

비 당뇨 만성신부전환자에서 연령 보정한 Charlson co-morbidity index에 따른 체질량 지수와 알부민뇨와의 관계

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Age Adjusted Charlson co-morbidity Index Affects the association between Body Mass Index and Albuminuria in Patients with Non-diabetic Chronic Kidney Disease

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Backgrounds: Albuminuria is an established risk factor of cardiovascular disease and progression of chronic renal disease (CKD). In several studies, obesity defined by elevated body mass index (BMI) was associated with albuminuria in general population. However, there was a controversy about the association between obesity and albuminuria according to study population with various co-morbidity statuses in CKD. Therefore, we thought to examine whether age adjusted Charlson co-morbidity index (ACCI) could affect the association between BMI and albuminuria in patients with non-diabetic CKD.

Methods: A prospective cohort of 869 patients with non-diabetic kidney disease (DKD) from 9 centers of the KoreaN Cohort Study for Outcome in Patients With Chronic Kidney Disease (KNOW-CKD) between April 2011 and December 2013 was included. Patients were classified into two groups by ACCI (Low ACCI group, 0 or 1; High ACCI group, ≥ 2). Urinary albumin to creatinine ratio (ACR) was ascertained using spot urine analysis, and transformed to natural logarithm. In each group, the association between BMI and albuminuria was evaluated using multivariate linear regression analysis.

Results: The mean age was 51 \pm 12 years and 525 (60.4%) were male. The median ACCI was 2 (0-3). 451 (51.9%) patients were in the high ACCI group and 418 (48.1%) patients in the low ACCI group. In the low ACCI group, there was significant positive association between Ln ACR and BMI ($\beta=0.076$, 95% CI=0.024 to 0.129, $p=0.004$). Whereas, in the high ACCI group, there was no significant association ($\beta=0.039$, 95% CI=-0.104 to 0.092, $p=0.148$). Furthermore, multivariate linear regression analysis showed that BMI had an independent association with Ln ACR ($\beta=0.097$, 95% CI=0.046 to 0.149, $p<0.001$) in the low ACCI group after adjustment for age, estimated glomerular filtration rate, systolic blood pressure, hemoglobin, albumin, blood urea nitrogen, uric acid, parathyroid hormone, calcium, and phosphorous levels. However, there was no significant association in the high ACCI group ($\beta=0.040$, 95% CI=-0.012 to 0.093, $p=0.134$).

Conclusion: In this study, BMI was a significant independent risk factor for albuminuria in non-DKD patients with low ACCI score. Therefore, the assessment of BMI could be useful to determine the risk of albuminuria in patients with no or low co-morbidity, leading to predict progression of renal disease or cardiovascular disease.

Key Words: 만성신부전, 체질량지수, 알부민뇨

Chronic kidney disease, Body mass index, Albuminuria