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Capillary β-hydroxybutyrate in Diabetic Ketoacidosis

Kurup, *et al*. [1] recently published their study assessing the validity of capillary β-hydroxybutyrate (BOHB) for diagnosis and monitoring of ketonemia in pediatric diabetic ketoacidosis (DKA). However, I would like authors to clarify certain issues, which may help readers better interpret the study.

Lesser cost and availability of real-time results (avoiding treatment delays while awaiting laboratory results) are the potential advantages associated with the use of capillary BOHB in clinical practice. While the authors have reported cost-effectiveness of capillary measurement, it would be worthwhile mentioning the mean time taken for availability of serum BOHB result once the sample had been sent to the laboratory. This is important because the monitoring for BOHB was repeated initially at every two hours in the study, and a lag period close to or more than this time interval would probably indicate the futility of serum BOHB measurement.

It has also been reported in the study that the bias increased at values above 5 mmol/L, and results of capillary BOHB above this threshold should be interpretated with caution. Could the authors comment on total number of observations (>5 mmol/l) for which the bias was estimated?

Finally, in the discussion, authors propose that capillary BOHB may obviate the need for blood gas analysis in pediatric DKA. However, one should be cognizant of the fact that blood BOHB serves as a surrogate for high anion gap metabolic acidosis, and not normal anion gap acidosis. Hyperchloremic metabolic acidosis (HCMA) may develop during treatment of DKA due to urinary loss of bicarbonate precursors as ketones and administration of excessive chloride in form of intravenous fluids [2]. Such patients may fail to show recovery of serum pH and bicarbonate despite resolution of ketoacidosis. In a retrospective analysis of 59 pediatric DKA admissions, Mrozik, *et al.* [3] reported that the difference in time period between recovery of bicarbonate and closure of anion gap was >6 hours in one-fourth of cases. Clearly, BOHB measurement may help to reduce the frequency of blood gas analysis, but it would be largely ineffective in detecting HCMA, a potential cause of persistent metabolic acidosis in patients with DKA.

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