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Depression and Suicidal Ideation is Associated with Renal Function in Predialysis Chronic Kidney Disease Patients

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Background: Depression and depression related suicide are prevalent mental health problems in patients with end-stage renal disease (ESRD). In addition to socioeconomic factors uremia related factors such as accumulation of indoxyl sulfate and increased oxidative stress have been suggested as causes of this increased prevalence in ESRD patients. Although uremic toxicity and oxidative stress are known to be increased even in early chronic kidney disease (CKD) patients, the relationship between depression and renal function is not well elucidated. Therefore, the association between renal function and depressive symptoms including suicidal ideation was investigated in predialysis patients with CKD.

Methods: Subjects who participated in the Korea National Health and Nutritional Examination Survey (KNHANES) from 2010 to 2014 were evaluated. Estimated glomerular filtration rate (eGFR) was calculated using the Chronic Kidney Disease Modification of Diet in Renal Disease equation. Subjects younger than 18 years or older than 75 years and CKD stage 5 patients were excluded from the analysis. The relationship between renal function and mental health outcomes were evaluated. Depression was screened using the Korean version of the World Health Organization Composite International Diagnostic Interview-Short Form. Suicidal ideation was assessed by a positive answer to the question 'In the last 12 months, did you think about committing suicide?'. To patients who answered 'yes', suicidal attempt was inquired.

Results: A total of 21,250 subjects were evaluated. The mean age of the subjects was 49 years and 43.9% were male. The mean eGFR of the subjects was 93.2 ml/min/1.73m². Suicidal ideation was found in 2,518 (11.8%) patients, and 5,235 (24.6%) patients had depressive symptoms. All of the patients that had suicidal ideation were depressive and 48.1% of the patients with depressive symptoms had suicidal ideations. Suicidal ideation was reported in 101 (11.5%), 86 (12.9%), 63 (18.4%), and 6 (33.3%) of each CKD stage 1, 2, 3, and 4, respectively (P for trend <0.001). Depressive symptoms were reported in 193 (21.9%), 170 (25.4%), 111 (32.5%), and 8 (44.4%) of each CKD stage 1, 2, 3, and 4, respectively (P for trend=0.002). When the relationship between renal function and mental health problems was evaluated, lower eGFR showed a significant relationship with having suicidal ideation (odds ratio 0.95, 95% confidence interval 0.97-0.99, P=0.02) even after adjustments were made for confounding factors.

Conclusion: Depressive symptoms and suicidal ideation were significantly more common in higher CKD stage patients. Evaluation and management strategies for mental health issues should be considered in predialysis CKD patients.

Keywords: Depression, Renal function, Suicidal ideation