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Metabolic Acidosis in Chronic Kidney Disease: An Update

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The kidneys play an essential role in the maintenance of the acid-base balance. Therefore, metabolic acidosis is a common chronic kidney disease (CKD) complication. Metabolic acidosis in CKD is usually assessed by measuring serum bicarbonate levels. However, recent emerging evidence suggests that nephrologists should also reevaluate the blood pH and serum anion gap for a clinical approach to metabolic acidosis in patients with CKD.

Metabolic acidosis in CKD can affect several outcomes, including CKD progression, the risk of death, muscle catabolism, and bone demineralization. Current guidelines recommend oral bicarbonate supplementation to maintain the serum bicarbonate levels within the normal range. However, a slow decline in the glomerular filtration rate might occur, even though the serum bicarbonate levels were normal. Because the serum bicarbonate levels decrease when metabolic acidosis advances, other biomarkers are necessary to indicate acid retention for early diagnosis of metabolic acidosis.

Metabolic acidosis can be treated with an increased fruit and vegetable intake and oral alkali supplementation. Previous studies have suggested that the administration of oral sodium bicarbonate may preserve kidney function without significant increases in blood pressure and body weight. Veverimer, a non-absorbed, counterion-free, polymeric drug, is emerging to treat metabolic acidosis. A recent study showed that veverimer was effective in treating metabolic acidosis in women with CKD, and significantly improved how they felt and functioned. A large-scale RCT is ongoing to evaluate the effectiveness of veverimer in slowing the progression of CKD.