Diabetic Ketoacidosis

Mario Bianconi
Otterbein University, mario.bianconi@otterbein.edu

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Diabetic Ketoacidosis
Mario Bianco RN, BSN
Otterbein University, Westerville, Ohio

Introduction:
According to “Statistics About Diabetes” (2014), in 2014, 29.1 million 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 it is linked for complications of diabetes. One of the severe complications of diabetes is Diabetic Ketoacidosis (DKA). DKA occurs as a result of prolonged untreated diabetes. It is the result of the body not being able to produce, or use, insulin to fuel the body’s demands for energy. The result of this is a mixture of a hyperglycemic state, the presence of ketones and metabolic acidosis (Bell & Cox, 2014, p. 15).

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 inversely monitored to ensure that the patient has a positive outcome. Getting patient in DKA requires a keen awareness of not only the various pathophysiological processes involved in diabetes mellitus, but also how these processes might manifest themselves.

Signs and Symptoms:
A patient suffering from Diabetic Ketosisacidosis can have many different signs and symptoms. According to Bogle Bell and Cox, polyuria, polydipsia, weakness, fatigue and weight loss due to hypokalemia, hyperglycemia, ketonemia, and metabolic acidosis (2014). Per Bogle, a cardinal feature will be ketonemia, which is exacerbated by vomiting and an inability to drink fluids (2014, p. 17). Tachycardia, dehydration, polyuria, polydipsia, ketonuria, altered mental status (Bell & Cox, 2014, p. 14). Additionally, Per Bell and Cox, 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).

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 Bogle, a decrease in insulin causes increased hepatic glucogenesis (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 free fatty acids result from lipolysis, thus increasing hepatic production of ketones and metabolic acidosis (Bell & Cox, 2014, p. 14). Additionally, there are several pathological factors that contribute to developing DKA. A lack of knowledge about diabetes as a disease process and managing one’s blood sugars is the patient at risk for developing DKA (Batalia, 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 Bell & Cox, 2014, p. 16). In a study by Elliott, the risk of DKA was reduced by 61% after patients were not through a training course in which they were taught to adjust their insulin doses based on their diet (2014, p. 16). Additionally, patients with Type 1 diabetes should be taught that even if they are not eating they still need to increase the patients changes of a positive outcome. The nurse is often the caretaker on which all care is balanced, and it often falls to the nurse to recognize signs that the patient is decompensating and immediately notify the proper providers. Additionally, it is just as important to the reason DKA has developed, to prevent further episodes of DKA, and to help the patient be able to live a full, active, and healthy life. The nurse plays a pivotal role in providing education to both the patient and the patients family. The nurse is there to coordinate educational services that can be provided both during the hospital stay, and after discharge. The combination of these important, and often difficult, areas requires that the nurse be increasingly vigilant not just during the stay of a patient with DKA, but also afterward to provide education. It is the hope of this educational role could be used as a reference to nurses caring for a patient suffering from DKA.

Implications for Nursing Care
Nursing care is multifaceted and the nurse must be able to monitor many different aspects of the patient to ensure adequate patient care. Ongoing physical assessments must be frequently done as any change in level of consciousness can be a result of cerebral edema, which can develop during the treatment of DKA (Watts, 2014, p. 275). Additional areas of nursing care are as follows:

Insulin Therapy - Insulin therapy is necessary to suppress ketogenesis, reduce blood glucose and help correct electrolyte imbalances. Ketogenesis is the increased peripheral glucose use, decreased glucose production, and inhibits the release of free fatty acids, thus decreasing ketogenesis (Bogle & Cox, 2014, p. 16). This typically is done through a fixed rate IV of regular insulin.

Monitoring Lab Values - Potassium can be high on admission, but will fall rapidly with insulin treatment as potassium will shift from outside the cell to inside the cell (Bogle&Cox, 2014, p. 16). Additionally, blood glucose checks should be done every 2 hours to prevent hypoglycemia (Bogle & Cox, 2014, p. 16).

Diabetes Education - The RN is a diabetes educator should teach the patient how to properly manage their blood glucose, and educate the patient on the outcomes of DKA (Bell & Cox, 2014). Per Blouin, a decrease in 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 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 energy. Per “Statistics About Diabetes”, DKA begins when cells do not get the glucose they need for energy as result of the body not producing enough insulin (2014).

Conclusions:
Diabetic Ketoacidosis is a very acute illness that requires the nurse to be both knowledgeable and able to think quickly on their feet. Caring for a patient in DKA requires assessing multiple areas, often at the same time, to increase the patient changes of a positive outcome. The nurse is often the caretaker on which all care is balanced, and it often falls to the nurse to recognize signs that the patient is decompensating and immediately notify the proper providers. Additionally, it is just as important to the reason DKA has developed, to prevent further episodes of DKA, and to help the patient be able to live a full, active, and healthy life. The nurse plays a pivotal role in providing education to both the patient and the patients family. The nurse is there to coordinate educational services that can be provided both during the hospital stay, and after discharge. The combination of these important, and often difficult, areas requires that the nurse be increasingly vigilant not just during the stay of a patient with DKA, but also afterward to provide education. It is the hope of this educational role could be used as a reference to nurses caring for a patient suffering from DKA.

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