

The mini-PET in pediatric peritoneal dialysis: a useful tool to predict volume overload?

Cano F, Rojo A, Azocar M, Ibacache MJ, Delucchi A, Ugarte F, Irrarrazabal C, Delgado I.

Abstract

BACKGROUND: Cardiovascular disease (CVD) in patients on chronic peritoneal dialysis (PD) is a major cause of death and is closely linked to hypertension and volume overload. The mini-Pet has been proposed as a useful tool to evaluate free-water transport (FWT) and characterize ultrafiltration across the peritoneum. Knowledge regarding FWT could be of great value to predict volume overload in PD patients. Our objective in this study was to characterize FWT through the peritoneum in children on PD.

METHODS: We studied clinically stable patients with >2 months on PD. Exclusion criteria were a peritonitis episode up to 2 months prior to entrance into the study and active nephrotic syndrome. A 1-h mini-peritoneal equilibration test (mini-PET) was performed with 3.86 % glucose. Calculations (see text for full definitions) were: Dip Na (Na dial min60 - Na dial min1), Dip D/PNa (D/PNa60 - D/PNa1), total Na removal (NaR = total Na dial60 - Na dial1), ultrafiltration small pores [(UFSP = NaR × 1,000)/Nap], and FWT (UF-UFSP). Peritoneal equilibration test (PET), left ventricular mass index (LVMI, g/m²), daily UF, and residual renal function were evaluated. Pearson's correlation coefficient was used to establish correlation between variables.

RESULTS: Sixteen patients were included, with a mean age of 11.8 ± 3.8 years. Free water transport normalized to body surface area (BSA) (FWTn) was 133.9 ± 85.7 ml/m²; creatinine dialysate-to-plasma (D/P) and glucose dialysate at X dwell time-to-0 dwell time (Dx/D0) ratios were 0.38 ± 0.1 and 0.65 ± 0.09, respectively. LVMI was 46.6 ± 14.8 g/m²; 2-h creatinine D/P and glucose Dx/D0 showed no correlation with FWTn, UF, and LVMI. FWTn showed a significant inverse correlation with LVMI (r 0.58, p 0.02).

CONCLUSIONS: This study characterized FWT in PD children through the mini-PET. Left ventricular hypertrophy showed a high prevalence in this group, and a significant correlation between LVMI and FWT was found. FWT could be a useful tool to evaluate UF in PD children.