

Diabetes Mellitus: A Review

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Abstract- Diabetes is a condition that affects the pancreas and causes it to stop secreting insulin into the bloodstream. Without insulin, glucose cannot penetrate into the cells, depriving every cell in the body of the energy that glucose provides. Diabetes type 1 is caused by defects in the parts of the body that help secrete insulin. 10% of all diabetes cases are of the kind known as diabetes mellitus. The type 1 diabetes that affects kids the most. 90% of type-2 diabetes cases are this condition. It usually happens after the age of 40. In this instance, however, only a small amount of insulin is secreted, and it is linked to aspects of our lifestyle, such as overeating and physical inactivity.

Diabetes is known to cause a number of symptoms, including increased urination, thirst, and appetite. Pre-diabetic patients are those who fall between the normal and diabetic ranges. Exercise, drinking water, portion management, and other measures can all be taken to prevent diabetes and treat it.

Metformin is a key component of diabetic treatment that helps to reduce glucose production. In contrast to China, Brazil, India, and other countries, the United States has the highest incidence of diabetes worldwide.

Keywords- Introduction, type, Pathophysiology, symptom, Risk factor, Prevention, Treatment.

I. INTRODUCTION

Diabetes, also known as diabetes mellitus, is a group of common endocrine diseases characterized by sustained high blood sugar levels. Diabetes is due to either the pancreas not producing enough insulin, or the cells of the body not responding properly to the insulin produced.

It is classify into two types:

1. Diabetes mellitus:

- It is a type of metabolic disorder in which every individual's blood sugar level is affected. The primary source of energy is blood glucose, which is obtained from food. The pancreas produces the hormone insulin, that

helps in allowing glucose obtained from food to enter your cells for use as energy.

- The most common sign of hyperglycemia is a higher-than-normal level of sugar.
- Humans are normally have blood sugar levels of 70 to 90 mg per 100 ml.

2. Diabetes insipidus:

- Unlike diabetes, which affects blood glucose levels, diabetes insipidus is a relatively rare condition. Increased urination is another symptom of diabetes. It developed polydipsia and polyuria illness.

II. TYPES OF DIABETES MELLITUS

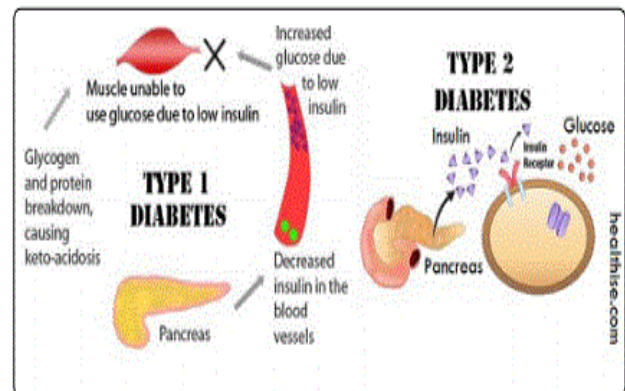


Figure 1. Types of Diabetes Mellitus.

1. Type 1 DM (NIDDM):

This type of diabetes is an autoimmune disease that typically results from the destruction of beta cells in the pancreas, which is where insulin is produced.

2-Type 2 DM (NIDDM):

An chronic disease that influences how the body consumes glucose (blood sugar). In type 2 diabetes, the body either produces insufficient insulin or rejects it. Increased thirst, frequent urination, feeling full, exhausted, and blurred visual abilities are a few symptoms. There could be instances when there are any symptoms.

Alternative therapies include insulin therapy, medication, nourishment, and exercise.

Pathophysiology:

Insulin resistance, decreased insulin production, and subsequently pancreatic beta cell destruction are all common symptoms of type 2 diabetes. Does hyperglycemia really cause the glucose to break down into glycogen and accelerate down the breakdown of fat? Individuals with type 1 diabetes tend to be young and undetected when their symptoms first occur; sometimes, they are caused by viral infections and the environment, which harm the pancreatic beta cells. Alternate long-term potentiating in this form of insulin absence changes the production of insulin and may cause abnormalities in learning and memory.

Symptoms of diabetes:

- Blurry vision
- Excessive thirst
- Frequent urination
- Slow healing wounds and increased skin infections
- Itchy skin
- Weakness/fatigue
- Pins and needles.

Risk factor:

Common diabetes health complications include heart disease, chronic kidney disease, nerve damage, and other problems with feet, oral health, vision, hearing, and mental health.

Prevention:

- Because type 1 diabetes is an auto immune disease, preventive is not possible. Instead, it needs to be managed with medical treatments (which is preferably an oral hypoglycemic agent). By maintaining a nutritious diet, staying physically fit, as well as maintaining a normal body weight, type 2 diabetes should be controlled or at least delayed.
- Diabetes can be prevented by limiting the consumption of sugary beverages, eating less red meat, and preventing additional forms of saturated fat.

Treatment of Diabetes mellitus:

Lowering blood sugar is how medications for diabetes function to treat the condition. Various types of oral

hypoglycemic drugs are utilised in managing the symptoms of diabetes mellitus. Metformin is the medication of choice for people with diabetes since it usually reduces insulin resistance and produces glucose in the liver.

Types of drug	Working	Example(s)
Biguanides	Reduce the amount of glucose your liver releases and maintain your blood sugar levels.	Metformin (Glucophage)
DPP-4 inhibitors	Increase the levels of your blood sugar without causing them to decrease too low	Linagliptin (Tradjenta), saxagliptin (Onglyza), and sitagliptin (Januvia)
Sulfonylureas	Stimulate the release of more insulin by your pancreas	Glyburide (DiaBeta, Glynase), glipizide (Glucotrol), and glimepiride (Amaryl)
Thiazolidinediones	Increase the insulin quantity that reduces the blood sugar level to a normal range.	rosiglitazone (Avandia) and Pioglitazone (Actos)
Meglitinides	Stimulate the release of more insulin by your pancreas to decrease blood glucose level.	Nateglinide (Starlix) and repaglinide (Prandin)
Glucagon-like peptides	To help the produces sufficient amount of insulin by beta cell of pancreas	Dulaglutide (Trulicity), exenatide (Byetta), and liraglutide (Victoza)
SGLT2 inhibitors	Release more glucose into the urine	Canagliflozin (Invokana) and dapagliflozin (Farxiga)

III. CONCLUSION

Hyperglycemia usually comes by conditions such as pancreatic beta cell degeneration and insulin resistance. Several different metabolic conditions fall under the common term "diabetes mellitus." The beta cell is damaged in type 1 diabetes mellitus, leaving the body insufficient to produce

sufficient amounts of insulin to control the level of sugar in the blood.

Type 2 diabetes is caused on by insulin resistance, a lifestyle that is to be overweight and not exercising enough. The basic objective of managing diabetes is, as much as is useful, restoring carbohydrate metabolism to normal. Insulin replacement therapy, which can be given orally or through injection, is required for the treatment of diabetes. Changes in nutrition and exercise can help control diabetes as well.

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