

This is a Fresenius Medical Care summary of:

Use of pure bicarbonate-buffered peritoneal dialysis fluid reduces the incidence of CAPD peritonitis

Montenegro J et al. *Nephrol Dial Transplant* 2007;22:1703-1708

Introduction

Bicarbonate as the physiological buffer, a neutral pH, and minimal glucose degradation products (GDPs) in peritoneal dialysis (PD) fluids (PDFs) have shown favorable results in preclinical studies. Using more biocompatible solutions should exert a positive effect on the incidence of peritonitis.

Objective

This study compared the incidence of peritonitis episodes in continuous ambulatory peritoneal dialysis patients treated with bicaVera, a bicarbonate-buffered, neutral pH PDF with a low GDP content (BIC), or with a conventional lactate-buffered fluid containing GDPs and a pH of 5.5 (LAC).

Design

This open, non-randomised, prospective, observational study was performed in one centre in Spain. Patients were allocated to BIC or LAC based on availability of BIC PDF. The PDF was not switched later. Recruitment was halted when 50 patients with a follow-up time of at least 12 months for each PDF were included. All procedures of training, catheter placement and care, and peritonitis treatment were the same for both groups.

Results

Groups were similar at baseline, although there was a higher Charlson Comorbidity Index (35% vs. 20%) and more diabetics in the BIC group.

Additionally, follow-up time was comparable. There was a significantly lower peritonitis rate in the BIC group, i.e., one episode per 21 patient-months with LAC and one episode per 36 patient-months with BIC (OR 0.58, 95% CI 0.37-0.91, $p=0.017$).

In addition, the BIC group showed:

- a shorter duration of peritonitis (48 ± 16 vs. 64 ± 29 h until peritoneal leukocyte count normalised, $p = 0.015$)
- a better preservation of residual renal function (week 0 to end of study: from 7.05 ± 1.8 to 4.13 ± 3.4 ml/min vs. from 7.07 ± 1.5 to 2.29 ± 2.18 ml/m in LAC, $p=0.004$)
- a lower inflammatory status (CRP week 0 to end of study: 2.64 ± 2.63 to 2.39 ± 2.35 mg/dL vs. from 2.68 ± 2.83 to 4.14 ± 3.83 mg/dL in LAC, $p<0.05$)
- better patient survival (7 deaths vs. 17 deaths in LAC, $p=0.0025$).

Conclusion

The more biocompatible BIC solution resulted in a 42% lower risk of peritonitis. In addition, it may also contribute to better preservation of residual renal function and improved patient survival.