

Alkali Therapy in Patients with Metabolic Acidosis

The Authors Reply: Severe metabolic acidosis can generate detrimental clinical effect such as cardiovascular depression and central nervous system dysfunction¹. It also disturbs important key enzymes' activity². The effect of bicarbonate therapy aimed at correcting the pH, however, is controversial. Bicarbonate therapy produced CO₂ and paradoxically lower the intracellular pH and cerebrospinal fluid pH^{3,4}. Bicarbonate infusion is associated with an increased blood lactate levels⁴. It might also produce the volume expansion, hyponatremia and rebound alkalemia. The other buffer agents such as Carbicarb (Na₂CO₃ + NaHCO₃) and THAM (Tris-hydroxymethyl aminomethane) are available, but these agents do not improve outcomes of metabolic acidosis⁴.

Therefore, recent articles and text books suggest that therapy is aimed at correction of the underlying disorder, volume depletion, and electrolyte imbalance⁴⁻⁶. On condition that severe acidosis (pH < 7.1) and the patient is deteriorating rapidly, bicarbonate therapy can be considered.

- 1) Sonnett J, Pafani FD, Baker LS, et al.: Correction of intramyocardial hypercarbic acidosis with sodium bicarbonate. *Circ Shock* 42:163-173, 1994
- 2) Edge JA, Roy Y, Bergomi A et al.: Conscious level in children with diabetic ketoacidosis is related to severity of acidosis and not to blood glucose concentration. *Pediatr Diabetes* 7:11-15, 2006
- 3) Rhee KH, Toro LO, McDonald GG, Nunnally RL, Levin DL: Carbicarb, sodium bicarbonate, and sodium chloride in hypoxic lactic acidosis. Effect on arterial blood gases, lactate concentrations, hemodynamic variables, and myocardial intracellular pH. *Chest* 104:913-918, 1993
- 4) Rose BD, Post TW: Metabolic acidosis. In: *Clinical physiology of acid-base and electrolyte disorders*. 5th ed., Philadelphia, WB Saunders, 2001, p578-646
- 5) Charfen MA, Fernandez-Frackelton M: Diabetic ketoacidosis. *Emerg Med Clin North Am* 23:609-628, 2005.
- 6) Palmer BF, Alpern RJ: Metabolic acidosis. In: *Comprehensive clinical nephrology*. 4th ed., St. Louis, Elsevier Saunders, 2010, p155-175

Yun Kyu Oh

Department of Internal Medicine, Seoul National University Boramae Medical Center; Department of Internal Medicine, College of Medicine, Seoul National University, Seoul, Korea

Correspondence: Yun Kyu Oh M.D., Department of Internal Medicine, Seoul National University Boramae Medical Center, Seoul National University College of Medicine, 425, Shindaebang 2-Dong, Dongjak-Gu, Seoul, 156-707, Korea.
E-mail: yoonkyu@snu.ac.kr

Electrolyte Blood Press 9:38-39, 2011 doi: 10.5049/EBP.2011.9.1.39