MRAD 202 – Patient Care 2

Diabetes Information Sheet

There are two types of diabetes:

1. **Diabetes Insipidus** (DI) – Excessive urination caused by inadequate amounts of antidiuretic hormone in the body or failure of kidney to respond to hormone.

2. **Diabetes Mellitus** (DM) – Disease marked by alternating episodes of hypoglycemia and hyperglycemia, which can be difficult to control. The varying amount of glucose can result from:
    a. Defects in insulin secretion (i.e., pancreas not producing insulin)
    b. Defects in the action of insulin. The pancreas produces the correct amount of insulin but the cells in the body are resistant to the action of insulin. This results in the blood sugar being too high (hyperglycemia)
    c. Defects in both secretion and action of insulin.

Causes of Diabetes Insipidus (DI)

DI usually results from hypothalamic injury (e.g., brain trauma or neurosurgery) or from the effects of certain drugs (e.g., lithium) on the renal resorption of water. Other representative causes include sickle cell anemia, hypothyroidism, adrenal insufficiency, inherited disorders of antidiuretic hormone production and sarcoidosis.

Signs, symptoms and treatment of Diabetes Insipidus

DI is characterized by polyuria and thirst. If left untreated, dehydration may result in fever, vomiting and convulsions. Therefore, fluid replacement is essential.

If DI is a side effect of drug therapy, the offending drug is withheld. DI caused by failure of the hypothalamus to secrete antidiuretic hormone is treated with synthetic vasopressin.

The prognosis is usually good when the disease is recognized and appropriately managed.

Diabetes Mellitus (DM)

There are 2 classifications of DM:

1. **Type 1** – Also known as insulin-dependent diabetes or juvenile-onset DM. These individuals rely on insulin for survival. It is an autoimmune disease that tends to occur in young, lean individuals before the age of 25 who produce little or no insulin. Circulatory impairment of vision, kidneys or extremities can occur. Family history appears to be of minor importance, however, autoimmune, genetic and environmental factors are involved in this type of diabetes.
2. **Type 2** – Known as non-insulin-dependent diabetes or adult-onset DM. These individuals can still produce insulin, but do so relatively inadequately for their body's needs. Occurs most commonly in obese individuals over the age of 40 with a marked family tendency. This type of diabetes usually responds to oral hypoglycemic medications and to changes in diet and lifestyle.

Classification of Diabetic Crisis

1. **Diabetic coma** – Too little insulin (hyperglycemia)
2. **Insulin reaction** – Too much insulin (hypoglycemia)

Hyperglycemia is elevated levels of blood glucose. Insulin is a hormone normally produced in the pancreas in response to food intake. Insufficient insulin prevents the use of glucose by the muscles, causing the glucose level in the blood to rise. When the muscles cannot use glucose, the body will break down fat for muscular contraction, and the by-products of fatty acid metabolism form ketone bodies. When excess ketone bodies appear in the blood, **diabetic ketoacidosis** (DKA) develops. The body attempts to compensate for the acidosis by hyperventilation and the loss of minerals and water in the urine. When the blood glucose is very high, sugar also "spills over" into the urine. DKA is most common with Type 1 DM.

Hyperosmolar hyperglycemic nonketotic syndrome (HHNK) is a severe condition that can occur when patients with neglected Type 2 DM become dehydrated and hyperglycemic. The LOC of patients with HHNK may vary from initial confusion to coma. Treatment includes fluid administration to rapidly expand intravascular volume, thus increasing circulation and urine output.

Signs and symptoms of mild to severe hyperglycemia:

- Terribly thirsty
- Frequent and copious urination
- Breath that smells fruity or sweet
- Decreased appetite
- Nausea, vomiting
- Weakness
- Confusion
- Coma

Hypoglycemia is decreased levels of blood glucose. The body needs fuel to work. Its major fuel sources are sugars (either simple sugars or complex carbohydrates). If the diabetic patient has taken insulin but no food then hypoglycemia may occur. Treatment of hypoglycemia for an alert and cooperative patient is the rapid delivery of a source of easily absorbed sugar such as juice, pop or a prepackaged dose of glucose (which is placed inside the cheek). However, if hypoglycemia is severe or patient is unconscious, then a parenteral injection of 0.5 to 1.0 mg of glucagon may be ordered. An IV infusion of dextrose solution could be necessary if the patient doesn't respond to the glucagon. Hypoglycemia needs to be reported to a physician and patients need to sit or lie down until the administered sugar takes effect.

Signs and symptoms of mild to severe hypoglycemia:

- Sudden onset of weakness
- Sweating, tremors (quivering)
- Hunger
- Cold, clammy skin, diaphoresis
- Headache
- Tachycardia
- Impaired vision

- Personality change, agitated and nervous
- Loss of consciousness

Gestational diabetes can occur temporarily during pregnancy. Significant hormonal changes can lead to blood sugar elevation in genetically predisposed individuals. It usually resolves once the baby is born.