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고령 혈액투석 환자의 체성분분석

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Bioimpedance Analysis in Elderly Patients on Hemodialysis

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Purpose: Although the incidence and the prevalence of elderly patients with end-stage renal disease (ESRD) are increasing fast, various management issues on these patients have not been fully elucidated. Bioimpedance spectroscopy (BIS) is an objective method to measure body composition, supporting clinical dry weight assessment in hemodialysis (HD) patients. This study was aimed to compare hydration status between young and elderly subjects and to analyze factors related to overhydration in ESRD patients on HD.

Methods: We measured fluid status before and after a mid-week HD session in clinically stable 47 patients on maintenance HD using BIS device which was able to assess quantification of extracellular overhydration compared with a healthy reference population. In addition, weight and blood pressure were recorded during the treatment.

Results: Participants were divided into young (<65 yrs, n=32) and elderly (≥65 yrs, n=15) patients. In elderly patients, pre-HD diastolic BP (78.8±16.5 vs. 68.4±9.3 mmHg, p=0.009), intracellular water (ICW; 15.6±3.4 vs. 13.4±3.5 L, p=0.031), and lean tissue index (LTI; 12.1±2.7 vs. 9.7±2.5 kg/m^2, p=0.006) were significantly lower and extracellular water (ECW)/total body water (TBW) (0.49±0.04 vs. 0.52±0.04, p=0.013) was significantly higher than in young patients. However, there were no differences in pre-HD body mass index (BMI), ultrafiltration volume, pre-HD systolic BP, TBW, ECW, and fat tissue index between the two groups. ECW/TBW ratio (r=0.304), ECW/ICW ratio (r=0.296), and LTI (r=-0.499) were significantly correlated with age. In a multivariate logistic regression analysis, age (RR, 0.924; 95% CI, 0.868-0.983) and pre-HD pulse pressure (RR, 1.056; 95% CI, 1.004-1.110) were independent factors associated with overhydration status.

Conclusion: Although BMI and TBW of elderly ESRD patients were similar to those of young patients, ICW and LTI was lower and ECW/TBW was higher than in young patients.

Therefore, clinical manifestations related to overhydration may be developed more frequently in elderly patients compared with young patients, and benefits of dry weight assessment using BIS need to be further evaluated.

Key Words: 고령, 혈액 투석, 체성분 분석
Elderly, Hemodialysis, Bioimpedence