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Soluble transferrin receptor can predict all-cause mortality regardless of anemia and iron storage: Results from the National Health and Nutrition Examination Survey, 2003 to 2010

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Objectives: Despite the interest in the clinical implications of soluble transferrin receptor (sTfR), previous studies for the association of sTfR with mortality in the general population are lacking. Therefore, we analyzed the association between sTfR and all-cause mortality in the general United States adult population.

Methods: We conducted a prospective cohort study using 2003 to 2010 data from the National Health and Nutrition Examination Survey. A total of 5,403 premenopausal non-pregnant female were analyzed in this study. Participants were divided into three tertiles of log (sTfR). The primary outcome was all-cause mortality. The secondary outcome was a chronic kidney disease (CKD) development (a composite of estimated glomerular filtration rate under 60 ml/min/1.73 m^2 and/or random urine albumin-to creatinine ratio ≥30 mg/g).

Results: During a median 8.7 years of follow-up, 103 (1.9%) participants died. Compared with the reference group (log (sTfR) 0.45−0.57), the highest tertile of log (sTfR) was associated with all-cause mortality (log (sTfR) >0.57, hazard ratio [HR] 1.77 [95% CI 1.05−2.98]) in a multivariable hazards model including covariates such as hemoglobin and ferritin. There was an association between a high sTfR and a CKD development in a multivariable logistic model. Subgroup analyses showed that sTfR was particularly associated with a higher risk of all-cause mortality in participants with 40s, in those without hypertension, in those without CKD, and in those without cancer.

Conclusions: High sTfR was associated with all-cause mortality as well as CKD regardless of anemia and iron storage.