

Sydney Sharp

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 the profound deficiency of insulin that is characterized by hyperglycemia, ketosis, acidosis, and dehydration. The patient's body was under stress from the gastroenteritis, the patient was unable to eat and therefore stopped taking insulin. Anytime the body is under stress, it produces more glucose which lead N.B. to experience hyperglycemia. The hyperglycemia was left untreated and eventually caused N.B. to go into DKA.
2. What clinical manifestations of DKA does this patient exhibit?
 - Breathing deep and rapid (Kussmaul breathing), fruity acetone breath, blood glucose of 730mg/dL, blood pH of 7.26, dehydration from the vomiting and diarrhea.
3. What factors precipitated this patient's DKA?
 - The patient states that they stopped taking insulin 2 days ago and has not been able to eat. The gastroenteritis has caused his body to be under stress and has also contributed to dehydration.
4. Priority Decision: What is the priority nursing intervention for N.B.?
 - Rehydrate the patient with NS
5. What distinguishes this case history from one of hyperosmolar hyperglycemic syndrome (HHS) or Hypoglycemia?
 - DKA occurs in type 1 diabetics and occurs because there is an deficiency of insulin. HHS occurs in type 2 diabetics because they have enough circulating insulin to keep them out of DKA, they do not present as acidotic.
6. Priority Decision: What is the priority teaching that should be done with this patient and his family?
 - Educating the family about sick day rules. The importance of continuing to take insulin, even when they are not feeling well. Further education on increasing intake of noncaloric or carb containing fluids such as water, diet gelatin, and other decaffeinated beverages.

7. What role should N.B.'s wife have in the management of his diabetes?
 - N.B.'s wife should play a role in moral support for his diabetes management. His is newly diagnosed and I'm sure it's hard to remember when to check blood sugar, when to take insulin, or recognize signs and symptoms of hyperglycemia, hypoglycemia, and DKA. It is important that N.B.'s wife is just as educated about type 1 diabetes so that she can help her husband manage his diabetes or intervene if a situation like DKA were to occur.

8. Priority Decision: Based on the assessment data presented, what are the priority nursing diagnoses? Are there any collaborative problems?
 - I believe the need for further education is the priority nursing diagnosis. The importance of sick day rules, key signs and symptoms of DKA, as well as how DKA develops in a type 1 diabetic. I would educate N.B. and his wife on key symptoms of DKA, fruity smelling breath, deep and rapid breathing, and ketones in the urine. I would make sure that they know if these signs are present, N.B. needs to get to the hospital immediately. I would also educate them about the ketone strips that can be purchased, if N.B. is experiencing hyperglycemia he could check to see if he is spilling ketones with the strips.

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 would tell his wife that yes she should give her husband his insulin when he is sick. I would stress the importance of diabetics continuing to take their insulin as prescribed even when they are not feeling well.