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 mmo1/L)
- Blood pH 7.26

Discussion Questions
1. Briefly explain the pathophysiology of the development of diabetic ketoacidosis (DKA) in this patient.

DKA happens to type 1 diabetics. Insulin is vital since this allows glucose to be used by the cells for energy. There is glucose in the body for type 1 diabetics but there is no insulin to utilize it. This would explain his blood glucose of 730 mg/mL. Since the body is not able to produce insulin, the cells will find new sources to create energy. The body will choose to metabolize fats for energy, thereby creating ketones. Ketones will eventually build-up in the blood and since ketones are acidic, it would cause the blood pH to be less than 7.35. NB also stopped taking insulin for 2 days, which would elevate his blood glucose.

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

Clinical manifestations of DKA would include Kussmaul respirations, a fruity breath odor, abdominal pain, anorexia, and dehydration. NB has all of these present.

3. What factors precipitated this patient's DKA?

The factors that precipitated this includes inadequate insulin (stopped for 2 days) and an illness (gastroenteritis).

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

The priority intervention for this patient will be to treat his dehydration by giving bolus normal saline with electrolyte replacement.

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

DKA happens to type 1 diabetics. HHS happens to type 2 diabetics and it produces little to no ketones in the body. Another difference between the two are the levels of blood glucose; 250 or more for DKA and upwards of 600 for HHS. Both will require a bolus of normal saline. Hypoglycemia is the opposite, with dangerously low blood sugar. The priority treatment for hypoglycemia would be to increase the glucose intake of the patient, thereby giving them fruit juices or soda when awake or a glucagon shot or dextrose IV when not awake.

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

Since NB is a type 1 diabetic, his body requires insulin in order to function. An important priority teaching for him and his family is to check his blood glucose regularly and remind NB to never skip doses of insulin.

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

NB's wife must be a strong support system. She should remind NB to take his insulin, check his glucose levels, be aware of the signs and symptoms DKA and move accordingly when symptoms show.

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

Imbalanced Nutrition: Less than Body Requirements which would lead to a **Risk for Infection.**

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 with: give him insulin after checking his glucose levels. During sick days, it is important that we still give the diabetic person his insulin dose and meds. She should take his glucose levels more often and give him insulin accordingly.