

혈액투석환자에서 sRAGE, EN-RAGE 및 혈관 석회화의 연관성 및 위험인자에 관한 연구

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Circulating Soluble Receptor for Advanced Glycation End Product (sRAGE) Levels but not S100A12 (EN-RAGE) are Associated with Vascular Calcification in Patients on Hemodialysis

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Background: The receptor for advanced glycation end products (RAGE) has emerged as a central regulator of vascular inflammation and atherosclerosis. Soluble RAGE (sRAGE) and extracellular RAGE-binding protein S100A12 (EN-RAGE) are anti-inflammatory and pro-inflammatory ligands of RAGE, respectively, in the development of vascular complications. We determined the levels of sRAGE and EN-RAGE in hemodialysis (HD) patients and evaluated their relationship with vascular calcification.

Method: We performed a cross-sectional study with 199 hemodialysis patients. Plain X-ray images of the lateral lumbar spine from all subjects were studied to calculate semiquantitative vascular calcification scores (VCSs), as described by Kauppila. Commercially available ELISA kits were used to quantify the serum concentration of sRAGE and EN-RAGE.

Results: The patients were 57.1±13.7 years of age; 54.3% were male, 49.2% were diabetic, and 36.2% had a history of cardiovascular disease. Kauppila scores revealed 40 patients (20.1%) with a high VCS (>7). In a univariate analysis, serum sRAGE was negatively associated with high VCS (log sRAGE, $p=0.035$), whereas EN-RAGE showed a positive tendency (log EN-RAGE, $p=0.431$). Even after adjustments for confounding risk factors, sRAGE was independently associated with a high VCS (log sRAGE, OR=0.491, 95% CI: 0.262-0.918, $p=0.026$).

Conclusions: This study demonstrated that the circulating sRAGE level was inversely associated with VCS in HD patients independent of the EN-RAGE level and the severity of systemic inflammation. Longitudinal observations and intervention studies are warranted to establish whether this link is causal.

Key Words: sRAGE, EN-RAGE, 혈관석회화, 혈액투석
sRAGE, EN-RAGE, Vascular calcification, Hemodialysis