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경동맥 죽상반과 신기능감소와의 관계

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Carotid Plaque and the Risk of Renal Function Progression in Patients with Chronic Kidney Disease

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Background: Carotid plaque is a surrogate marker of systemic atherosclerosis and closely associated with adverse cardiovascular outcomes. However, data regarding the predictive role of carotid plaque for progression of renal dysfunction is limited.

Methods: This is a longitudinal observational study with 411 Stage 3 and 4 chronic kidney disease (CKD) patients. A carotid plaque was defined as a focal structure encroaching into the arterial lumen of at least 0.5mm or 50% of the surrounding carotid intima-media thickness (cIMT) or a thickness >1.5mm. Renal function decline was measured by estimated glomerular filtration rate (eGFR) slope and renal endpoint was defined as the start of dialysis.

Results: Baseline eGFR was 44.5±11.6 mL/min/1.73m^2 and eGFR slope was -2.87±3.76 min/1.73m^2/yr. A carotid plaque was found in 282 (68.6%) patients, and these patients had significantly faster rates of renal decline than those without plaque (-3.64±3.34 vs. -1.20±1.85 mL/min/1.73m^2/yr, p<0.001). According to multivariate analysis, statistically significant variables determining eGFR slope were diabetes (β=-0.77, p=0.033), increased pulse pressure (β=-0.02, p=0.015), proteinuria (β=-0.50, p<0.001), cIMT (β=-4.36, p<0.001) and the presence of carotid plaques (β=-1.48, p<0.001). During the 2.5-year follow-up, 47 (11.4%) of patients started dialysis. Patients with carotid plaque had a poorer dialysis-free survival rate than those without carotid plaque (hazard ratio 3.30, 95% confidence interval 1.01, 10.77). Particularly, irregular plaque surface significantly increased the risk of dialysis by 2.2-fold.

Conclusions: Carotid plaque was closely associated with rapid decline of renal function and progression to dialysis in stage 3 and 4 CKD patients.

Key Words: 만성신부전, 죽상반, 신기능감소
Chronic kidney disease, Carotid plaque, Renal survival