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Diabetic Ketoacidosis

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Introduction:

A patient suffering from Diabetic Ketoacidosis can have many different signs and symptoms. According to Bogle & Cox (2014), 29.1 million people in the United States, 8.3% of the population, had diabetes; additionally, 28.8 million, or 28.1% of the population were diagnosed, and 8.1 million were undiagnosed. With such a high prevalence, it is imperative that the hospital nurse is aware not only how to treat diabetes, but also how to look for complications of diabetes. One of the several complications of diabetes is Diabetic Ketoacidosis (DKA). DKA occurs as a result of prolonged uncontrolled diabetes. As the result of the body not being able to produce, or use, insulin to meet the body’s demands for energy. The result of this is a mixture of a hyperosmolar state, the presence of ketone bodies, and metabolic acidosis (Bogle & Cox, 2014, p. 15).

Signs and Symptoms

DKA is often seen in the emergency room and ICU setting, as it is a very acute complication, that can result in death if not properly cared for. When a patient is experiencing DKA, there are many complicated pathophysiological processes that need to be intensely monitored to ensure that the patient has a positive outcome. Getting patient in DKA requires a keen awareness of not only the various signs and symptoms of DKA (Bogle & Cox, 2014, p. 15), but how these processes might manifest themselves.

Underlying Pathophysiology

Insulin is necessary for the body to use glucose to produce energy. Per “Statistics About Diabetes”, DKA begins when cells do not get the glucose they need for energy as a result of the body not producing enough insulin (2014). Per Blouin, a decrease in insulin causes increased hepatic gluconeogenesis (production of glucose from non-carbohydrate sources), accelerated glycolysis (breakdown of glycogen to glucose), and impaired glucose use by peripheral tissues, thus putting the body in a hyperglycemic state (2012, p. 55). An additional result of these processes is an increase in fatty acids result from hypoxia, thus increasing hepatic production of ketone bodies and metabolic acidosis (Bogle & Cox, 2014, p. 14). Additionally, there are pathophysiological factors that contribute to developing DKA. A lack of knowledge about diabetes as a disease process and managing an increased blood sugar patient at risk for developing DKA (Butala, 2013, p. 571). According to Schwartz, there is an increase in poor blood sugar control for adolescents living in single parent households and/or who are malnourished and severe alcoholism (Bogle & Cox, 2014, p. 16). Per Bogle & Cox, on physical examination the nurse should expect to find dry mucous membranes, decreased skin turgor, tachycardia, hyperventilation, and possibly an altered mental status (2014, p. 15). Additionally, deep labored breathing, also known as kussmaul breathing, which have a fruity smell. Diagnostic decision comes from laboratory data, which shows hyperglycemia, ketonemia, and metabolic acidosis. All three must be present as ketones can develop from malnutrition and severe alcoholism (Bogle & Cox, 2014, p. 15).

Implications for Nursing Care

Conclusion


