Literature
Medical MS Summary
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This is a Fresenius Medical Care summary of:

Effects of Biocompatible versus Standard Fluid on Peritoneal Dialysis Outcomes

Johnson DW et al. Australia, J Am Soc Nephrol 2012;23(6):1097-1107

Introduction

Glucose degradation products (GDPs) in conventional peritoneal dialysis (PD) fluids are known to have detrimental local, systemic and nephrotoxic effects. Biocompatible (neutral pH, low-GDP) fluids may improve various outcome parameters, but the results of previous studies are inconsistent.

Objective

The *bal*ANZ trial investigated the effect of a biocompatible PD fluid (balance, Fresenius Medical Care, Bad Homburg, Germany) on preservation of residual renal function (RRF) compared with conventional fluid (stay•safe®, Fresenius Medical Care, Bad Homburg, Germany).

Design

In this multicentre, open-label, randomised controlled trial, incident PD patients from Australia, New Zealand and Singapore were allocated to either a neutral-pH, low-GPD or conventional fluids, and followed up for 2 years. To be eligible, they had to have a residual GFR of ≥5ml/min/1.73m² and a urine volume of ≥400 ml/d. The primary outcome parameter was the decline of RRF (i.e., mean of renal 24 h urea and creatinine clearances); secondary outcome parameters included time to anuria, time to first peritonitis, measures of fluid balance, patient and technique survival, and adverse events.

Results

185 patients were randomised to either low-GDP (n=92) or control fluid (n=93). The groups were comparable in terms of baseline characteristics.

- RRF declined by -0.22 and -0.28 ml/min/1.73m² per month in the low-GDP and control groups, respectively, in the first year (p=0.17), and by -0.09 and -0.10 ml/min/1.73m² per month, respectively, in the second year (p=0.9). The difference in RRF decline over two years missed statistical significance (p=0.06).
- Time to anuria was significantly longer in the low-GDP group than in the control group (7% versus 20% of patients became anuric during follow-up, respectively; p=0.01).
- Patients in the low-GDP group experienced a significantly lower peritonitis rate than the control group (0.30 versus 0.49 episodes/patient-year, p=0.01) and a longer time to the first peritonitis episode (p=0.01). Non-PD-related infections were less frequent in the low-GDP group.
- There were no significant between-group differences in patient and technique survival.
- A significant transient reduction in ultrafiltration volume and increase of urine volume at 3 and 6 months was observed.

Conclusion

The low-GDP group did not show a significantly slower decline of RRF than the control group, but time to anuria was significantly longer and the peritonitis rate was significantly lower in the low-GDP group.
This trial therefore demonstrated relevant clinical benefits for biocompatible PD fluids.

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