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RISK FACTORS

ACIDOSIS PREDICTS DECLINE IN EGFR

Metabolic acidosis is well established as a hallmark of advanced chronic kidney disease (CKD). Now, two new reports in different populations at risk of CKD—the elderly and those with atherosclerosis—have shown that acidosis precedes decline in kidney function and is predictive of a rapid decline in estimated glomerular filtration rate (eGFR).

The first study was a longitudinal observational study of the Health, Aging, and Body Composition (Health ABC) cohort of elderly individuals aged 70–79 years at enrolment ($n = 3,075$), whereas the second was a retrospective cohort analysis of the Multi-Ethnic Study of Atherosclerosis (MESA) participants ($n = 5,810$).

In the Health ABC population, lower serum bicarbonate concentrations (<23 mmol/l) were associated with significantly increased risk of decline in kidney function, an effect that was independent of baseline eGFR and a range of CKD risk factors. Participants with serum bicarbonate levels <23 mmol/l were almost twice as likely to experience eGFR <60 ml/min/1.73 m^2 during the 7-year observation period of this study. Similarly, in the MESA study, every 1 SD decrease in serum bicarbonate concentration increased the risk of rapid decline in kidney function by 12%.

The authors of the two studies speculate that reduced serum bicarbonate concentration is an early marker of renal tubular damage or dysfunction, due to the established role of renal tubules as a regulator of serum pH. They add that differences in dietary choices and other variations in lifestyle factors can also affect serum pH, suggesting that associations with decreased renal function are not entirely causal.

The authors conclude that metabolic acidosis is associated with a decrease in renal function. Given that observational studies alone cannot assess causality, further investigations—including randomized controlled trials that investigate the efficacy of therapeutic interventions that increase serum pH for the treatment of CKD—are required.

Peter Sidaway

Original articles Goldstein, L. *et al.* Serum bicarbonate concentrations and kidney disease progression in community-living elders: the Health, Aging, and Body Composition (Health ABC) study. *Am. J. Kidney Dis.* doi:10.1053/j.ajkd.2014.05.009 | Driver, T. H. *et al.* Low serum bicarbonate and kidney function decline: the Multi-Ethnic Study of Atherosclerosis (MESA). *Am. J. Kidney Dis.* doi:10.1053/j.ajkd.2014.05.008