Meredith Edwards- Module 3

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.

This patient is currently experiencing a profound deficiency in insulin due to his inability to take his insulin due to his gastroenteritis. He also has a blood glucose of 730 and hyperglycemia is part of the pathophysiology of DKA. His fruity breath is due to ketones being present in his mouth. His pH is 7.26 which is acidotic. He described as “dry” which indicates he is dehydrated. His type of diabetes, Type I, is also most likely to occur with DKA.

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

This patient is currently experiencing vomiting, anorexia, deep and rapid breathing, sweet/fruity odor of his breath, and a moderate to high level of ketones which is indicated by the fruity smell to his breath.

3. What factors precipitated this patient’s DKA?

The patient not taking his insulin for two days, the gastroenteritis with symptoms of nausea and vomiting, the elevated blood glucose level, the acidic nature of his pH, and dehydration led to his current state of DKA.

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

After assessing for dehydration due to the current skin being flushed and dry, I believe the priority of care would be to first replace his fluids that have been lost by using IV treatment, while being cautious of fluid overload.

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

This HHS typically occurs in individuals with Type II diabetes and those of elderly age. This patient's pH is too acidic for HHS, his ketones are high as indicated by the described "fruity" breath, there is enough circulating insulin with HHS to prevent ketoacidosis, and HHS has more of a gradual onset.

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

It is essential to follow the SICK day rules of check your blood glucose every 2 to 3 hours, always take your insulin, drink plenty of fluids, and check your urine and blood ketone level every 4 hours.

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

His wife is essential to his success and could act as his "safe harbor". There is often more success when the patient has support from a family member. His wife could help him through encouragement with healthy eating habits, exercise with him, help him make healthy choices at the grocery store, and ensure that she understands his need for consistency with his insulin.

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

The nursing diagnosis that I would prioritize are:
The risk of fluid volume deficit
Deficient Knowledge
Imbalanced Nutrition

The collaboration exists with his Type I DM diagnosis and current gastroenteritis. His gastroenteritis is causing his inability to take insulin, the inability to eat, and ongoing vomiting. The gastroenteritis that is causing the patient to be unable to eat and take his insulin ultimately effects his ability to properly manage his Type I DM.

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 first reassure her that her husband's condition is not her fault, because often when an individual asks this question, they are indicating guilt. I would ensure that she understood how to give the insulin, such as rotating sites, cleaning with alcohol, monitoring his blood glucose levels, etc. I would also ask about her understanding of the disease itself and what insulin injections mean. I would educate her on the possibility of hypoglycemia as well.

But honestly, I do not think I would advise the wife to give this insulin due to the patient being so ill with gastroenteritis and the complications that arise from lack of eating something when administering insulin and it not being followed by food. I would advise her to call their doctor and encourage her husband to come to seek medical help sooner. I would refer her to a diabetes educator to help her and her husband's understanding of how to respond in this situations.