A Detailed Study Of Diabetes

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Introduction

Diabetes has an effect on the body's ability to maintain normal levels of glucose (sugar) in the blood. When the body turns the food into sugar, this conversion is introduced into the bloodstream. Whenever the amount of sugar increases, the pancreas produces insulin that helps the body to adjust the sugar level by helping the cells to absorb it. However, the problem arises when the pancreas is unable to make a sufficient amount of insulin or the body cannot absorb the insulin made. When the sugar is not being managed by the body effectively and remains in the bloodstream, then serious health problems can occur, such as heart problems, loss of vision, and kidney diseases. There is no effective cure for the disease yet, but physicians always recommend eating healthy and losing weight. Diabetes is a growing concern for the healthcare system of the United States, and this paper will discuss diabetes in detail to provide an extensive understanding of the disease.

Statistics

In the United States, diabetes has been a cause for concern in older people; however, over the last decade, new cases of this disease have decreased in older people but have increased in younger people. According to the CDC's National Diabetes Statistics Report of 2020, showed that one in ten people is suffering from diabetes, which is 34.2 million Americans. Pre-diabetic symptoms were found in eighty-eight million adults; however, newer cases in adults have decreased as compared to the data of 2008. Existing cases of diabetes were higher among American Alaska Natives, and newer cases of the disease were higher among Black citizens and Hispanic citizens. People who showed worse symptoms of diabetes were due to an unhealthy lifestyle, among which 15% were smokers, 38% lead a sedentary (inactive) life, and 89% were either obese or overweight.

Some patients were also suffering from other diseases due to diabetes, which included kidney-related diseases in 37 per cent of diabetic individuals, including 25 per cent suffering from moderate to severe symptoms of the disease. New cases of type 1 and Type 2 diabetes were much higher in the youth of America, which is very concerning as these patients are also suffering from obesity. This rise in cases was observed among youth from age 10 to 19, with racial minorities suffering more from type 2 diabetes. After the statistics of 2020, it became obvious that the youth is the most at risk as compared to adults, and the reason behind this is unhealthy life choices (CDC, 2020).

Pathophysiology (Causes)

The primary reason behind diabetes is the inability of the body to maintain the sugar levels in the bloodstream. Diabetes has four types, namely, “Type 1 diabetes mellitus, Type 2 diabetes mellitus, idiopathic diabetes and gestational diabetes mellitus”. In type 1 diabetes, insufficient diabetes is produced, so the body does not have the required amount to maintain the sugar levels. In type 2 diabetes, the tissues in the body are unable to absorb the insulin produced. Idiopathic diabetes is similar to type 1 diabetes, but the variable of this type of diabetes is the dysfunction of beta cells that are responsible for producing insulin. It causes varying levels of insulin deficiency. Gestational diabetes is often diagnosed at the beginning or during pregnancy. Obese women are often at high risk of suffering from this type of diabetes. In a normal body, whenever the glucose levels are high, the beta cells of the pancreas start to release insulin, which is used by the whole body. To function normally, the brain requires a continuous supply of glucose, so its functions are disrupted when there is an imbalance in the glucose levels.

The drugs used to treat diabetes cause hypoglycemia, which is low plasma glucose levels. The pathophysiology of diabetes is the concentration of plasma glucose, which is responsible for signalling the brain to consume the energy being produced. So, the underlying cause of diabetes is hyperglycemia due to elevated glucose levels. If this hyperglycemia persists, then there are often microvascular and macro-vascular complications that can lead to mortality. Hyperglycemia is the biomarker that helps in the diagnosis of diabetes. The pathophysiology of diabetes is very complex, but any classification for this disorder is always useful in making a diagnosis (Banday et al., 2020).

Signs And Symptoms

If people develop the following symptoms, then they are advised to seek medical attention as they may be suffering from diabetes.

- If the individual urinates more than usual, especially at night.
- Often feels thirsty
- Keep losing weight
- Has blurred vision
- Tingling or numbness in hands and feet.
- Feels tired all the time
- Overly dry skin
- The appearance of sores that take more time to heal than usual.
- Suffering from infection more often than usual.

Other than these symptoms, the symptoms become more specific to the type of diabetes a patient may be suffering from. In type 1 diabetes, the patient may also experience nausea, vomiting and stomach ache. These symptoms develop within weeks or months and are most often observed in

young people. The symptoms of type 2 diabetes may take years to develop, and in some cases, the symptoms do not show at all, so the patient may be completely unaware of it. The symptoms are hard to find, so if the patient has the following risk factors, then they may have Type 2 diabetes:

- Prediabetes
- Suffering from obesity
- Older than 45 years
- Type 2 diabetes runs in the family.
- Lead sedentary life
- Suffered from gestational diabetes
- Gave birth to an infant that weighed more than 9 pounds.

In type 2 diabetes, the symptoms are hard to notice; however, if the patient has the risk factors, then the doctor of the expecting mother usually advises to get a test for it to be certain (CDC, 2021).

Diagnosis And Treatment

The symptoms of type 1 diabetes become apparent more quickly, so tests are performed to observe blood sugar levels; however, other types of diabetes do not show symptoms easily, so screening tests are advised for individuals who have the risk factors. These tests are advised for anyone who has a BMI of 23 to 25, is older than 45, has suffered gestational diabetes or is diagnosed with prediabetes. A glycated haemoglobin (A1C) test is performed to identify type 1, type 2 or prediabetes. This test measures the blood sugar that is attached to the haemoglobin. The test shows increased sugar attached to haemoglobin if the sugar levels are high. Two tests are conducted for this purpose if the collective percentage of both tests is 6.5 per cent or higher than the patient tests positive for diabetes. If the percentage falls between 5.7 and 6.4, then the patient has pre-diabetes; however, a percentage lower than 5.7 indicates normal blood sugar levels.

Sometimes, the results of the A1C test are inaccurate, so the doctor may use alternative tests to diagnose or rule out diabetes. One of these tests is the “Random Blood Sugar Test”, in which the blood samples are collected regardless of food consumption. If the results show a blood sugar level of 200 milligrams per deciliter (mg/dL) or higher, then the individual has diabetes. In the “Fasting blood sugar test”, the patients observe fast during the night, and then the blood sample is taken the next day. If the test show a result that is 126 mg/dl or higher than it is positive, if falls between 100 and 125 mg/dL then it is an indication of prediabetes and lower than that is normal. Other tests include “oral glucose tolerance test”, “initial glucose challenge test”, and “follow-up glucose tolerance test” (Ewald & Hardt, 2013).

Prognosis, Prevention And Complications (If Any)

Obese individuals are at higher risk of developing diabetes. The life expectancy of the patients is about seventy per cent, and the patients can live more than eighteen years after the diagnosis. A healthy lifestyle and exercise are recommended to prevent diabetes, as an unhealthy lifestyle is a reason behind many cases. Previously, many cases of mortality were caused by diabetic coma; however, nowadays, it has almost disappeared. Complications can occur if diabetes advances and causes other diseases. For instance, seventy-five per cent of diabetic patients have died due to coronary heart disease. The mortality in young diabetic patients is often caused by renovascular complications. The reason behind these mortalities is that surgeries cannot be conducted on patients whose blood sugar levels cannot be controlled, and if the patients do not receive timely treatments, then the patient dies due to complications. Diabetes in its initial stages is not as threatening, but if it increases, then it can cause complications by affecting organs like the heart and kidneys (Schatz, 1976).

Conclusion

Diabetes has been observed in people who lead an unhealthy life; these people are mostly obese and do not exercise often. In the recent decade, fast food consumption has risen drastically, and this has also led to a drastic increase in the cases of diabetes among the youth. This disease can be easily prevented by making better health choices.

References

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