P140

복막투석을 시행하는 여성에서 골밀도 감소의 위험인자로써 저칼슘 투석액

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Low Calcium Dialysate as a Risk Factor for Decline in Bone Mineral Density in Female Patients on Peritoneal Dialysis

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Background: Previous studies have showed that low calcium dialysate (LCD) induce an increase of serum intact-parathyroid hormone (i-PTH) in PD patients. There are few reports on the effects of LCD for decline in bone mineral density (BMD) in PD patients.

Patients and Methods: We reviewed the medical records at Yeungnam University Hospital in Korea and identified all the female patients who received PD between 2001 April and 2009 March. Among them, patients with <2 years of follow-up were excluded. BMD measurement was performed yearly by the Hologic (Discovery Wi). One hundred ten patients were enrolled. The following data was documented from the patients' record: age at the initiation of PD, underlying disease, the time averaged laboratory findings, types of dialysate and changes in total body BMD during 2 years.

Results: Twenty four underwent LCD and 86 patients underwent standard calcium dialysate (SCD). The mean age was 49.8±11.4 years old in low calcium dialysate group and 49.5±13.7 years old in standard calcium dialysate group. Total BMD (g/cm^2) was 1.02±0.13, 1.02±0.13 and 1.00±0.12 at baseline, 1 year and 2 years after the initiation of PD. There was a significant decrease in the BMD between 1 and 2 years after the initiation of PD. Time averaged intact-PTH was 249.4±161.3 in LCD group and 141.3±1189 in SCD group (p=0.000). Time averaged alkaline phosphatase (ALP) was 215.4±87.6 in LCD group and 186.4±74.6 in SCD group (p=0.023). On the univariate analysis, LCD, residual renal function, normalized protein equivalent of nitrogen appearance, weekly Kt/V, i-PTH, ALP and initial total body BMD were associated with decline of total body BMD. On the multivariate analysis, LCD, ALP and initial total body BMD were proved to be the independent risk factors for decline in total body BMD.

Conclusion: Low calcium dialysate is a risk factor for decline in BMD. LCD may be associated with increment of ALP and intact-PTH. Therefore, LCD should be carefully used for female PD patients with risk of decline in BMD.

Key Words: 투석, 저칼슘투석액, 골밀도
Dialysis, Low calcium dialysate, Bone mineral density