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The association between serum osteoprotegerin and renal prognosis in non-dialytic chronic kidney disease from the KNOW-CKD Study

Tae Ryom Oh[1], Chana Myeong[1], Su Hyun Song[1], Sang Heon Suh[1], Hong Sang Choi[1], Chang Seong Kim[1], Eun Hui Bae[1], Kook Hwan Oh[2], Seong Kwon Ma[1], Soo Wan Kim[1]
[1]Department of Internal Medicine-Nephrology, Chonnam National University Hospital, Korea, Republic of
[2]Department of Internal Medicine-Nephrology, Seoul National University College of Medicine, Korea, Republic of

Objectives: In patients with chronic kidney disease (CKD), osteoprotegerin is an important regulator of bone metabolism and vascular calcification. However, the association between serum osteoprotegerin and the progression of chronic kidney disease has not yet been studied. The purpose of this study was to investigate the prognostic value of serum osteoprotegerin on renal prognosis in non-dialytic chronic kidney disease patients.

Methods: We analyzed 2238 patients who were collected from 2011 to 2016 using The KoreaN Cohort Study for Outcome in Patients with Chronic Kidney Disease (KNOW-CKD) dataset and a total of 2082 patients were analyzed. The participants were divided into quartiles by the levels of serum osteoprotegerin. Primary outcomes were initiation of dialysis or kidney transplantation, a two-fold increase in baseline serum creatinine, or a 50% decline in estimated glomerular filtration rate during the follow-up period. Cox proportional hazard regression model was applied to survey the prognostic impact of serum osteoprotegerin on chronic kidney disease progression.

Results: The median follow-up period was 48.9 months and a total 641 (30.78%) patients experienced the primary outcomes. The hazard ratio of serum OPG in full extended Cox proportional hazard model were 1.064 (confidence interval, 1.041-1.088). The subgroups analyses by age, presence of diabetes and estimated glomerular filtration rate showed significant results which is consistent with entire subject analysis.

Conclusions: Serum osteoprotegerin is independently associated with renal prognosis. These findings suggest that serum osteoprotegerin might have prognostic value for predicting the progression of chronic kidney disease.