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Impact of nutritional index on long-term kidney function

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Objectives: Kidney function can be affected by nutritional status or inflammation. We investigated whether the prognostic nutritional index (PNI) is associated with kidney function change in the general population.

Methods: We retrospectively examined data from population who received a health check-up between 2002 and 2018. We included participants aged ≥18 years with baseline data on serum creatinine, lymphocyte, and serum albumin. Participants with baseline estimated glomerular filtration rate (eGFR) <15 mL/min/1.73 m^2 and without follow-up data on serum creatinine were excluded from the analysis. Primary exposure was PNI divided into quintiles. Primary outcome was 5-year kidney function change, calculated by subtracting the baseline eGFR from the eGFR at 5 years. Secondary outcome was a 25% decline in eGFR from baseline for 5-year follow-up period.

Results: Our study included 15,432 participants (mean [standard deviation, SD] age, 44 [8] years; 46% males). Mean (SD) eGFR was 95 (15) mL/min/1.73m^2. The median (interquartile ranges, IQR) 5-year change of eGFR was –5.2 (–18.8, –3.3) mL/min/1.73m^2. Lower PNI quintiles were associated with a greater decline in eGFR after 5 years compared with the highest PNI quintile; beta coefficients and 95% confidence intervals (CIs) were –2.79 (–3.40, –2.18), –1.49 (–2.07, –0.91), –1.23 (–1.79, –0.66), and –0.93 (–1.49, –0.38) for the first to fourth quintiles of PNI, respectively. Of the total, 2,272 (14.7%) participants experienced a 25% decline in eGFR at 5 year. Lower PNI groups had a greater risk of 25% decline in eGFR compared with the highest PNI group; odds ratios and 95% CIs were 1.45 (1.23, 1.71), 1.28 (1.09, 1.51), 1.22 (1.04, 1.43), and 1.19 (1.01, 1.40) for the first to fourth quintiles of PNI, respectively.

Conclusions: Our results suggest that the nutritional and inflammatory status assessed as PNI can be considered as a potential predictor of kidney function decline in general population.