

This is a Fresenius Medical Care summary of:

Effects of neutral pH and low-glucose degradation product-containing peritoneal dialysis fluid on systemic markers of inflammation and endothelial dysfunction: a randomized controlled 1-year follow-up study

Park SH et al. *Korea, Nephrol Dial Transplant.* 2012;27:1191–1199

Introduction

Peritoneal dialysis (PD) solutions with low glucose degradation products (GDPs) are known to attenuate the detrimental effects of PD on the peritoneum, but little is known about their potential systemic benefits.

Objective

This clinical trial studied the effects of a low-GDP solution on markers of systemic inflammation and endothelial dysfunction.

Design

Patients from seven centres in South Korea were included in this, open-label, randomised controlled trial. Before their first ever PD treatment, patients were assigned to either a neutral-pH, low-GDP solution (*balance*, Fresenius Medical Care, Bad Homburg, Germany) or a conventional PD fluid (*stay•safe*[®], Fresenius Medical Care, Bad Homburg, Germany). Peritoneal Equilibration Tests and biochemical analyses were performed after 4 weeks (baseline), and 6 and 12 months. Patients were followed up for 12 months. The primary outcome measure was the inflammation and endothelial dysfunction index (IEDI), which considers serum levels of soluble intercellular adhesion molecule 1 (sICAM-1), soluble vascular cellular adhesion molecule 1 (sVCAM-1), and high-sensitivity C-reactive protein (hs-CRP).

Results

152 patients were randomised, 146 entered baseline data (low-GDP:conventional, n=79:67), and 111

completed the study per protocol (n=64:47). Baseline characteristics were similar between the groups.

- At 12 months, the low-GDP group showed lower IEDI values than the conventional group ($p<0.05$). This difference was not significant in the linear mixed model (LMM) analysis that compared the entire study period.
- At 12 months, sICAM-1 was significantly lower in the low-GDP group versus the conventional group. This was confirmed in the LMM analysis.
- sVCAM-1 was significantly lower at 6 and 12 months in the low GDP group versus the conventional group; findings were confirmed in the LMM analysis.
- Compared with the conventional group, log-transformed hs-CRP was slightly higher in the low-GDP group at 6 months but not at 12 months.
- At 4 weeks and 6 months, single markers of peritoneal transport characteristics were different in the low-GDP group versus the conventional group. However, there were no between-group differences in peritoneal transport characteristics, residual renal function, frequency of peritonitis, patient and technique survival at 12 months.

Conclusion

Compared with conventional PD fluid, therapy with biocompatible, low-GDP fluid resulted in significantly lower markers of endothelial dysfunction at 12 months. Further studies are needed to examine if improvements in these surrogate markers translate into better clinical outcomes.