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Treatment of metabolic acidosis in chronic kidney disease yields better weight control with fruits and vegetables than with currently recommended sodium-based alkali therapy

Donald E Wesson^{1,2,4}, Nimrit Goraya^{1,2}, Jan Simoni³ and Jessica Pruszyński¹¹Baylor Scott and White Health, USA²Texas A&M HSC College of Medicine, USA³Texas Tech University Health Sciences Center, USA⁴Diabetes Health and Wellness Institute, USA

Background: Current guidelines recommend sodium-based alkali therapy for metabolic acidosis in chronic kidney disease (CKD) but recent data support that base-producing fruits and vegetables (F+V) also improve metabolic acidosis in CKD. Because CKD increases cardiovascular risk, weight reduction in overweight CKD patients appears desirable given its cardiovascular and other benefits. A diet high in F+V might promote weight reduction as well as improve metabolic acidosis in CKD.

Methods: We randomized 108 subjects with CKD stage 3 estimated glomerular filtration rate (30-59 ml/min/1.73 m²), metabolic acidosis with plasma total CO₂ (PTCO₂) >22 but <24 mM, and baseline BMI >25 as follows: F+V (n=36) added to reduce dietary potential renal acid load (PRAL) 50%, oral NaHCO₃ (HCO₃, n=36) to reduce PRAL 50%, or no alkali (Usual Care, n=36). All received standard kidney protection measures and were followed for 5 years.

Results: Baseline PTCO₂ (23.0±0.6, 23.1±0.6, and 23.0±0.5, p=0.62) and BMI (28.8±2.1, 28.3±2.0, and 28.2±2.1, p=0.45) were not different among F+V, HCO₃, and Usual Care, respectively. Five-year PTCO₂ was higher in HCO₃ (23.9±0.4 mM) and F+V (23.8±0.4 mM) than Usual Care (21.9±0.4 mM, p <0.01 vs. HCO₃ and F+V). By contrast, five-year BMI was lower (p<0.03) in F+V (26.6±1.7) than both HCO₃ (28.4±1.9) and Usual Care (27.8±1.7).

Conclusions: Treating CKD patients with either NaHCO₃ or F+V improved metabolic acidosis similarly but BMI was lowest with F+V. Better weight control with F+V than NaHCO₃, the latter being the currently recommended treatment option, supports F+V as the preferred treatment strategy for metabolic acidosis in overweight CKD patients.

Biography

Donald E Wesson, MD, FACP is currently Professor of Medicine and the Vice Dean of Texas A&M University College of Medicine in Temple, Texas. Prior to this position, he was the S C Arnett Professor of Medicine and Chairman of the Department of Internal Medicine and Physiology at Texas Tech University Health Sciences Center and had been Associate Professor of Medicine at the Baylor College of Medicine where he was Assistant Chief of the Nephrology Section at the Houston VA Hospital. He received his undergraduate degree from the Massachusetts Institute of Technology. He earned his Medical Degree from Washington University School of Medicine and completed his Residency and Internship at Baylor College of Medicine. He is the recipient of multiple teaching awards at Baylor and Texas Tech.

donald.wesson@BSWHealth.org

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