



A Review on Diabetes Mellitus

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Abstract: One of the most prevalent non-communicable diseases in the world is diabetes mellitus. India confronts a number of obstacles when it comes to managing diabetes, including an increase in the disease's urban incidence, a lack of public awareness of the condition, a lack of available medical resources, high treatment costs, and subpar care. Management of blood sugar and an increase in the frequency of diabetes complications. Insulin treatment is the most common type of Up to four times each day, subcutaneous injections are typically used for delivery. Regular insulin administration, Patient compliance issues have been made worse by the intrusive nature of its administration. The prevalence of type 1 diabetes has also increased. However, Type 2 diabetes mellitus is the primary contributor to the diabetic epidemic and affects more than 80-90% of all cases of diabetes.

Key Words: Diabetes mellitus, Type 1 diabetes mellitus, Type 2 diabetes.

1. INTRODUCTION:

A persistent problem in the metabolism of proteins and lipids called diabetes mellitus. Diabetes is defined as a urine flow (5).

Diabetes mellitus (DM), also known as "sugar," is the most common endocrine disorder and typically results from inadequate or absent insulin or, less frequently, from impaired insulin activity (insulin resistance) (8). According to WHO estimates, there are currently about 45 million diabetic subjects in India, and that number is expected to increase to 77 million by the year 2030. Both the hormones insulin and glucagon are released by the pancreas (3). The islets of Langerhans contain both (β) Beta cells, which release insulin, and (α) Alpha cells, which secrete glucagon. The glycogenesis process in insulin lowers blood glucose levels.

Approximately 85-90% of all instances of diabetes mellitus are Type II. Geographical variation may have an impact on magnitude concerning the issues as well as to total morbidity and death. Additionally, those with diabetes who engage in modest levels of physical exercise have a negligibly lower chance of passing away (6) than inactive individuals. It is now well accepted that a certain genetic makeup is necessary for such an event to trigger.

2. REVIEW OF LITERATURE:

Classification of Diabetes Mellitus

In the years 1980–1981, WHO released the first classification of diabetes mellitus that was largely accepted.

Additionally, it is altered in 1985. The primary or idiopathic form of diabetes mellitus, which is the subject of our discussion, is the most prevalent and significant type. It must be unique (10). kinds of hyperglycemia connected to secondary diabetes mellitus, which includes

The Pharma Innovation Journal has identified several factors that can lead to the loss of pancreatic islets, including iron overload (hemochromatosis), surgery, malignancies, certain medicines, and inflammatory pancreatic disorders.

Along with the clinical stages and aetiological kinds of diabetes mellitus, the categorization also includes other varieties of hyperglycemia (11). Type 1, Type 2, and Gestational Diabetes are the four kinds of diabetes mellitus identified under the new classification system (4).

Insulin Dependent Diabetes Mellitus (Type -1diabetes):

Juvenile Type 1 diabetes, also known as insulin-dependent diabetes mellitus.

Previously known as juvenile diabetes mellitus, this kind of diabetes is also known as autoimmune diabetes (3).



Type I diabetes mellitus, also known as IDDM, primarily affects children and young adults. Its abrupt, potentially fatal onset is another name for the condition.

Antibodies against insulin, islet cells, or glutamic acid decarboxylase, which indicate the autoimmune mechanisms that result in beta-cell death, are typically present in type 1 diabetes (1).

Diabetes type 1 (caused by the death of β cells, which typically results in a complete lack of insulin) (American Diabetes Association, 2014).

Betacell degeneration occurs at a very varied rate; in some people, it happens quickly and slowly.

The loss of the pancreatic β -islets cells results in a significant lack or absence of insulin production (9).

Insulin injections are necessary for treatment. When fasting diabetic hyperglycemia is first identified, 85% of people with Type 1 diabetes mellitus have markers of immunological damage, such as islet cell autoantibodies, auto antibodies to insulin, and auto antibodies to glutamic acid decarboxylase GAD (2).

Non-Insulin Dependent Diabetes Mellitus (Type2):

Adult-onset diabete is another name for type 2 diabetes mellitus.

Peoples with this kind of diabetes commonly have insulin resistance.

The primary causes of morbidity and mortality from diabetes are both forms of chronic issues with the blood vessels, kidneys, eyes, and nerves (11).

The causes are multifaceted, and risk factors include sedentary behaviour, obesity, ageing (affecting middle-aged and older persons), and genetics (Ross and Wilson, 2010). Both macrovascular and microvascular problems are more likely to affect patients with these diseases (8).

3. GESTATIONAL DIABETES MELLITUS:

The phrase "gestational diabetes mellitus" refers to glucose intolerance that emerges or is detected during pregnancy. The term "gestational diabetes mellitus" is used to describe both women who discover they have undiagnosed asymptomatic Type 2 diabetes mellitus during pregnancy as well as women who develop Type 1 diabetes mellitus during pregnancy (3). Pregnancy-related diabetes that is not definitely diabetic is known as gestational diabetes mellitus (GDM).

In the long run, the consequences of intrauterine exposure to hyperglycemia are thought to be responsible for the higher risk of obesity and type 2 diabetes in children born to mothers with gestational diabetes mellitus (GDM) (9).

4. OTHER SPECIFIC TYPE (MONOGENIC TYPES):

Hepatocyte nuclear factor (HNF)-1a is a hepatic transcription factor that develops mutations on chromosome 12 in the most prevalent form of monogenic kinds of diabetes (5).

They were also known as hereditary beta cell deficits.

A common characteristic of several kinds of diabetes is the early development of hyperglycemia, frequently before the age of 25.

Maturity-onset diabetes of the young (MODY), maturity-onset diabetes in youth, or with defects of insulin action are other terms used to describe people who have exocrine pancreas diseases like pancreatitis or cystic fibrosis, people whose dysfunction is linked to other endocrinopathies (like acromegaly), and people whose pancreatic dysfunction is brought on by drugs, chemicals, or infections (10). In addition to therapies, some drugs are used.

Importance of oral glucose tolerance test (OGTT):

By PGTT, significant number of asymptomatic individuals, with normal fasting blood glucose, may show high postprandial blood glucose values (impaired glucose tolerance, IGT). These individuals may be considered to have mild or early diabetes mellitus. Simialarly, more show than half the population older than 60 years may show similar glucose tolerance values. Follow-up of such individuals, however, indicated that in next 10 years, majority of person with slight decrease in glucose tolerance, did not manifest definite evidence of diabetes mellitus (6).

Diabetes Mellitus Some Common Sign and Symptoms:

Due to the cells' inability to digest glucose normally in diabetes mellitus, they essentially go without food. The long-term effects of diabetes mellitus include retinopathy, which could result in blindness, nephropathy, which could cause renal failure, and neuropathy, which increases the chance of foot ulcers, Charcot joints, and symptoms of autonomic dysfunctions and sexual dysfunction (4).

Diabetes raises a person's risk for disease.



1. Due to this, additional, different symptoms are seen. Blood glucose levels are further raised by the process of gluconeogenesis, which results from the breakdown of body protein and amino acids.
2. Body fat is catabolized, releasing some of its energy, and an excessive amount of ketone bodies are produced (12).

Etiology of Diabetes Mellitus:

The Greek term "aetiologia" the source of the word "aetiology."

Consequently, aetiology is described as the science of determining the origins and causes of a disease.

1. Viruses like coxsackieB may contribute to the genesis of diabetes.
 2. It has been established that the mumps and rubella viruses alter the morphology of islet cells.
 3. There is debate concerning the genetic component in the aetiology of diabetes.
- Perhaps a person's pancreas is predisposed to one of the aforementioned viruses due to a hereditary characteristic (10).

Causes of Diabetes Mellitus:

β cell gluco-receptor disturbances or abnormalities that cause them to respond to greater glucose concentrations or a relative β cell deficit (1).

In either case, there is a reduction in insulin secretion, which could lead to β cell failure, the direct effects of hyperglycemia on neuronal metabolism, and the idea of primary in micro vascular disease-causing neural hypoxia (7).

- Reduction in the number of insulin receptors and "down regulation" of insulin receptors, which results in decreased sensitivity of peripheral tissues to insulin.

Numerous cases of abdominal obesity, dyslipidemia, and hyperinsulinemia with normal blood sugar levels are also present (8).

As a result, there is some insulin resistance, especially in the liver, muscles, and fat.

Angiopathy has been connected to hyperinsulinaemia.

- An excess of the hyperglycemia hormone (glucagon, etc.) or fat; this results in a relative lack of insulin; the β cells are left behind.

Nitric oxide metabolic anomalies have been shown to cause nerve injury and altered perineural blood flow, according to two theories.

- Various uncommon types of diabetes mellitus (type 3) include those caused by particular genetic flaws (5).

DIAGNOSIS:

Never base a diabetes diagnosis in a client who is asymptomatic on a single abnormal blood glucose reading. The practitioner must be certain that a diabetes diagnosis is made with certainty because there are serious and lifetime ramifications for the patient.(2) The following tests are used to determine whether a patient has diabetes mellitus: urine sugar, blood sugar, glucose tolerance test, renal glucose threshold, diminished glucose tolerance, increased glucose tolerance, renal glycosuria, extended glucose tolerance curve, cortisone stressed glucose tolerance test, intravenous glucose tolerance test, and oral glucose tolerance test.(11)

TREATMENT:

In addition to eliminating the triggering cause, high doses of regular insulin are administered as a treatment (2). Once the condition is under control, the need for insulin returns to normal. The following steps can be taken to manage diabetes mellitus:

- To get the diabetic's altered metabolism as close to normal as possible while yet maintaining comfort and safety.
- To stop or halt the progression of the disease's short- and long-term risks.
- 3.Giving the patient the information, inspiration, and resources they need to carry out this self-advanced care (4).

5. CONCLUSION:

In today's world, diabetes mellitus is a major issue. The way of life and current conditions have a significant impact on the development of these grave difficulties. We learn a little bit about diabetes mellitus from this review.



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