

Category : **Endocrine disease**

**A139 - The role of anion gap normalization time in the management of pediatric diabetic ketoacidosis. is it time for a new perspective?**

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### **Introduction:**

Diabetic Ketoacidosis (DKA) is a life-threatening metabolic crisis. Pediatric DKA criteria include hyperglycemia (serum glucose > 200 mg/dL), acidosis (pH < 7.2) and/or serum bicarbonate < 15mEq/L. DKA resolution criteria (normalization of PH, bicarbonate and anion gap) are somewhat confusing because anion gap and clinical conditions improve and normalize hours before PH and bicarbonate do. This may prolong PICU admission and carry unnecessary treatments, laboratory tests and medical expenses. We hypothesized that anion gap normalization time (AGNT) correlates with the severity of DKA in children admitted to the PICU and could be a good marker for DKA resolution.

### **Methods:**

We extracted data from medical charts of all PICU DKA admissions over ten years.

### **Results:**

95 patients met inclusion and exclusion criteria. Admission age was 10±4.64 years. In 87% it was their first DKA episode. Mean admission serum glucose and pH were 508 mg/dL and 7.12 respectively. Median AGNT was 8 hour. Late AGNT correlated with pH < 7.1 (OR 2.94 95% CI 1.2-7.4 P=0.020) and serum glucose > 500 (OR=3.31 95%CI 1.42-7.74, P=0.005). Multivariate analysis showed glucose > 500mg/dL increases the risk for delayed AGNT, by 3.41 folds and admission glucose elevation by each 25 mg/dL was associated with 10% risk increment for delayed AGNT. Median AGNT preceded median PICU discharge by 15 hours (8 hours vs. 23 hours respectively).

### **Conclusion:**

AGNT could be used for DKA recovery assessment and late AGNT correlated with markers of its severity. AGNT represents return to normal physiology - stopping ketone body (KB) production, and KB and other organic acids clearance from the serum by restoration of intravascular volume and improvement of liver, kidneys and skeletal muscle perfusion. Acidosis beyond AGNT is caused by hyperchloremia and not by DKA. Adding AGNT to the DKA resolution criteria could have shorten PICU admission time. We suggest DKA resolution criteria in children be re-evaluated and AGNT role should be further studies.