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비당뇨성 만성신장병 환자에서 당화알부민과 동맥경화의 관련

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Glycated Albumin is a Risk Factor for Arterial Stiffness in Non-diabetic Chronic Kidney Disease Patients

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Introduction and Aims: Glycated albumin (GA) is the major form of circulating Amadori-type glycated protein and increased serum GA levels are associated with development of cardiovascular complications in diabetic patients. GA production is also increased with aging, oxidative stress, coronary artery disease, obesity, and renal dysfunction. GA exhibits potential atherogenic effects in endothelial cells as well as vascular smooth muscle cells and therefore cause development of arterial stiffness. A cross-sectional study was carried out to further ascertain the association between GA and arterial stiffness in nondiabetic chronic kidney disease (CKD) patients.

Methods: Arterial stiffness was measured by brachial-ankle pulse wave velocity (baPWV) using a volume plethysmographic instrument(VP 1000, OMRON Healthcare, Japan) along with simultaneous measurements of GA in non-diabetic CKD patients. Estimated glomerular filtration rate was calculated using serum creatinine (MDRD-GFR) and cystatin C level (Cystatin C-GFR).

Results: A total of 134 non-diabetic CKD patients were enrolled. Serum glucose, GA, HOMA-β and HOMA-IR in subjects were 96.2±12.4 mg/dL, 13.7±2.3 %, 109.7±101.2 and 2.4±4.0, respectively. Age-adjusted partial correlation analysis showed that baPWV correlated significantly with GA (r=+0.198, p=0.024), pulse pressure (r=+0.331 p=0.000), and mean blood pressure (r=+0.279 p=0.001). Cystatin C-GFR (r=-0.245, p=0.005), HDL-cholesterol level (r=-0.192, p=0.028), and hemoglobin level (r=-0.172, p=0.049) showed significant negative correlation with baPWV. MDRD-GFR, serum glucose level, HOMA-β and HOMA-IR did not show the significant correlation with baPWV. Multiple regression analysis revealed that pulse pressure, mean blood pressure, serum HDL-cholesterol, and GA level were the independent risk factors affecting baPWV.

Conclusions: In this study, the increase serum GA, pulse pressure, mean blood pressure, and low HDL might be risk factors of arterial stiffness in non-diabetic CKD patients.

Key Words: 당화알부민, 동맥경화, 만성신장병
Glycated albumin, Arterial stiffness, Chronic kidney disease