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PRESS INFORMATION

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High sodium intake increases cardiovascular disease events in patients with chronic kidney disease

A groundbreaking study by Jiang He et al. [1] was presented today at the ERA-EDTA Congress in Vienna and published simultaneously in “JAMA”, the renowned medical journal. The study results have enormous practical relevance for nephrologists – they show that high sodium intake (by measuring urinary sodium excretion), is significantly and independently associated with increased risk of cardiovascular disease (CVD) in patients with chronic kidney disease (CKD). This study suggests that dietary sodium reduction might be beneficial to CKD patients for CVD prevention.

Persons with CKD are at increased risk of CVD compared to the general population. A significantly higher cardiovascular risk has even been identified for minor renal dysfunction [2], and the risk level for dialysis patients is very high. It is well known that the cardiovascular risk of patients with end-stage renal disease (ESRD) is increased about 20- to 30-fold compared to people with normal kidney function [3]. A positive association between sodium intake and blood pressure is well established. However, the association between sodium intake and clinical CVD remains controversial.

In this prospective cohort study of patients with CKD, cumulative mean urinary sodium excretion from three 24-hour urinary measurements was calculated. A composite of CVD events defined as myocardial infarction, congestive heart failure, or stroke was used. Among 3,757 participants (mean age 58 years, 45% women), 804 composite CVD events (575 heart failure, 305 myocardial infarction, and 148 stroke) occurred during a median 6.8 years of follow-up. From the lowest ($\leq 2,894$ mg/24 hours) to the highest ($>4,548$ mg/24 hours) quartile of calibrated sodium excretion, 174, 159, 198, and 273 composite CVD events occurred, and the cumulative incidence was 18.4%, 16.5%, 20.6%, and 29.8% at median follow-up. In addition, the cumulative incidence in the highest quartile of calibrated sodium excretion compared to the lowest was 23.2% versus 13.3% for heart failure, 10.9% versus 7.8% for myocardial infarction, and 6.4% versus 2.7% for stroke at median follow-up. After adjustment for multiple CVD risk factors, the highest quartile of calibrated sodium excretion was associated with a 36% increased risk of CVD compared to the lowest.

This study indicates that among patients with CKD, higher urinary sodium excretion was associated with an increased risk of CVD. Urinary sodium excretion is a good estimate of dietary intake. Therefore, these findings suggest that high sodium intake increases risk of CVD among patients with CKD. Future randomized controlled trials should recommend testing the effect of sodium reduction on risk of CVD.

[1] He J et al. *Jama* 2016. May 24, 2016 [epub ahead of print]

[2] Go AS et al. *N Engl J Med* 2004; 351: 1296-305

[3] Foley RN et al. *Am J Kidney Dis* 1998; 32 (5 suppl3): S112-9