



Response to ‘Comment on “Excessive Sodium Bicarbonate Infusion May Result in Osmotic Demyelination Syndrome During Treatment of Diabetic Ketoacidosis: A Case Report” by Hsieh et al.’

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Dear Editor,

We appreciate the concise comments and suggestions by Castello and colleagues. They suggested a higher correction factor of serum glucose level and plasma sodium level (P_{Na}) be applied for more concise evaluation. Various values had been proposed for the correction factor, such as 1.6, 2.0, 2.4, or even higher [1–3].

We agreed with the suggestions by Castello et al. about the correction factors and careful calculation of osmolytes, but we would also like

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to mention that although we can never overemphasize the importance of estimating the correct P_{Na} , such diversity and complexity may increase the difficulty of decision-making regarding resuscitation. There may be some limitations, such as time limit of resuscitation, extreme changes of vital signs, and so on to prevent clinicians from calculating the osmolytes from each infusion under resuscitation settings. Our main purpose is to highlight the idea that first-line clinicians should follow the treatment guidelines of diabetic ketoacidosis (DKA) [4, 5] and restriction of sodium bicarbonate may be the first step of avoiding extraordinary osmolar change.

In our case, the first-line clinicians were initially facing difficult decisions to stabilize the hemodynamic status, and giving large amounts of fluids was naturally the first step. Then severe metabolic acidosis might force the clinician to decide whether to give sodium bicarbonate supplement or even renal replacement therapy. The patient also presented ventricular premature complexes (VPCs) which further interfered with clinical judgement as the VPCs might be life threatening and might result from either acidosis or electrolyte imbalances. To our knowledge, though it is possible, DKA does not typically present with VPCs and shock. The atypical presentation also made it more difficult to follow the guidelines.

Dr. Bartoli and colleagues performed great work to evaluate the relationships between sodium and water during hyperosmolar hyperglycemic state (HHS), and Dr. Baldrighi and colleagues proposed a concise and detailed method of evaluating fluids and electrolytes in patients with HHS. Further implementation may help clinicians determine the adequate amount of fluid supplements. However, in DKA with life-threatening status, we may need further work to achieve the balance between timely stabilization of vital signs and precise fluid therapy.

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Peer Review. Please note, contrary to the journal's standard single-blind peer review process, as a letter this article underwent review by one of the journal's Editors-in-Chief.

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