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Navigating Pediatric DKA: A Case of Severe Pediatric DKA and the Importance of Fluid Protocols

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INTRODUCTION

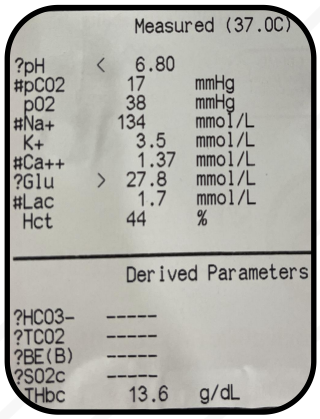
Diabetic ketoacidosis (DKA) is a potentially life-threatening complication of type 1 diabetes mellitus, particularly in children. Early recognition and timely intervention in the emergency department is essential to minimize associated morbidity and mortality. We describe an uncommon case of DKA, highlighting the clinical approach and management strategies used.

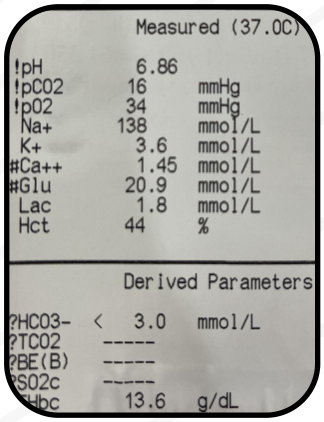
CASE DESCRIPTION

An 11-year-old girl, weighed 26 kg, previously well, presented with a two-day history of vomiting, lethargy, and progressive right gluteal swelling, along with a two-week history of polyuria, nocturia, and weight loss. On examination, she was severely dehydrated with impaired level of consciousness (Glasgow Coma Score [GCS] of 13/15 [E3, V4, M6]). She was tachypneic with acidotic respirations at 35 breaths/minute. Her heart rate was elevated at 165 beats/minute, and her blood pressure was 112/70 mmHg.

Bedside investigations confirmed severe DKA, with a capillary glucose of 32 mmol/L, unmeasurable high serum ketones, and venous blood gas showing a pH <6.8, PCO_2 of 23 mmHg, and unreadable bicarbonate levels. The patient received two boluses of intravenous normal saline at 20 mL/kg over one hour. Repeat tests showed persistent acidosis (pH 6.8, PCO_2 12, HCO_3 <3, ketones 6.8 mmol/L).

Early referral to paediatric was made and the case subsequently discussed with pediatric intensivist. Fluid therapy continued with full maintenance (63 mL/hour sterofundin + 1.5 g KCl/pint) and 10% deficit correction (54 mL/hour over 48 hours). Insulin infusion was started at 0.1 U/kg/hour (2.6 mL/hour) after one hour of fluid resuscitation, along with IV Ceftriaxone 1 g (50 mg/kg). She was transferred to tertiary paediatric intensive care unit and was subsequently discharged well.





DISCUSSION

Osmotic diuresis resulting from hyperglycemia leads to profound dehydration. Despite this, patients may present with normotension, which can mask underlying hypovolemic shock. This case illustrates the importance prompt fluids management and early referral of severe DKA. Adherence to established DKA guidelines was crucial in preventing serious complications, notably cerebral edema

CONCLUSION

Prudent and appropriately administered fluid therapy, timely electrolyte monitoring and regular neurological assessments are key to effective pediatric DKA management.

REFERENCES:

1. Stephen Addai, Jason Trachovic. Management Of Pediatric Diabetic Ketoacidosis: Does Aggressive Fluid Resuscitation Actually Result In Cerebral Edema? The Case Of A 6-Year-Old With Aggressive Fluid Resuscitation, AACE Clinical Case Reports. Volume 3, Issue 1, Winter 2017, Pages e1-e4
2. Vini Jamarin, Nanis Sacharina Marzuki, Mild and severe diabetic ketoacidosis in children: a report of two cases. Paediatrica Indonesiana, Vol.62, No.4(2022). p.291-4
3. Nicole Glaser, Maria Fritsch, Leena Priyambada, Arleta Rewers, Valentino Cherubini5, Sylvia Estrada, Joseph I. Wolfsdorf, Ethel Codner, ISPAD Clinical Practice Consensus Guidelines 2022: Diabetic ketoacidosis and hyperglycemic hyperosmolar state