NAME: OSAKWE CHUKWUWEIKE JESSE

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DEPARTMENT: MEDICINE AND SURGERY

BIOCHEMISTRY IV

1. Define the following terms
2. KETOGENESIS: 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.
3. KETONAEMIA: This is the presence of recognizable concentrations of ketone bodies in the plasma.
4. KETONURIA: Is a medical condition in which ketone bodies are present in urine. It is seen 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.
5. KETOGENESIS: 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.
6. CONSEQUENCES OF KETOSIS

Ketosis is a natural state the body finds itself in when it is using fat as its main fuel. This occurs when following a very low carb, ketogenic diet and during intermittent fating too. Ketosis can have both positive and negative effects on a person

1. Bad breath: People on ketogenic diet often report that their breath take a fruity smell which is a result of acetone (a ketone that exits the body in your urine and breath). It can be a positive sign for your diet
2. Insomnia: a lot of people report insomnia or waking up at night when they reduce their carbs drastically, but it usually improve in a matter of weeks
3. Dehydration: as a result of the continuous loss of sodium, dehydration is aggravated. The ketone bodies are excreted in urine as their sodium salt, leading to loss of cations from the body.
4. Weight loss: studies have shown that you will either experience both short term and long term weight loss. Fast weight loss is when carbs are stored and water is being used up.
5. Appetite suppression: its been suggested that this hunger reduction may be due to an increased protein and vegetable intake along with alterations to your body`s hunger hormones.
6. MANAGEMENT OF KETOACIDOSIS

Diabetes Ketoacidosis (DKA) is a potentially life threatening complication of diabetes mellitus. Its signs and symptoms may include vomiting, abdominal pain, increased urination, weakness and a persons breath may develop a specific fruity smell. The main aim in the treatment are replacing the lost fluids and electrolytes while surpressing the high blood sugars and ketone production with insulin

FLUID REPLACEMENT: You will receive fluids either by mouth or through a vein (intravenously) until you are rehydrated. The fluids will replace those you`ve lost through excessive urination as well as help help dilute the excess sugar in your blood. The amount of fluids replaced depends on the degree of dehydration. If dehydration is so severe to cause shock, rapid infusion of saline (1 litre for adults, 10ml/kg in repeated doses for children)

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 will receive electrolytes through a vein to help keep your heart, muscles and nerve cells functioning normally. Potassium levels can fluctuate severely during DKA, so potassium is added to the intravenous fluids once levels falls below 5.3mmol/l. if potassium levels fall below 3.3mmol/l , insulin administration may need to be interrupted to allow correction of the hypokalemia.

INSULIN THERAPY: Insulin reverses the processes that cause diabetic ketoacidosis. In addition to fluids and electrolytes, you will receive insulin therapy through a vein. When your blood sugar level falls to about 200 mg/dl (11.1mmol/l) and your blood is no longer acidic, you may be able to stop intravenous insulin therapy and resume your normal subcutaneous insulin therapy.