A strategy for encapsulating peritoneal sclerosis: pay attention not only to PD solution but also middle-molecular uraemic substances retention!

Encapsulating peritoneal sclerosis (EPS) is a serious complication in patients undergoing continuous ambulatory peritoneal dialysis (CAPD) or automated peritoneal dialysis (APD). The Pan–Thames EPS study is one of the largest cohorts of patients with EPS in the literature. Of the patients with peritoneal dialysis (PD) details available, a few had significant residual renal function.

As for β₂-microglobulin (MG) clearance by residual renal function per sé, it was significantly lower in subjects with long duration of dialysis even though no difference was observed in the total daily β₂-MG clearance [2]. Middle molecular uraemic substances retention itself might influence the bioincompatibility of PD solution. β₂-MG is useful as a screening test for the onset of EPS, and that β₂-MG and accumulation of middle molecular uraemic substances may be related to the pathophysiology of EPS. Patients with EPS were detected by a historical cohort study using clinical data on 219 CAPD patients at our hospital. According to multiple regression analysis, a high β₂-MG level was an independent risk factor for EPS (odds ratio 1.162, 95% confidence interval 1.026–1.317, \( P = 0.018 \)). Other clinical markers did not show positive significance. A receiver operating characteristic curve (ROC) was prepared to evaluate the suitability of β₂-MG measurement as a screening test. The sensitivity was 64%, and the specificity was 80% when a β₂-MG level of 37.0 mg/dL was taken as the cutoff value [3]. We also reported β₂-MG staining in peritoneal tissue from CAPD patients [4].

In the new millennium: a national cohort study, no patients were treated solely with ‘bio-compatible’ dialysate. Various brands of dextrose-based dialysate were used by the EPS cases. Biocompatible dialysis solutions are thought to improve function and viability of peritoneal mesothelial cells. Thus, biocompatible dialysis solutions might decrease the high incidence of EPS in this study [5]. However, Fan et al. reported that the clinical outcomes (residual kidney function, peritoneal membrane function, technique survival and peritonitis rates) were the same, irrespective of standard or biocompatible PD solutions [6].

β₂-MG may have a pathogenic role, which is, however, still unproven. If middle molecular uraemic substances retention itself influences the bioincompatibility of PD solutions, it might be worthwhile to attempt combined CAPD and haemodialysis treatment in patients with high β₂-MG levels for whom sufficient clearance cannot be maintained with CAPD alone, but this also requires further study. We should not pay attention only to PD solutions but also middle-molecular uraemic substance retention.

Conflict of interest. None declared.

Division of Kidney and Hypertension, Department of Internal Medicine, The Jikei University School of Medicine, Tokyo, Japan

Email: keitaro@jikei.ac.jp

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doi: 10.1093/ndt/gfp744