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말기 신부전 환자에서 내부생성 재주입 혈액투석여과요법을 통한 요독물질의 효과적인 제거

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Effective Removal of Uremic Toxins Via Hemodiafiltration with On-line Endogenous Reinfusion in Patients with End Stage Renal Disease

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Purpose : Hemodiafiltration with on- line endogenous reinfusion (HFR) is a novel dialytic method which combines the processes of diffusion, convection and adsorbance. We performed a prospective, cross- over study, to compare the removal of uremic toxin between HFR and low flux hemodialysis.

Methods : Eleven stable hemodialysis patients, who had been on maintenance hemodialysis over 3 years, were treated for 12- weeks with low- flux hemodialysis using a dialyzer 1.4 m^2 and then switched to HFR (SG30 Plus [surface area 1.4 m^2]; Sorin Group Italia S.r.l, Mirandola ,Italy) for 12 weeks. Blood samples were collected at the beginning of the study, after 12 weeks and after 24 weeks. Concentrations of adiponectin, leptin, and interleukin- 6 (IL- 6) were analyzed using a logarithmic transformation.

Results : After 12- week HFR treatment, serum β_2- microglobulin (β_2M) significantly decreased (38.6±2.60 at week 12 vs 28.7±1.25 mg/dL, p=0.001), and serum levels of adiponectin and leptin also decreased (1.68± 0.110 at week 12 vs 1.11±0.118 μg/mL at week 24, p=0.001; 27.6±11.5 at week 12 vs 13.7±3.80 ng/mL at week 24, p=0.011, respectively). Hemoglobin levels increased (10.9±0.287 at week 12 vs 11.48±0.318 g/dL at week 24, p=0.48) without increasing dose of erythropoietin. Kt/Vurea, normalized protein equivalent of nitrogen appearance, subjective global assessment or serum albumin levels was not changed during HFR treatment period. There was no difference of serum levels of C- reactive protein or interleukin- 6 between week 12 and week 24.

Conclusion : The results of this study indicate that HFR may be effective therapy for the removal of middle molecular weight uremic toxin such β_2 M, adiponectin, and leptin, and that HFR may be useful to preserve nutritional status or improve anemia.

Key Words : 혈액여과투석, 베타2- 마이크로글로불린, 렙틴
Hemodiafiltration, Beta2- microglobulin, Leptin