

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 was presented in N.B because of the precipitating factors. This can happen suddenly or over several days or weeks. One is that the wife stated the patient had gastroenteritis with vomiting. The first factor is that the patient was ill. The patient also stopped taking his insulin 2 days ago when he was unable to eat. The second factor is that the patient is getting an inadequate insulin dosage. When these two factors are present within a patient their blood sugar starts to increase. Glucose in a type 1 diabetic becomes insufficient the glucose cannot be properly used for energy. The body starts to break down fat as a secondary source of energy. Ketones start to become present in the patient. These are acidic by products of fat metabolism and become a serious problem. This alters the pH balance and causes metabolic acidosis.

- 2. What clinical manifestations of DKA does this patient exhibit?**

The clinical manifestation of DKA the patient is experiencing by objective data is breathing deep and rapid, fruity acetone smell on breath, skin flush and dry. The diagnostic studies show the patients' blood glucose level 730 mg/dL and blood pH 7.26.

- 3. What factors precipitated this patient's DKA?**

The factor precipitated the patients DKA is gastroenteritis. As E.B was sick he stopped taking his insulin. This causes an inadequate amount of insulin to N.B. He also became dehydrated from vomiting.

- 4. Priority Decision: What is the priority nursing intervention for N.B.?**

The priority decision for this patient is to administer IV fluids via physician order. This is the first action to take during these types of situations.

5. What distinguishes this case history from one of hyperosmolar hyperglycemic syndrome (HHS) or Hypoglycemia?

This patient is a type one diabetic. N.B has an acidic pH along with the other types of clinical manifestations of DKA. N.B has an extremely high blood glucose level which is known as hyperglycemia. Hypoglycemia is when a blood glucose is less than 70 mg/dL.

6. Priority Decision: What is the priority teaching that should be done with this patient and his family?

During the event of becoming ill. Teach the patient to not stop taking insulin. Explain the "Sick day rules" to the patient and his family.

7. What role should N.B.'s wife have in the management of his diabetes?

Take interest in her husbands' diabetes and allow him to be in control. As a wife, I believe she should have an understanding of her husband's diabetes. Working together allows more knowledge about the signs/symptoms, what to do during a sick day, and what to look out for. Being a team is a priority and N.B having a strong support system. E.B and family should understand the substitutions of food. The necessary intake is important because the body requires extra energy to deal with the illness.

8. Priority Decision: Based on the assessment data presented, what are the priority nursing diagnoses? Are there any collaborative problems?

The priority nursing diagnosis is risk for fluid volume deficit. The risk factors include excessive gastric loss due to nausea and vomiting. The collaborative problem is that E.B has deficient knowledge. This may be related to the newly diagnosis of type one diabetes, and unfamiliar with risk factors. E.B did not know the risk factors of not taking his insulin when he was sick. Which caused DKA. He also had hyperglycemia and electrolyte disturbance.

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 respond to the wife by letting her know that she needs to become responsible for her husband's care. She needs to administer and check N.B blood glucose. As caregivers we need to teach our patients and their families the importance of insulin when their loved one becomes sick. Giving her husband's his insulin could have prevented this outcome if they had more knowledge about the "sick day rules."