

만성신질환 환자에서 감소된 아디포넥틴 농도와 대사 증후군과의 관계

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Association between Hypoadiponectinemia and Metabolic Syndrome in Patients with Chronic Kidney Disease

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Introduction: In patients with chronic kidney disease (CKD), metabolic syndrome has been demonstrated as the culprit of diverse complications and disease progression. Among the newly developed markers of metabolic imbalance in CKD patients, adiponectin has been known to have anti-atherogenic and cardioprotective effects. However, previous studies did not clarify the correlation between serum adiponectin levels and metabolic syndrome in CKD patients. The aim of this study was to elucidate the association between serum adiponectin levels and the risk of metabolic syndrome in CKD patients.

Methods: The Korean Cohort Study for Outcome in Patients with Chronic Kidney Disease (KNOW-CKD) is a cohort study that enrolled subjects with CKD stages 1 to 5 (predialysis) from nine nephrology centers in major tertiary hospitals throughout the South Korea. From April 2011 to December 2013, data were collected from 1,529 CKD patients and analyzed by a cross-sectional method. Baseline serum adiponectin levels were measured. Patients were categorized into two groups according to the presence of metabolic syndrome. Logistic regression analysis was used to identify the independent association between serum adiponectin and metabolic syndrome.

Results: The mean age of the patients was 53.6 years and 941 patients (61.5%) were male. 612 patients (40.0%) were CKD stage 3; 360 (23.5%), stage 4 CKD; and 114 (7.5%), CKD stage 5. The mean value of serum adiponectin levels were 13.3 and 552 (36.1%) patients had metabolic syndrome. Serum adiponectin levels were positively associated with age ($r=0.060$, $p=0.021$), total cholesterol ($r=0.110$, $p<0.001$), low density lipoprotein-cholesterol ($r=0.061$, $p=0.02$), high density lipoprotein-cholesterol ($r=0.262$, $p<0.001$) and urinary albumin to creatinine ratio (UACR) ($r=0.176$, $p<0.001$), whereas negatively associated with body mass index ($r=-0.247$, $p<0.001$), triglyceride ($r=-0.198$, $p<0.001$) and estimated glomerular filtration rate (eGFR) ($r=-0.250$, $p<0.001$). Multivariate logistic regression analysis indicated that decreased serum adiponectin levels were increased the risk of metabolic syndrome (per 1 mg/mL increase; odds ratio=0.945, 95% confidence interval=0.931-0.959, $p<0.001$) after adjustment for age, gender, smoking status, high sensitivity C-reactive protein, UACR, and eGFR.

Conclusions: Decreased serum adiponectin levels were associated with an increased risk of metabolic syndrome in the CKD patients.

Key Words: 아디포넥틴, 만성신질환, 대사증후군

Adiponectin, Chronic kidney disease, Metabolic syndrome