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Association of serum hepcidin levels with metabolic syndrome in patients with chronic kidney disease

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Objectives: The association between serum hepcidin and metabolic syndrome remains unclear in chronic kidney disease (CKD) patients. The aims of this study were to evaluate the association of serum hepcidin levels with metabolic syndrome in patients with CKD.

Methods: The serum hepcidin, iron, ferritin and transferrin saturation levels were measured at baseline and metabolic syndrome assessed for 2,052 patients enrolled in the prospective KoreaN cohort study for Outcome in patients With Chronic Kidney Disease (KNOW-CKD). Baseline clinical characteristics of the study population was analyzed according to quartiles of serum hepcidin levels (≤ 6.5 mg/dL, 6.5−12.8 mg/dL, 12.8−23.7 mg/dL, and >23.7 mg/dL). Multivariable linear and logistic regression analyses were performed to determine the associations between serum hepcidin level and prevalence of metabolic syndrome.

Results: Increasing quartiles of serum hepcidin levels were associated with men, higher prevalence of diabetes and hypertension, lower hemoglobin, and higher ferritin levels. Serum hepcidin concentration negatively correlated with high-density lipoprotein cholesterol level ($r = -0.140$, $P < 0.001$), while not with waist circumference and triglyceride levels, even after adjusting for age and sex. Metabolic syndrome independently associated with log-transformed serum hepcidin in a multivariable linear regression analysis (B =0.027, 95% confidence interval [CI], 0.004−0.050, P=0.020). In a multivariable logistic regression analysis, higher quartiles of hepcidine levels were significantly associated with metabolic syndrome compared to lowest quartile (Q2, odds ratios [ORs], 0.160, 95% CI, 0.898−1.499, $P = 0.256$; Q3, ORs, 1.416, 95% CI, 1.090−1.839, $P = 0.009$; Q4, ORs, 1.372, 95% CI, 1.046−1.800, $P = 0.022$).

Conclusions: Serum hepcidin levels were associated with the metabolic syndrome in CKD patients. Therefore, the measurement of serum hepcidin might be useful as a surrogate marker for predicting metabolic syndrome in patients with CKD.