

## TSH Elevation and Chronic Kidney Disease in Elderly Adults

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### Commentary

Chronic kidney disease (CKD) is common in the elderly. Thyroid-stimulating hormone (TSH) progressively increases over time in older individuals, and hypothyroidism is highly prevalent in CKD patients. Hypothyroidism was reported to be associated with increased mortality in CKD patients [1,2]. The hypothesis of an adaptive and protective effect of abnormal thyroid function in CKD patients has been suggested [3]. Recently, several studies reported that elevated serum TSH level is associated with longevity [4,5]. However, the effect of thyroid function on CKD is unclear. Should abnormal thyroid function be considered as a marker for survival drawback and not an etiological factor in CKD patients? [3]. Higher TSH levels were associated with greater risk of subsequent CKD, according to a cohort study of elderly persons in Taipei City [6]. Mei-Hsing Chuang, MD, of Yang-Ming University in Taipei, and colleagues studied 41,454 non-CKD elderly adults who had received health examinations, including demographic characteristics, medical history, medication history, alcohol consumption, smoking status, vital status, and laboratory results. Subjects with DM (30.2% vs 23.4%), dyslipidemia (hypertriglyceridemia: 30.0% vs 23.8%; low HDL-C: 27.4% vs 23.4%), smoking (26.1% vs 24.4%), or obesity (28.4% vs 23.5%) had a greater risk of developing incident CKD. In adjusted analyses, the association between hypothyroidism and onset of CKD in the group without DM was significant. Subclinical hypothyroidism and overt hypothyroidism had an increased risk of developing CKD in non-DM patients (HR=1.19, 95% CI=1.07-1.31; HR=1.34, 95% CI=1.08-1.65, respectively). The study showed that the effects of comorbidities and DM can supersede the influence of hypothyroidism on CKD in individuals with DM.

The likely biologic mechanism by which thyroid hormones affect kidney function seems to be by mediating on cardiac output and renal blood flow, contributing to changes in GFR. High serum creatinine also may explain the link between hypothyroidism and CKD [7-11]. Although the study has a number of limitations, this finding suggests that thyroid function should be periodically checked in elderly adults to detect those individuals with abnormal thyroid function. Thyroid and renal function might be carefully monitored in persons with

mildly abnormal TSH levels, because they are at risk of renal function decline. For elderly patients with CKD, the author also observed an increased death risk in individuals with TSH level higher than 5.2 mIU/L. It is also important for health care providers to acknowledge that periodic evaluation of TSH level in elderly CKD patients might be helpful to detect abnormal thyroid function [2]. However, a well-designed randomized controlled trial is needed to evaluate the benefit of treating TSH elevation in elderly patients with CKD.

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