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ASSIGNMENT TITLE: DIABETES, OBESITY AND CANCER(GROUP 2)

1. Define the following terms:
 - a) Ketogenesis
 - b) Ketonaemia
 - c) Ketonuria
2. What are the consequences of ketosis?
3. Write concisely on the management of ketoacidosis

Answers

1. **a) Ketogenesis:** It is the biochemical process through which organisms produce ketone bodies through breakdown of fatty acids and ketogenic amino acids. This process supplies energy under circumstances such as fasting or caloric restriction to certain organs, particularly the brain, heart and skeletal muscle. Insufficient gluconeogenesis can cause hypoglycemia and excessive production of ketone bodies, ultimately leading to a life-threatening condition known as ketoacidosis.
b) Ketonaemia: The presence of an abnormally high concentration of ketone bodies in the blood.
c) Ketonuria: Ketonuria is a medical condition in which ketone bodies are present in the urine. It is seen in conditions in which the body produces excess ketones as an indication that it is using an alternative source of energy. It is seen during starvation or more commonly in type 1 diabetes mellitus. Production of ketone bodies is a normal response to a shortage of glucose, meant to provide an alternate source of fuel from fatty acids.
2. Ketosis is a natural part of metabolism. It happens either when carbohydrate intake is very low or when you haven't eaten for a long time. Both of these lead to reduced insulin levels, which causes a lot of fat to be released from your fat cells. When this happens, the liver gets flooded with fat, which turns a large part of it into ketones.

During ketosis, many parts of your body are burning ketones for energy instead of carbs. This includes a large part of the brain.

However, this doesn't happen instantly. It takes your body and brain some time to "adapt" to burning fat and ketones instead of carbs. During this adaptation phase, you may experience some temporary side effects. These are generally referred to as the "**low-carb flu**" or "**keto flu**."

Note: In ketosis, parts of the body and brain use ketones for fuel instead of carbs. It can take some time for your body to adapt to this. The consequences of ketosis are:

- ***The Low-Carb/Keto Flu***

In the beginning of ketosis, you may experience a range of negative symptoms. They are often referred to as "low-carb flu" or "keto flu" because they resemble symptoms of the flu. These may include:

- i. Headache.
- ii. Fatigue.
- iii. Brain fog.
- iv. Increased hunger.
- v. Poor sleep.
- vi. Nausea.
- vii. Decreased physical performance

- ***Bad Breath Is Also Common***

One of the more common side effects of ketosis is bad breath, often described as *fruity and slightly sweet*. It's caused by **acetone**, a ketone that is a byproduct of fat metabolism. Blood acetone levels are elevated in ketosis, and your body gets rid of some of it via your breath. Occasionally, sweat and urine can also start to smell like acetone.

In ketosis, your breath, sweat and urine may smell like acetone. This ketone is produced by the liver from fat and increases on a ketogenic diet

- ***Leg Muscles May Cramp***

In ketosis, some people may experience leg cramps. Although they're usually a minor problem, they're never pleasant and can be painful. Leg cramps in ketosis are usually connected to dehydration and loss of minerals. This is because ketosis causes a reduction in water weight.

Glycogen, the storage form of glucose in muscles and liver, binds water. This gets flushed out when you reduce carb intake. That being said, there are many other potential causes of muscle cramps.

- ***Ketosis May Cause Digestive Problems***

Dietary changes can sometimes lead to digestive issues. This is also true for ketogenic diets, and constipation is a common side effect in the beginning. This is most commonly due to not eating enough fiber and not drinking enough fluids. Some people may also get diarrhea, but it's less common.

If you made drastic changes to your diet in order to get into ketosis, it's more likely that you'll experience digestive symptoms. Nevertheless, digestive issues are usually over within a few weeks.

- ***Elevated Heart Rate***

Some people also experience increased heart rate as a side effect of ketosis. This is also called heart palpitations or a racing heart, and can happen during the first few weeks of a ketogenic diet. Being dehydrated is a common cause, as well as low salt intake. Drinking a lot of coffee might also contribute to this. If the problem doesn't stop, you might need to increase your carb intake.

- ***Other Side Effects of Ketosis***

Other, less common side effects may include:

- i. Ketoacidosis: A few cases of ketoacidosis (a serious condition that occurs in uncontrolled diabetes) have been reported in breastfeeding women, likely triggered by a very low-carb diet. However, this is extremely rare.
- ii. Kidney stones: Although uncommon, some epileptic children have developed kidney stones on a ketogenic diet.
- iii. Raised cholesterol levels: Some people get increased total and low-density lipoprotein (LDL) cholesterol levels .

Less common side effects include issues for breastfeeding women, kidney stones in epileptic children and raised cholesterol levels.

3.) **Treatment/ Management of ketoacidosis**

If you're diagnosed with diabetic ketoacidosis, the treatment usually involves:

- **Fluid replacement.** You'll receive fluids — either by mouth or through a vein (intravenously) — until you're rehydrated. The fluids will replace those you've lost through excessive urination, as well as help dilute the excess sugar in your blood.
- **Electrolyte replacement.** Electrolytes are minerals in your blood that carry an electric charge, such as sodium, potassium and chloride. The absence of insulin can lower the level of several electrolytes in your blood. You'll receive electrolytes through a vein to help keep your heart, muscles and nerve cells functioning normally.

- **Insulin therapy.** Insulin reverses the processes that cause diabetic ketoacidosis. In addition to fluids and electrolytes, you'll receive insulin therapy — usually through a vein. When your blood sugar level falls to about 200 mg/dL (11.1 mmol/L) and your blood is no longer acidic, you may be able to stop intravenous insulin therapy and resume your normal subcutaneous insulin therapy.

As your body chemistry returns to normal, your doctor will consider additional testing to check for possible triggers for the diabetic ketoacidosis. Depending on circumstances, you might need additional treatment.

For example, your doctor will help you create a diabetes treatment plan. If a bacterial infection is found, he or she might prescribe antibiotics. If a heart attack seems possible, your doctor might recommend further evaluation of your heart.