

Diabetes Mellitus

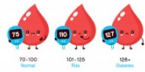
- It is characterized by the presence of high levels of glucose in the blood.
- It is classified as being either primary idiopathic or secondary.

Primary Idiopathic Diabetes Mellitus has 3 main categories:

- Insulin dependent: Type 1 DM
- Non- insulin dependent: Type 2 DM
- Monogenic: MODY and Neonatal diabetes

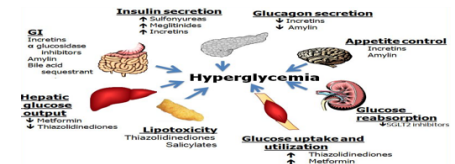
Blood tests used to screen for DM:

- Fasting plasma glucose level of 126 mg per dL or greater
- an A1C level of 6.5% or greater
- a random plasma glucose level of 200 mg per dL or greater
- a 75-g two-hour oral glucose tolerance test with a plasma glucose level of 200 mg per dL or greater.



Secondary Diabetes mellitus:

- This category of diabetes can be caused by either impaired glucose tolerance or other factors like drugs, malnutrition, hormonal imbalance, gestation, or liver disease.



Type 1 Diabetes Mellitus:

T1DM is an autoimmune disorder characterized primarily by insulin deficiency or depletion.

Tests to identify the abnormal antibodies produced by the immune system are used to diagnose type 1 diabetes.

T1DM is suggested by the presence of circulating, islet-specific pancreatic autoantibodies

However, the absence of pancreatic autoantibodies does not rule out the possibility of T1DM. Up to 30 percent of individuals with the classical appearance and presentation of T2DM have positive autoantibodies and may have a slowly progressive type of autoimmune diabetes

Type 1 treatment: Insulin is the treatment of choice for type 1 diabetes, as the problem is due to the lack of sufficient insulin being produced by the pancreas.

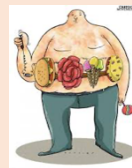


Type 2 diabetes:

T2DM is a metabolic condition resulting from high blood glucose levels, due to defective insulin secretion by pancreatic β -cells, and the inability of insulin-sensitive tissues to respond appropriately to insulin.

Treatment:

Medications include agents that will either increase the sensitivity of the cells to insulin or increase the beta cells insulin secretion.



Gestational Diabetes Mellitus

Gestational diabetes mellitus (GDM) is a secondary type of diabetes mellitus that develops in pregnant women due to release of diabetogenic hormones by the placenta (Insulin antagonist), that will lead to insulin resistance.

First choice drug for managing GDM is insulin, as it does not cross the placenta. Therefore, it is safe for the fetus.



Monogenic Diabetes Mellitus:



Is a rare form of diabetes that mainly affects the young it is caused by a mutation in a single gene and in many cases, it is inherited, making it different from both type 1 and type 2 diabetes.



1- Maturity onset diabetes of the young (MODY)

There are currently 11 types of MODY caused by mutations in different genes. If a parent has this gene mutation, their children have a 50% chance of inheriting it and will usually develop MODY before the age of 25, no matter what type of lifestyle they have. The 4 most common types of MODY are:

- MODY 1
- MODY 2
- MODY 3
- MODY 5

Knowing the type of MODY is important as it determines the type of treatment needed. For example:

- MODY 1 and MODY 3: With these types, patients will require the use of oral sulfonylureas (pills) to lower their blood glucose and may require insulin in the long run.
- MODY 2: This MODY specifically does not require the use of antidiabetic medication as it only very slightly increases the glucose blood levels and treatment often does not have an effect.
- MODY 5: is rare and related to unusual renal development. These patients often require the use of insulin.



2- Neonatal diabetes

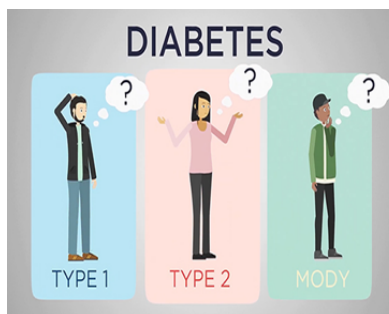
Neonatal diabetes mellitus (DM) is a rare disorder characterized by the onset of persistent hyperglycemia within the first six months of life due to impaired insulin function and is frequently caused by a mutation in a single gene affecting pancreatic beta cell function it is different from Type 1 diabetes because it's not an autoimmune disease.



Type 1 Vs. Type 2 DM



- One of the biggest differences between the two is that type 1 is not affected by your lifestyle or weight.
- As for the symptoms, they tend to appear more quickly in T1DM whereas, in type 2 they appear more slowly making it easier to miss.
- There is currently no cure for both types, however, in many cases T2DM can be prevented.



How is MODY different from type 1 diabetes?

- People with MODY are more likely to have an affected parent.
- The pancreas continues to produce insulin in people with MODY.
- In type 1 diabetes insulin production is very low or stops entirely three to five years after diagnosis.
- Antibodies that attack insulin-producing cells are not likely to be present in people with MODY. These antibodies are present in 85% of people with type 1 diabetes at diagnosis. Blood tests can detect certain antibodies to confirm type 1 diabetes.

How is MODY different from type 2 diabetes?

- MODY has an early age of onset, whereas type 2 diabetes is more commonly diagnosed in people over age 45.
- While MODY is not usually associated with overweight or obesity, someone who is obese with MODY may develop symptoms sooner than someone who is not affected by overweight.

References:

- <https://kingscollegehospitaldubai.com/service/diabetes-clinic/monogenic-diabetes/>
- <https://diatribe.org/mody-genetic-diabetes-affects-people-young-age>
- <https://core.ac.uk/download/pdf/17295043.pdf>
- http://www.uptodate.com/usesources/remotexts.xyz/contents/classification-of-diabetes-mellitus-and-genetic-diabetic-syndromes?search=mody&source=search_result&selectedTitle=1-22&usage_type=default&display_rank=1#H9
- https://www.health.harvard.edu/a_to_z/maturity-onset-diabetes-of-the-young-mody-a-to-z
- https://www.medicinenet.com/type_1_vs_type_2_diabetes_similarities_differences/article.htm
- <https://www.diabetes.org.uk/diabetes-the-basics/other-types-of-diabetes/mody>
- <https://www.diabetes.org.uk/diabetes-the-basics/differences-between-type-1-and-type-2-diabetes>

Prepared By:

Reem Magdi Abdelhafiz U17104380
and Tahani Ahmed Eljack U17100376