

저 GDP 투석액이 지속성외래복막투석 환자의 내피세포 기능 이상 관련 인자와 복막중피세포의 표현형에 미치는 영향

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조규향, 도준영, 황문주, 정요한, 강석휘, 박종원, 윤경우, 석윤미, 이희정, 신계림, 김산옥

Long-term Effect of Low GDP Dialysis solution on the Markers of Endothelial Dysfunction and Phenotype of Human Peritoneal Mesothelial Cells in Continuous Ambulatory Peritoneal

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Purpose: Recent studies showed that clinically overt vascular events are preceded by endothelial dysfunction and increase in circulating markers of endothelial activation, including vascular cellular adhesion molecule (VCAM)-1 and intercellular adhesion molecule (ICAM)-1. Therefore, the authors conducted a prospective, observational study to investigate the effect of the low glucose degradation product (GDP) solution on the markers of endothelial dysfunction and phenotype of human peritoneal mesothelial cells (HPMCs) in CAPD patients.

Methods: Among new CAPD patients from May 2001 to April 2012 in our hospital, 74 patients (43 male, 27 diabetes, mean age 47 ± 11 years) finished a 60-month protocol. They were assigned to one of the four groups, group D (Dianeal[®], n=38, lactate-based high GDP solution), group P (Physioneal[®], n=7, bicarbonate/lactate-based low GDP solution), group S (Stay • safe[®], n=10, lactate-based high GDP solution), and group B (Balance[®], n=19, lactate-based low GDP solution). Blood chemistry including serum C-reactive protein (CRP), ICAM-1 and VCAM-1 were measured at months 1, 12, 24, 36, and 60. HPMCs were cultured from overnight dwell effluent and were scored HPMCs (1: cobble stone appearance mesothelial cell, 2: mixed, 3: fibroblast) as morphologic characteristics at months 1, 12, 24, 36, 48, and 60.

Results: There were no differences in the parameters at the baseline between the four groups. There were significant increases over time in Serum ICAM-1, VCAM-1 level and HPMCs cell score in the four groups ($p < 0.01$, $p < 0.01$, and $p < 0.01$). Serum CRP, ICAM-1, VCAM-1 level and HPMCs cell score were higher trend in high GDP solution group (group D and group S) than in low GDP solution group (group P and group B). But, it did not reach the statistical significance. According to the subgroup analysis, serum VCAM-1 level and HPMCs cell score were significantly higher in lactate-based high GDP solution group (group S) than in lactate-based low GDP solution group (group B) ($p = 0.029$ and $p = 0.001$).

Conclusions: Compared to lactate-based high GDP solution group (group S), lactate-based low GDP solution group (group B) showed the beneficial effect on endothelial dysfunction in CAPD patients in this five year period study. Lactate-based high GDP solution group (group S) also showed higher epithelial to mesenchymal transition (EMT) than lactate-based low GDP solution group (group B) in CAPD patients.

Key Words: 저 GDP 투석액, 내피세포 기능 이상, 복막투석

Low GDP solution, Endothelial dysfunction, Peritoneal dialysis