

Case Study 1: Patient N.B.

Diabetic Ketoacidosis

Patient Profile

N.B., a 34-year-old Native American man, was admitted to the emergency department after he was found unconscious by his wife in their home.

Subjective Data (Provided by Wife)

- Was diagnosed with type 1 diabetes mellitus 12 mo. ago
- Was taking 50 U/day of insulin: 5 U of lispro insulin with breakfast, 5 U with lunch, and 10 U with dinner Plus 30 U of glargine insulin at bedtime
- States a history of gastroenteritis for 1 wk with vomiting and anorexia
- Stopped taking insulin 2 days ago when he was unable to eat

Objective Data

Physical Examination

- Breathing deep and rapid
- Fruity acetone smell on breath
- Skin flushed and dry

Diagnostic Studies

- Blood glucose level 730 mg/dL (40.5 mmol/L)
- Blood pH 7.26

Discussion Questions

1. Briefly explain the pathophysiology of the development of diabetic ketoacidosis (DKA) in this patient. DKA is caused by a profound deficiency of insulin. The patient's blood sugar results as 250 or greater, then they produce ketones in both the urine and in the serum. This leads to an increased anion gap, ultimately resulting in metabolic acidosis.
2. What clinical manifestations of DKA does this patient exhibit? Fruity acetone smell on breath, breathing deep and rapid (Kussmaul's respirations), skin flushed and dry (dehydration)
3. What factors precipitated this patient's DKA? The patient stated they have a history of gastroenteritis, which causes vomiting. Then, they also stopped taking their insulin 2 days ago due to being unable to eat. Now, their body is showing a stress response due to the gastroenteritis, so even though they're not able to eat, their body is still producing glucose due to the stress it's under. Without taking the prescribed insulin to counteract the rising glucose, it's just going to continue to rise.
4. Priority Decision: What is the priority nursing intervention for N.B.? We need to rehydrate this patient as soon as possible, so they need IV fluids and would benefit from a bolus of NS.
5. What distinguishes this case history from one of hyperosmolar hyperglycemic syndrome (HHS) or Hypoglycemia? This patient has a pH of 7.26 and in HHS the pH should be 7.3 or greater. HHS occurs over time, whereas DKA has a rapid onset.
6. Priority Decision: What is the priority teaching that should be done with this patient and his family? This patient needs to be educated on the importance of continuing to take your insulin, even when feeling poorly. As well as, staying on top of checking blood sugars regularly, to ensure they know where they're at.

7. What role should N.B.'s wife have in the management of his diabetes?
She can help by ensure N.B. is staying on top of his insulin administration and blood sugar checks. As well as, by ensuring that he's maintaining a proper diet and exercise habits.
8. Priority Decision: Based on the assessment data presented, what are the priority nursing diagnoses?
Are there any collaborative problems?
Risk for fluid volume deficit, risk for infection, deficient knowledge
9. Evidence-Based Practice: N.B.'s wife asks you if she should have given her husband insulin when he got sick? How would you respond?
I'm sure it can be hard to know for sure what should be done in this situation, but now having experienced this, we can hopefully get all the questions answered to help you both navigate this in the future. It's important to continue checking your blood sugar regularly, even when sick. Our bodies continue working even when we stop, so if we're not eating due to being sick, we need to keep that in mind and stay ahead of our checks. If our blood sugar is high, especially when not eating, we need to continue taking our insulin as scheduled.