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Association of Pulse Pressure with Renal Function in Subjects With Diabetes, Prediabetes, or Normal Glucose Tolerance

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Objectives: Arterial stiffness is a risk factor for cardiovascular disease in patients with chronic kidney disease (CKD). Recently, pulse pressure (PP), a marker of arterial stiffness has been suggested as a predictor of adverse renal outcome in CKD. However, the association between PP and renal function decline in diabetes and pre-diabetes has not yet been determined. The present study was aimed to investigate the association between PP and estimated glomerular filtration rate (eGFR) in patients with diabetes, pre-diabetes and normal glucose tolerance.

Methods: To compare the impact of PP on renal function, 23,849 subjects from Korea National Health and Nutrition Examination Survey (2015 to 2018) were categorized by PP as follows: group 1, < 43 mmHg; group 2, 43-48 mmHg; group 3, 49-54 mmHg; group 4, 55-62 mmHg; group 5, \geq 63 mmHg. We classified diabetes, pre-diabetes and normal glucose tolerance groups according to American diabetes association guidelines, and calculated the eGFR using the CKD-EPI equation. The data were analyzed with the complex samples general linear model.

Results: In diabetes, incidence of proteinuria increased with increasing PP, but not in pre-diabetes and normal glucose tolerance. Pre-diabetes showed reduced eGFR in only group 5 compared with group 1. However, eGFR of diabetic patients was significantly lower in group 2-5 compared with group 1.

Conclusions: These findings suggest that diabetes showed a significant decrease of eGFR even at mild degree of PP than the pre-diabetes and normal glucose tolerance. Thus, the change of PP should be carefully monitored in diabetes.