASIL PETER²; HILWATI HASHIM²

¹RADIOLOGY/ SELAYANG HOSPITAL/ Malaysia, ²MEDICAL IMAGING DEPARTMENT/ UNIVERSITI TEKNOLOGI MARA/ Malaysia

Intro

Subarachnoid and intra-parenchymal haemorrhages are known complications of cavernous sinus thrombosis (CVST). We report a case of CVST with pituitary haemorrhage which we postulate is also a complication of the former.

Report

A 49-year-old lady with Systemic Lupus Erythematosus (SLE) presented with altered sensorium, high grade fever, vomiting and left sided hemiparesis. Neurological examination also revealed right ptosis and absent gag reflex. Non enhance and enhance CT scans were performed with a 64-slice scanner while the MRIs were carried out using a 1.5 T. The MRI protocol utilised included the stroke protocol and cavernous sinus protocol, including a contrast MRV study. MRI was repeated a month and 6 months later to monitor progression with treatment.

Non contrast and contrast enhanced CT brain revealed a right sided brainstem infarct and a suspicious lesion eroding the right posterior clinoid process. Subsequent MRI Brain demonstrated CVST, possibly a complication of sphenoid sinusitis. It was complicated with a right cavernous ICA stenosis, right brainstem infarct and pituitary haemorrhage. She was put on anti-coagulant therapy. Although the CVST subsequently resolved, the pituitary haemorrhage persisted on follow up MRI Brain up to 6 months after the initial presentation. She has improved clinically and has completed anti-coagulant therapy.

Conclusion

The pituitary haemorrhage may be a result of local venous hypertension and bleed secondary to CVST. Although a causal relationship cannot be established with this single case, this provides an interesting observation and may serve as a platform for future reference and clinical research.

NR004P

A Rare Cause Of Tinnitus That Can Be Confirmed By Imaging: Cerebellopontine Lipoma

WEI LIN NG¹; SUZET TAN¹

¹RADIOLOGY/HOSPITAL TAIPING/ Malaysia

Intro

Intracranial lipomas are rare, constituting less than 0.1% of intracranial tumours. It is commonly found at midline structures such as the corpus callosum, quadrigeminal plate, and suprasellar area and rarely occurs within the cerebellopontine angle (CPA).

Report

A 56 years old lady presented with headache and right tinnitus for 6 months. The plain CT brain showed a well-defined oval fat density lesion with hyperdense loops within at the right CPA with no extension to the internal auditory meatus. Further evaluation by MRI showed high signal intensity compared with brain tissue on T1W and low signal intensity on T2W. It is fat suppressed and demonstrates chemical shift artifact on T2W. There was no postgadolinium enhancement and no restricted diffusion. The linear loops within this lesion are suggestive of cranial nerves as the lesion is located at the origin of the CNVII and CNVIII at the border of the cisterns and inferior border of the right pontine. As surgical removal of this lesion may results in neurological deficits, conservative management was planned for this patient.

Conclusion

Both CT and MRI are highly sensitive and specific in depicting a tumour with high fat content and in this case, the diagnosis of a CPA lipoma can be often made, whilst reserving surgical intervention for cases of intractable tinnitus.

NR005P

Brain Abscess Following Traumatic Intracerebral Haematoma: A Case Report

XIAO YI LIM¹

¹DEPARTMENT OF NEUROSURGERY/ QUEEN ELIZABETH HOSPITAL/ Malaysia

Intro

Brain abscess requires inoculation of microorganisms into an area of devitalised brain tissue. Traumatic intracerebral haematoma may also get infected by contiguous spread of microorganisms causing brain abscess. Treatment response following surgery and antibiotic course can be assessed clinically and radiologically.

Report

Following a motor vehicle accident, a 24-year-old gentleman presented with headache and a forehead laceration wound. Computed tomography (CT) scan showed severely comminuted fracture of the right fronto-orbital region, paranasal sinuses and the base of skull with a small frontal extradural and intraparenchymal haematomas. He was managed conservatively and was well upon discharge. Ten weeks following the trauma, he presented with a seizure, nasal discharge and features of raised intracranial pressure. His Glasgow Coma Score (GCS) was E4V4M6 and pupils 3mm bilaterally reactive. Contrast-enhanced CT scan showed a right frontal abscess with irregularly enhancing thick wall lesions extending into the right frontal, ethmoidal and maxillary sinuses. He underwent a craniotomy and excision of abscess, packing of frontal sinus and functional endoscopic sinus surgery. Intraoperative culture grew *Streptococcus constellatus*. Upon completion of a six-week course of antibiotics, CT scan showed resolved frontal lobe abscess with minimal sinus content. He was discharged home well.

Conclusion

Post-traumatic brain abscess can be easily diagnosed with contrast-enhanced imaging which is widely available. A high index of clinical suspicion and prompt management result in a good outcome.

NR006P

Correlation Between MR Volumetry And ADC Value Of Hippocampal Formation In Medically Intractable Temporal Lobe Epilepsy Patients

MOHD HANIF AMRAN¹; MOHD SHAFIE ABDULLAH¹; SALMAH@WIN MAR JALALUDDIN¹

¹RADIOLOGY/ UNIVERSITI SAINS MALAYSIA/ Malaysia

Purpose

The purpose of this study is to determine the volumetry values of the hippocampus and its correlation with ADC values for detecting hippocampal formation abnormalities in patients with medically intractable temporal lobe epilepsy (MITLE).

Materials and Methods

A total of 28 participants were recruited for the present study; there were 14 participants in control and TLE-positive group, respectively. MR images were evaluated for hippocampal volumetric values and ADC values. Mean and SDs were obtained for each measurement, and level of significance and correlation between volumetry and ADC values were determined. The relationship between volumetric values and duration of illness were also evaluated.

Results

There is no significant difference between left and right hippocampal MR volumetric values in the control group. However, significant differences were shown in hippocampal MR volumetric values, were found between control and TLE-ipsilateral sites. The hippocampal MR volumetric values did not show significant correlation with the duration of illness. There was significant correlation between hippocampal volumetric value and ADC.

Conclusion

Hippocampal volumetry has the capabilities to detect changes in the hippocampal formation and to lateralize the seizure focus in patients with TLE. There is no significant correlation between hippocampal volumetric value with duration of illness. There was significant correlation between hippocampal volumetric value with ADC.

BR001

Spectrum Of Papillary Breast Lesions In Malaysian Population: Radiopathological Considerations

FARHANA FADZLI¹ ; KARTINI RAHMAT¹ ; MARLINA TANTY RAMLI HAMID² ; FAIZATUL IZZA ROZALLI¹ ; MEE HOONG SEE³ ; KEIN HOOI TEOH⁴

¹DEPARTMENT OF BIOMEDICAL IMAGING/ UNIVERSITY MALAYA RESEARCH IMAGING CENTRE/ Malaysia, ²MEDICAL IMAGING UNIT/ UNIVERSITI TEKNOLOGI MARA/ Malaysia, ³DEPARTMENT OF SURGERY/ UNIVERSITY MALAYA MEDICAL CENTRE/ Malaysia, ⁴DEPARTMENT OF PATHOLOGY / UNIVERSITY MALAYA MEDICAL CENTRE/ Malaysia

Purpose

To study the subtypes of papillary breast lesions in the population of patients in University Malaya Medical Centre, with imaging correlation.

Materials and Methods

This was a retrospective study to determine radiopathological features of papillary lesions. A total of 100 patients were identified from the pathology records of UMMC from 2008-2012 of which the patients either had core biopsy or surgical excision. Out of this group, 28 did not have imaging stored in the PACS. The available imaging (ultrasound, mammogram, MRI) for the other patients were assessed by a radiologist with 5 years of experience.

Results

The age range of the patients was between 21 to 87 years. 55 patients were diagnosed with intraductal papilloma on histopathological examination, 12 papillomatosis, 5 atypical papilloma, 5 papilloma with DCIS, 16 intraductal papillary carcinoma and 7 invasive micropapillary carcinoma. Correlation between histology and duct changes on ultrasound was analysed.

Conclusion

Breast papillary lesions may represent a significant portion of patients presenting to surgical clinic, radiological features may help predict histology and assist in further management.