

INCREASED SODIUM REMOVAL WITH STEADY CONCENTRATION PERITONEAL DIALYSIS

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Objectives

Adequate removal of sodium is a challenge with current PD modalities. Increased ultrafiltration (UF) volume is associated with sodium retention during APD as a result of sodium sieving. Carry Life® UF is a novel portable UF device for patients requiring enhanced fluid removal using steady concentration peritoneal dialysis (SCPD). The therapeutic concept is to keep stable dialysate glucose concentrations by infusing glucose throughout the dwell, to compensate for glucose uptake. A small amount of the dialysate is drained to the device cyclically and a glucose concentrate added before returning the fluid to the patient. The aim of this study was to investigate UF rate and sodium removal using Carry Life® UF.

Methods

Eight stable PD patients were included in the study. Subjects were treated with 5-hour Carry Life® UF treatments using three different glucose doses (11, 14, 20 g/h). An initial fill with 1500 ml, 1.36% glucose PD solution was used. A small volume of dialysate was drained hourly to avoid overfill. A standard 4-hour Peritoneal Equilibration Test (PET) (2000 ml, 2.27% glucose) was used as control. Data expressed as mean ± SD, statistical analysis using one-way ANOVA, **p<0.01 ***p<0.001.

Results

Treatment	UF-rate (ml/h)	Sodium removal (mmol/dwell)	Calculated sodium concentration in UF-volume (mmol/l)	Dialysate sodium concentration end of dwell (mmol/l)
PET	40±60	22±33	135±23	133±3
Carry Life® UF	11 g/h	124±49**	86±27***	136±11
	14 g/h	146±63***	92±33***	127±13
	20 g/h	168±78***	110±37***	133±16

Conclusions

The Carry Life® UF therapy significantly increased sodium removal and UF-rates compared to control. The decreased dialysate sodium concentration with Carry Life® UF leads to an increased sodium diffusion that generates an ultrafiltrate with a sodium concentration similar to PET. In conclusion, continuous glucose administration with Carry Life® UF results in more efficient sodium and fluid removal in PD patients.