P-196

중등도 이상의 만성 신부전환자에서 혈청 TNF 수용체 농도와 신부전 진행의 관계

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Concentration of Serum TNF Receptors and Progression of Chronic Kidney Disease in Patients with Moderate to Severe Renal Dysfunction

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Background: The prevalence of chronic kidney disease (CKD) has been increased steadily, and it's one of public health problems. However, there is a paucity of biomarkers for the prediction of CKD progression other than high serum creatinin (SCr), reduced glomerular filtration rate (GFR), and proteinuria. Chronic inflammation may contribute to kidney damage and interaction between tumor necrosis factor alpha (TNFα/TNF) and its receptors (TNF receptor 1 and 2) has essential role in the inflammation signaling. We aimed to evaluate the clinical significance of TNF receptors as a biomarker of CKD progression.

Methods: We recruited 104 patients with CKD stage 3 (n=37) and 4 (n=67). Primary outcome was defined as composite of SCr increase more than 2 times, GFR decrease more than 50 percent, or initiation of renal replacement therapy. We measured serum concentration of TNF receptors by ELISA (DRT100 and DRT200; R&D Systems, Minneapolis, MN).

Results: A total of 40 patients reached primary outcomes during 3 years of follow-up. Patients with primary outcomes showed higher baseline level of SCr, proteinuria and TNF receptor 1/2 than patients without primary outcomes did. (p=0.004, 0.080, 0.004, and 0.051, respectively). However, it was not statistically significant when we performed multivariate analysis. When we divided patients according to CKD stage, however, higher level of TNF receptor 2 was associated with composite outcomes especially in CKD stage 4 patients. (OR (C.I,); Q2: 3.101 (0.345-27.843), Q3: 5.128 (0.580-45.312), Q4: 8.950 (1.090-73.478), adjusted with age, gender, SCr, and urine protein to Cr ratio).

Conclusion: This study showed that higher serum level of TNF receptors, especially TNF receptor 2, is associated with progression of CKD in patients with moderate to severe renal dysfunction (CKD stage 3 to 4). We need to recruit more patients to verify the role of TNF receptors as a biomarker of CKD progression.

Key Words: TNF receptor 1과 2, 만성신부전, 생체 표지자
TNF receptor 1 and 2, Chronic kidney disease, Biomarker