PERITONEAL DIALYSIS WITH THE NEW PORTABLE CARRY LIFE® PD SYSTEM

Study ID # CIV-17-03-019046

INTRODUCTION

Carry Life®PD is a new portable device intended for peritoneal dialysis (PD) which regenerates the PD fluid throughout the treatment session.

Carry Life PD consists of a **Cycler, Line set**, concentrated **glucose** solution and an adsorbent cartridge, **Purecart®**.

During the treatment, intraperitoneal fluid is circulated from the peritoneal cavity through the Purecart where uremic toxins are removed. Concentrated glucose is added to the fluid in the device before the regenerated fluid is returned to the patient.

Therapeutic concept Carry Life PD

- **An efficient dialysis** by maintaining a low dialysate/plasma ratio of uremic toxins
- **An efficient ultrafiltration** by maintaining a stable intraperitoneal glucose concentration. Glucose dose is based on individual patient need

AIM

A feasibility study to evaluate:

- Dialysis efficiency by measuring removal of uremic biomarkers
- Maintenance of a stable intraperitoneal glucose concentration and ultrafiltration
- Safety and patient tolerability

METHOD

- Five patients on stable PD therapy were treated with Carry Life PD for eight hours
- Patients were treated day time (no food and fluid restrictions)
- After an initial pre-fill with 2 liters of PD solution (1.36% glucose), the Carry Life PD was connected to the patient and the treatment was started
- Glucose was added continuously throughout the treatment
- The Purecart was replaced after 4 hours
- Blood and dialysate samples for analysis of uremic biomarkers, electrolytes and glucose were taken regularly
- Student's paired two tailed t-test was used for statistical analysis
- Data is expressed as mean ± ST DEV

RESULTS

- Treatment was well tolerated by the patients
- Normal blood electrolytes were maintained throughout the treatment
- Intraperitoneal glucose concentration was maintained at approximately 50 mmol/L (0.9%) and blood glucose was normal throughout the treatment
- UF volume was variable between patients
- Total albumin removal was 2.1±0.5 g

Carry Life® PD is not available for sale

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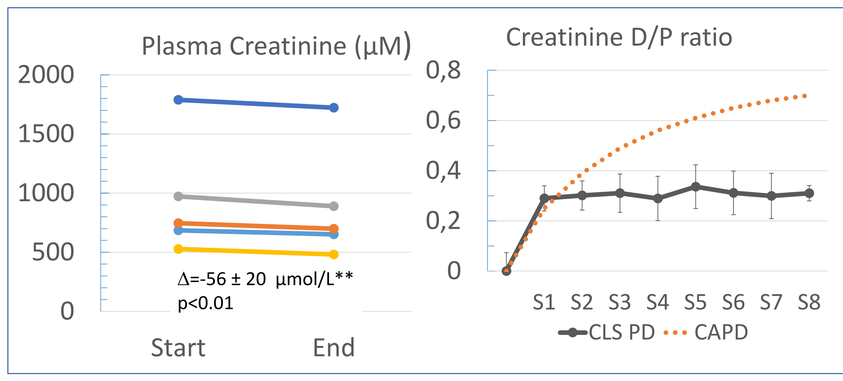
Creatinine

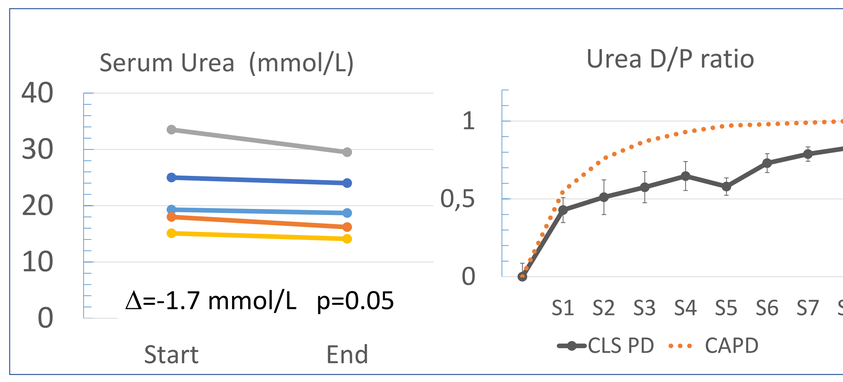
Serum creatinine decreased from 944±500 µmol/L at the start of treatment to 888±488 µmol/L after treatment. Creatinine dialysate to plasma ratio was maintained at approximately 0.28.



Mean creatinine removal	
Amount (µmol)	3100±480
Clearance (ml/min)	8.1±2.1

Urea

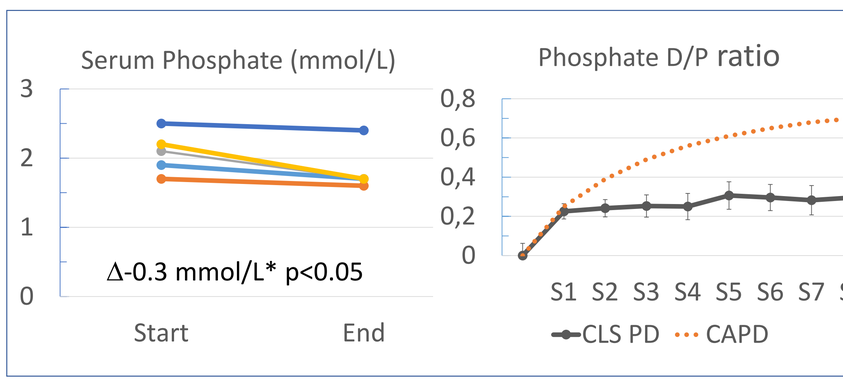
There was a decrease in serum urea concentration in all patients after the treatment, on average from 21.5±8.2 to 19.6±6.8 mmol/L. The urea dialysate plasma ratio increased slowly throughout the treatment, with a dip after change of Purecart, reaching 0.83 after 8h treatment.



Mean urea removal	
Amount (mmol)	102±24
Clearance (ml/min)	10.6±1.9

Phosphate

Serum phosphate decreased from 2.1±0.3 mmol/L at the start of the treatment to 1.8±0.3 mmol/L after the treatment. Phosphate dialysate to plasma ratio was maintained at approximately 0.27.



Mean phosphate removal	
Amount (mmol)	5.8±1.7
Clearance (ml/min)	6.4±1.3

CONCLUSIONS

- Carry Life PD provides an efficient peritoneal dialysis therapy by maintaining the dialysate to plasma concentration gradients of uremic toxins
- The intraperitoneal glucose concentration is maintained throughout the treatment. Further studies are needed to optimize the glucose level required for efficient UF in individual patients
- The Carry Life PD treatment is associated with relatively low removal of albumin and was well tolerated by the patients

Carry Life® Renal

- Cycler
- Purecart®
- Line set with drain bag
- Concentrated solution