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Serum uric acid level is an independent predictor for left ventricular diastolic dysfunction in patients with chronic kidney disease

Il Young Kim, Hye Jung Kim, Nan Young Lee, Byung Min Ye, Min Jeong Kim, Seorin Kim, Dong Won Lee, Soo Bong Lee
Department of Internal Medicine-Nephrology, Pusan National University Yangsan Hospital, Korea, Republic of

Objectives: Cardiovascular disease (CVD) is the leading cause of death in patients with chronic kidney disease (CKD). Left ventricular diastolic dysfunction (LVDD) is known for the predictor of CVD in these patients. In this study, we assessed the association between serum uric acid level and LVDD in CKD patients.

Methods: This study included 985 pre-dialysis CKD patients (estimated glomerular filtration rate (eGFR) < 60 ml/min/1.73m^2) with preserved left ventricular systolic function. Tissue Doppler imaging was used to measure the early mitral inflow velocity (E) and the peak early mitral annular velocity (E'). The severity of LVDD was estimated by the E' and the ratio of E to E' (E/ E'). The presence of LVDD was defined when E' < 8 cm/s.

Results: In univariate analysis, uric acid levels correlated with indices of LVDD. In multivariated analysis, uric acid levels were significantly associated with E' (β = -0.391, P < 0.001) and E/ E' (β = 0.351, P < 0.001) after adjustment for other confounding factors. ROC analysis showed the best cut-off value of uric acid for identifying the LVDD was ≥ 7.3 mg/ml with an associated sensitivity of 70.5% and specificity of 78.1% (AUC: 0.810, 95% CI, 0.766-0.853).

Conclusions: Increased uric acid levels were independently associated with decreased E' and increased E/E' in patients with CKD, suggesting that hyperuricemia is an independent predictor for LVDD in them.