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Adequacy of peritoneal dialysis



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Adequate Dialysis

Adequate dialysis \neq small solute clearance (Kt/V) alone

Solute clearance

The fluid balance and blood pressure control

The electrolyte balance

Acid-base balance

Calcium and bone mineral status

Anaemic control

Nutritional status

Patient feeling of wellbeing and life participation

Small solute clearance in PD

- Total urea clearance in PD patients with RRF
= **Renal clearance** + Peritoneal clearance
- Total urea clearance in anuric PD patients
= Peritoneal clearance
- Renal clearance \neq peritoneal clearance

Residual Renal Function contributes to survival

Outcomes of SONG-PD study

68
countries

530
participants



<https://songinitiative.org/projects/song-pd/>

Take home messages

- Good prescription include
 - Comprehensive assessment
 - Individualized prescription
 - On going monitoring
- Adequacy means
 - The solute and fluid clearance
 - Free of uremic symptoms
 - Well nourished
 - Good anaemia and bone mineral disease control
 - Feeling of well-being, Life participation



**THANK YOU
FOR
YOUR
ATTENTION!
ANY QUESTIONS?**

Case

- A 70 kg man on CAPD with
 - Total peritoneal drain volume over 24 hours: 8.5 L
 - The concentration of urea in the effluent : 14 mmol/L(D)
 - The plasma urea concentration : 15 mmol/L(P)
 - The 24 hours urine volume: 0.5L (v)
 - The concentration of urine urea: 80 mmol/L (U)
 - The weight of patient is 70 Kg
- What is Kt/V for him ?

Case

- Peritoneal clearance

- D/P urea: $14/15 = 0.93$

- $K = 0.93 \times 8.5 = 7.9 \text{ L}$

- $V = 70 \times 0.6 = 42 \text{ L}$

(Volume of distribution of urea \approx Total body water)

- Daily $Kt/V = 7.9/42 = 0.19$

- Weekly peritoneal $Kt/V = 0.19 \times 7 = 1.33$

$$\text{PD Clearance: } C_x = \frac{[D_x] \times \text{dialysate Volume}}{[P_x]}$$
$$\text{So, } K_{\text{urea}} = \frac{D}{P_{\text{urea}}} \times \text{dialysate V}$$
$$Kt/V = \frac{[D/P_{\text{urea}} \times \text{Dial. Volume}] \times 7 \text{ days}}{V_{\text{d urea}}}$$

Case

$$\text{Renal Clearance: } C_x = \frac{[U_x] \times \text{urine Volume}}{[P_x]}$$

Calculate renal Kt/V_{urea}

$$Kt/V = \frac{[U/P_{\text{urea}} \times \text{Urine Volume}] \times 7 \text{ days}}{V_d \text{urea}}$$

- renal clearance

- $U_v/P = 80 \times 0.5/15 = 2.7$

- Weekly renal urea clearance = $2.7/42 \times 7 = 0.45$

- His total $Kt/V = \text{peritoneal } Kt/V + \text{renal } Kt/V$
 $= 1.33 + 0.45 = 1.78$