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저GDP 복막투석액이 당뇨병성 지속성외래복막투석 환자의 초여과에 미치는 영향

영남대학병원 내과

조규향, 도준영, 정선영, 박종원, 윤경우

The Effect of Low GDP Solution on Ultrafiltration in Diabetic CAPD Patients

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Purpose: There are several reports regarding the beneficial effect of neutral pH and low glucose degradation product (GDP) dialysate in the preservation of the peritoneal membrane. There has been limited literature reporting the effect of low GDP solution on ultrafiltration, transport of solutes and control of body water in diabetic CAPD patients. Therefore, the authors investigated the effect of low GDP solution on ultrafiltration, solute transport and control of body water in diabetic CAPD patients.

Methods: Among new diabetic CAPD patients from May 2001 to December 2009 in our hospital, 124 patients (69 male, mean age 54.1±11.1 years) finished a 12-month protocol. Patients were assigned to one of four groups, Group 1 (N=45, high GDP, Dianeal®, Baxter), Group 2 (N=18, low GDP, Physioneal®, Baxter), Group 3 (N=19, high GDP, Stay-safe®, FMC) and Group 4 (N=42, low GDP, Stay-safe · Balance®, FMC). Ultrafitration (UF) volume, 4 hour D/P Creatinine (D/P4Cr) and 1 hour D/P Na (D/P1Na) during the peritoneal equilibration test (PET) using 4.25% dialysate were measured at the 1st, 6th and 12th month. Daily 24 hour UF volume, urine volume, amount of glucose absorption through the peritoneal membrane and clinical indices were also measured at the 1st, 6th and 12th month. Body composition including total body water (TBW) volume and extracellular fluid (ECF) volume was compared using bio-impedance analysis (BIA) at the 1st and 12th month. We analyzed the data with independent t-test and chi square test by SPSS 17.0.

Results: Compared to the group 1, the group 2 showed higher UF volume during the PET at the 1st, 6th and 12th month ($p<0.05$). The group 2 showed lower D/P4Cr than the group 1 at the 6th and 12th month ($p<0.01$). D/P1Na in the group 2 was lower than the group 1 at the 12th month ($p<0.05$). In spite of higher daily UF volume in the group 2 at the 12th month, there were no significant differences in TBW volume and edema index (ECF/TBW) at the 12th month. In comparison with the group 3, the group 4 showed lower UF volume during the PET at the 6th month ($p<0.01$). The group 4 showed lower daily UF volume and higher amount of daily glucose absorption than the group 3 at the 6th month ($p<0.01$). There were no significant differences in D/P4Cr and D/P1Na between the group 3 and the group 4. There were no significant differences in TBW volume and edema index between the group 3 and the group 4 at the 12th month.

Conclusion: There were no significant differences in body water between the high GDP group and the low GDP group in diabetic CAPD patients at the 12th month. It is speculated that lower UF volume during the PET and daily UF volume in the group 4 at the 6th month in comparison with the group 3 is related to higher amount of daily glucose absorption through the peritoneal membrane. We need further studies to evaluate the longer effect of low GDP solution on ultrafiltration and solute transport in diabetic CAPD patients.

Key Words: 저GDP 투석액, 초여과, 당뇨병
Low GDP solution, Ultrafiltration, Diabetes