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Assessment of Nutritional Status in Non-dialysis-dependent Chronic Kidney Disease Patients Using Handgrip Strength: Results from the KNOW-CKD study

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Objectives : Handgrip strength (HGS) is suggested as an indirect assessment of nutritional status in chronic kidney disease (CKD) patients. However, most studies have been conducted in maintenance dialysis patients. There is still a lack of evidence on the diagnostic usefulness of HGS for malnutrition in non–dialysis–dependent CKD (NDD-CKD).
Methods : We included 468 patients who enrolled in the Phase II KoreaN Cohort Study for Outcome in Patients With CKD, and underwent nutritional assessment. The exposure was the maximum value of HGS, measured twice in each hand. The outcome was the malnutrition status defined as a Malnutrition inflammation score (MIS) of 6 or higher. In this cross-sectional study, the risk of malnutrition was calculated using logistic regression analysis adjusted for age, sex, stage of CKD, and history of diabetes mellitus (DM). Predictability of HGS for malnutrition was assessed by area under curve (AUC) using receiver operating characteristic curve analysis.
Results : Patients with lower HGS, defined as HGS values below sex-specific median values, were older and had a higher proportion of individuals with DM and lower eGFR. A higher HGS was significantly associated with a lower risk of malnutrition after adjustment (per 1 standard deviation [SD] increase, adjusted odds ratio [OR], 0.40 [0.22–0.74]). Furthermore, HGS exhibited fair significance for prediction of malnutrition in men (AUC 0.626, Sensitivity 40%, Specificity 92%) and women (AUC 0.714, Sensitivity 70%, Specificity 71%) (Figure 1). In the subgroup with DM (n=283), HGS did not show significant associations with the risk of malnutrition (per 1 SD increase, adjusted OR, 0.52 [0.24–1.15]), although the presence of DM did not have a significant interaction with the association between HGS and MIS≥6 (Interaction term P = 0.18) (Figure 2).
Conclusions : HGS test is a useful diagnostic indicator of malnutrition status in NDD-CKD patients. However, clinicians should cautiously interpret HGS values of NDD-CKD patients with DM.

Figure1_ROCcurve.jpg

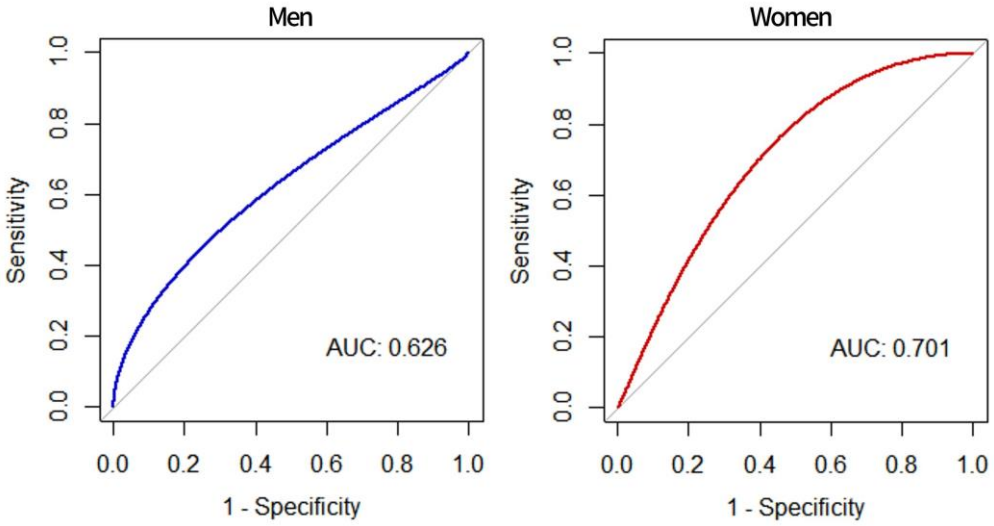

Figure1_ROCcurve.jpg