Fighting Diabetes Mellitus part 1

If only Jude had known that certain things are worse than death he would have taken more precautions in life. Diagnosed by chance of diabetes mellitus some ten years ago when he presented in a medical facility on account of insomnia (inability to sleep), he was placed on drugs and was asked to check back after two weeks for a follow up. He used the drugs got better and then called his friends and relatives to celebrate his good health.

That was ten years ago. Jude believed he was okay and so stopped going to the hospital for checkup until the eventuality happened about six months ago.

Jude, a 45 year old businessman had been complaining to his wife about the body weakness he experienced whenever he returned from work. His wife, an avid believer in traditional medicine went to various herbal shops where she was given barrage of herbs to be used as 'enema' on her husband. Still at that, Jude's health was deteriorating. On a Saturday morning while tending to his flowers in the garden, he mistakenly stepped on a stump of wood on the floor. With much pain and difficulty, he removed the stump, stopped the bleeding with a rag on the floor and continued with a vocation that had become his hobby.

Two months after the accident, Jude's wound was yet to heal. He went from one chemist to the other, bought different forms of injection powders with little or no improvement. At some points the wound began to release a foul smelling discharge. The leg started changing colour, initially to brown and then to black and later white. The size of the affected leg was like times four of the normal one. Pus was oozing out.

At this time, Jude, a key member of the council of elders could not go to church for the fear that the odour coming from his leg would disperse the members. Not even the angels could withstand the smell, he thought.

His spare part business was now running at a loss as he could not be physically present. His wife though still supportive could not but remind him that the family was broke. "Women will always be women" Jude often said to himself. If not for his three year old daughter, he probably would have committed suicide. He was not proud of himself again; he was no longer the strong, powerful, rich and handsome Jude. He had become a shadow of himself.

Thanks to the pastor who visited the family at home and instructed the wife to seek medical attention immediately.

At the hospital, his blood sugar was found to be dangerously high, the leg was said to have been gangrenous with an infection that was rapidly ascending. His wife was congratulated for bringing him at a time when the infection had not put him in coma even though the leg would still have to be amputated.

It was like choosing between the devil and the deep blue sea. Jude was in a dilemma; to save his life, his right leg had to be cut off. He refused to consent to the surgery. He claimed he would rather die than be an amputee. But his wife prevailed on him to accept the latter. He was encouraged to see it as one of the challenges he would have to overcome in life.

For days as he lay on the hospital bed, he imagined the kind of life he would live as an amputee.

Introduction

Diabetes mellitus (DM) is a syndrome of chronic hyperglycaemia (excess glucose) due to relative insulin deficiency, resistance, or both. It affects more than 120 million people world-wide, and it is estimated that it will affect 220 million by the year 2020. Diabetes is usually irreversible and, although patients can have a reasonably normal lifestyle, its late complications result in reduced life expectancy and major health costs.

What is Diabetes in layman's language and how does this happen.

As much as possible I will try to bring the concept of diabetes down to the basics. Just relax and try to digest what you are about to read next.

There is a part of the body called pancreas. This pancreas is a "leaf like" structure just around the small intestine. The pancreas has a head, body and tail. This "leaf like" structure has a lot of functions in the body. It produces a lot of chemicals that help in digestion of the food we eat and in storing up of our food. In short it is a necessity.

On the tail of the pancreas are some special cells that are called beta cells. These beta cells produce chemical called insulin among other chemicals it produced. Now we are coming home gradually right. Okay.

This insulin is a chemical (we call such chemicals hormones) that performs many functions in the body. The most important function of the insulin and the one that is widely known among its functions is the conversion of glucose to glycogen. You should know that the end product of all the food we eat is either glucose, amino acids or fatty acid. While glucose results from carbohydrate, amino acids result from protein diet and fat and oils end up in fatty acids. Understand? Okay.

Now when we eat our food, the insulin acts on all the excess glucose that remains in the body after the cells have used the ones that are needed on the spot, to convert them to glycogen, the form that glucose is stored. The glycogen are stored up in the liver only to be called into action on the days that for one reason or the other we are not able to eat on time. Other functions of insulin includes regulation of ketogenesis and enhancement of lipogeneseis

(accumulation of fat) as against lipolysis (breaking down of fat). No wonder one of the late complications of diabetes is weight loss. It also helps in driving glucose into the cells.

With the above explanation, at least you should by now understand the following points.

Pancreas produces insulin among other hormones

Insulin is important for the conversion of glucose to glycogen and for the storage of same in the liver.

So, diabetes disease comes into play when there is problem in the processes above. It could be as a result of destruction of the beta cells that produce insulin, reduction in the quantity of insulin produced or inability of the system to recognize the insulin that was produced. With this at the back of your mind, you should be able to understand perfectly the issues with diabetes mellitus.

Types

There are two major types of Diabetes mellitus which are;

Primary Diabetes which can either be type 1 or type 2 and secondary diabetes

Aetiology

Primary Diabetes

Type 1 Diabetes

Type 1 diabetes belongs to a family of HLA-associated immune-mediated organ-specific diseases. What this means is that the body produces certain chemicals that destroy the beta cells that produce insulin in the pancreas. And whenever this happens the body comes down with increase blood glucose.
This often happens in people that have genetic predisposition to this disease. It runs in the family with increase chance of siblings having the disease. This form of diabetes is usually diagnosed early in life. Most people are diagnosed at the age less than five years. However some may remain undiagnosed till adulthood. Type 1 diabetes is common in Finland and other northern European countries. Environmental factors have also been implicated in type 1 diabetes. Early exposure to enteroviruses such as Coxsackie B4 has often been suspected, but the role of viruses in the cause of the disease is yet to be confirmed.

Children fed on cow milk have also been shown to come down with this disease more than those who are breastfed.

Type 2 Diabetes.

This is relatively common in all populations enjoying an affluent lifestyle. The four major determinants are increasing age, obesity, ethnicity and family history. Large differences in prevalence exist based on these characteristics. And here is the paradox, in poor countries, type 2 diabetes is a disease of the rich, while in rich countries it is a disease of the poor.
The reason for this is because in developing countries, many people are born into poverty and as they grow up and make more money, they tend to make up for the things they did not enjoy as a child. They tend to eat more until they overworked their pancreas.
Genetic factors have also been implicated in the aetiology of type 2 diabetes.

Secondary diabetes mellitus.

This usually happens as a result of one thing or the other. It could be due to a disease condition or a hormonal imbalance. The good thing about this situation is that once the underline cause is treated, the patients completely get well.

Common Causes of secondary DM

Pancreatic disease

Cystic fibrosis
Chronic pancreatitis
Malnutrition-related pancreatic disease
Pancreatectomy
Hereditary haemochromatosis
Carcinoma of the pancreas

Endocrine disease

Cushing's syndrome
Acromegaly
Thyrotoxicosis
Phaeochromocytoma
Glucagonoma

Drug-induced disease

Thiazide diuretics
Corticosteroid therapy
Atypical antipsychotics
Antiretroviral protease inhibitors

Insulin-receptor abnormalities

Congenital lipodystrophy
Acanthosis nigricans

Genetic syndromes

Friedreich's ataxia
Dystrophia myotonica

Other types of diabetes include the popularly known gestational diabetes. This happens in pregnancy to some patients that are genetically predisposed to diabetes disease.

Clinical features of diabetes mellitus.

Patients with diabetes mellitus often complain of frequent urination. Some may visit convenience like three or four times before the day break. However, readers should note that it is not only diabetes that makes people urinate frequently. Other diseases that can make an individual to pass frequent urine include, urinary tract infection, benign prostate enlargement, renal failure to mention but a few.

Other symptoms complain by patients suffering from diabetes mellitus include, polyphargia (eating too much), and polydypsia (drinking too much water). These are the classical symptoms of diabetes mellitus. Other signs and symptoms will depend on how severe the disease is or how poorly managed it is.

Diabetes is one of the leading causes of immune suppression, therefore, when not properly managed, it can present in a way similar to HIV. For instance, there could be body rashes, frequent attack of fever, susceptibility to minor infections, recurrent boils, tuberculosis, to mention but a few.

Complications of diabetes mellitus.

There are two types of complications that we see in diabetes mellitus; these are acute complications and chronic complications.

Acute complications

These are the complications that arise as a result of a sharp increase or decrease in blood glucose. These include;

Hypoglyceamia

Hypoglycemia is one of the worst case scenarios in the management of diabetes mellitus. From what we have discussed so far you will understand that diabetes mellitus is a situation of too much glucose in the blood. On the contrary, hypoglycemia is a situation of low blood glucose. A good student will want to ask that how can low blood glucose be a complication of excess glucose. The answer is simple, treatment. Some of the drugs used in the management of diabetes mellitus are notorious for causing hypoglycemia. Insulin, which is one of the most important drugs used in the management of type 1 DM and complicated diabetes, is notorious for this. Likewise are the sulphonyureas, examples of which are the popularly known daonil (glibenclamide), diabinese etc.

Hypoglycemia often results from over dosage of these anti diabetes regimen. When we say over dosage however we do not mean a deliberate over ingestion of the drugs. Many patients would stop attending clinics just because they are acquainted with their drugs. They keep using the

drugs, the same dosage prescribed over a long time by their physician without knowing their present blood glucose value.
As a result, it often happens that at a time when the blood glucose is very low, the patient still uses the drug at a high dose. This group of patients comes down with hypoglycemia. Other causes could be as a result of over aggressiveness of the managing health worker. Some patients present with a seemingly high glucose which may be as a result of dehydration such that rehydrating with ordinary normal saline fluid will go a long way to reduce the blood glucose. Some inexperienced health workers would bombard such patient with load of insulin, the result of which is a sharp drop in the glucose level. Insulin should be introduced at the lowest dose and gradually increased until the right dose is achieved, except in diabetes coma.
My objective here is not to scare people, rather to teach people the signs and symptoms of hypoglycemia. We have all at one point or the other experienced a mild form of hypoglycemia. Remember the last time you fasted or when for a reason or two you delayed your meal till later in the evening, remember the feeling. Okay, that is hypoglycemia though in a mild form. The signs include, excessive sweating, dizziness, tremor (shaking), palpitation (hearing your heartbeat), blurring of vision. The patient can also come down with syncopy attack. Therefore, when a diabetic patient starts feeling this way shortly after using his drugs, he should be aware that he is experiencing hypoglycemia.
We all know that diabetes patients are not allowed to drink soft drinks or take sugar, but hypoglycemic situation is one condition under which diabetic patient are permitted to take a bottle of coke or two cubes of sugar before presenting at the nearest health facility.
The ultimate treatment for hypoglycemia is glucose. If the patient is still conscious, the glucose should be taken orally, otherwise intravenous glucose fluid should be given.
At this point we shall be drawing the curtain on the topic for this week. We will continue again next week when we shall complete discussion on the complications, the treatments, the dietary control and the prevention of diabetes mellitus.
Till next week, live healthy, stay healthy bye.

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