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The association between oral frailty and muscle strength in patients with chronic kidney disease

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Objectives: Chronic kidney disease (CKD) is one of the major causes and exacerbating factors for sarcopenia. Patients with CKD frequently experience dry mouth due to water restriction and decreased appetite due to uremic toxins, which leads to malnutrition, protein-energy wasting, and increased mortality. The association between oral function and the sarcopenia index in CKD remains unclear. The purpose of this study was to evaluate oral function and its correlation with the sarcopenia index in patients with CKD.

Methods: The participants were patients with CKD (stages 3-5) who visited an outpatient clinic in a single center. Patients who are on maintenance dialysis or have had a kidney transplant were excluded. For evaluating the sarcopenia index, bioimpedance analysis, handgrip strength, and the 5-time chair stand test were performed. Oral frailty was evaluated by the Oral Frailty Index-8 and physical examinations assessing the number of teeth, tongue-lip motor function, and tongue coating index.

Results: Among the 30 participants (21 male, 9 female; age 70.63±10.91 years; creatinine level 3.08±1.56 mg/dl), 60% of participants had oral frailty, defined as an Oral Frailty Index-8 score of ≥4 points. Muscle strength measured by handgrip strength in the group with and without oral frailty was 27.21±5.79 and 33.78±6.43 kg in male (P=0.03), and 16.7±4.15 and 28.6±0.0 kg in female (P=0.007), respectively. In stepwise regression analysis, muscle strength was significantly associated with oral hypofunction (P=0.009, odds ratio 0.72; 95% confidence interval, 0.57-0.92), whereas muscle mass was not related to oral frailty (P=0.26).

Conclusions: Over half of outpatients with non-dialysis dependent chronic kidney disease have oral frailty, which is correlated with muscle strength. Further studies are warranted to assess the significance of early intervention for muscle weakness in preventing oral frailty and its consequences.