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Theme : PD in Pediatric Patients

## **Long term changes in peritoneal membrane function in children on chronic peritoneal dialysis**

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### Objective:

Preservation of adequate peritoneal membrane function is key to technique survival in children on chronic peritoneal dialysis (PD). Long term followup data on peritoneal transport function are however scarce in children.

### Methods:

Sixty-five children treated in 7 pediatric dialysis centers in Poland and Germany, aged 9.7 (0.1 to 20 years) were analyzed with respect to peritoneal solute and water transport over time. A baseline PET test was performed with conventional single chamber PD fluid within the first six months of treatment (fill volume 1015±81 ml/m<sup>2</sup> BSA). Patients with peritonitis prior to the initial PET were excluded. PET tests from 46, 27, and 17 patients were available after one, two and three years of PD.

### Results:

At baseline 10 (15.3%) children were categorized by 4 hour dialysate-to-plasma ratio (D/P) for creatinine as low, 23 (66.3%) as average and 12 (18.4%) as high transporters. The ratio of dialysate glucose concentration at 0 and 4 hour (D/D0) was 0.37±0.1 and ultrafiltration 227±152ml/m<sup>2</sup>/4h. Daily glucose exposure was 97±44g/m<sup>2</sup>/d.

After one and two years of PD there was no difference in D/P for creatinine, urea, phosphate, potassium, or in D/D0 glucose, 4 hour ultrafiltration rate and daily glucose exposure.

After 36 months of PD, however, D/P creatinine and phosphate increased (p<0.02 and 0.03 vs. baseline) and D/D0 glucose decreased significantly (p<0.001). The fraction of high transporters increased to 47% (8/17), four hour ultrafiltration decreased from 275±122 to 192±85ml/m<sup>2</sup>/4h (p=0.02) and daily glucose exposure increased from 88±58 to 129±55g/m<sup>2</sup>/d (p=0.005). Change in PD membrane function was not significantly influenced by intercurrent peritonitis episodes.

### Conclusions:

Peritoneal transport function significantly changes in children maintained on PD for more than 36 months. Solute transport increases and ultrafiltration declines. The latter appears to be insufficiently compensated by an increase in glucose exposure.