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Association between frailty, cognitive impairment, and nutrition in chronic kidney disease

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Objectives: Frailty is a state of vulnerability to poor resolution of homeostasis after a stressor event. The prevalence of frailty in chronic kidney disease (CKD) patients is more common than in the general population, and the risk of frailty increases when the eGFR is less than 45mL/min/1.73 m^2. Frailty is also associated with cognitive impairment, but frailty and cognitive impairment in CKD have not been studied. We hypothesized and studied that low nutritional status was observed in CKD patients, which would be associated with frailty and further cognitive decline.

Methods:

We prospectively enrolled participants from June 2019 to December 2020 and divided into three CKD groups according to kidney function (normal kidney function, pre-dialysis CKD stage 3-5, and dialysis). Frailty was defined as Fried Frailty Index 3 points or higher, cognitive decline was defined by using Korean-Montreal Cognitive Assessment(K-MoCA), and nutritional index was evaluated through Nutritional Quotient (NQ) scores. To calculate the relative risk of frailty, cognitive impairment, odds ratios (ORs) and 95% confidence intervals (CIs) were obtained using logistic regression analysis.

Results:

A total of 90 patients were included, of whom 32.2% had frailty and 17.8% had cognitive impairment. In dialysis patients, the percentage of frailty (56.9%, n=17) was significantly higher, and the nutritional quotient score was lower than the other groups. However, cognitive impairment was not significantly different between the three groups. Frailty was significantly associated with cognitive impairment, CKD groups, and presence of coronary heart disease. Cognitive impairment was significantly related to older age and lower NQ score in CKD patients.

Conclusions:

Frailty was significantly associated with CKD groups, cognitive impairment. In addition, cognitive impairment in CKD patients was significantly related to older age and lower NQ score.