Diabetes Mellitus

Diabetes mellitus is a disorder in which the body does not produce enough or respond normally to insulin, causing blood sugar level to be abnormally high.

☆ Etiology:

Type-I DM — B-cell destruction, usually leading to absolute Insulin deficiency.

Idiopathic type-I refers to rare forms of the disease with no known cause.

Immune mediated diabetes :- An autoimmune disorder in which the body's immune system destroys or attemps to destroy the cell in pancreas that produce insulin.

Type-2 DM — Predominantly Insulin resistance with relative Insulin deficiency or Predominantly an insulin secretory defect with / without Insulin resistance.

Gestational D.M. — Is Carbohydrate Intolerance resulting in hyperglycaemia of variable severity with onset of first recognition during pregnancy.

☆ Epidemiology

- Prevalence worldwide is increasing 2.8 % in 2000 or 4.4 % in 2030 worldwide.

- 171 million in 2000, 366 million in 2030 greatest rise in developing World. Prevalence Estimates only include reported and diagnosed persons.

- There is a large % that is undiagnosed as well as a large % at high risk of developing D.M.

Sign and symptoms

Type-1	Type-2
Increased thirst	Obesity
Blurred vision	Increased thirst
Increased Urination	Increased Urination
Weight Loss	Fatigue
fatigue	Blurred vision
Nausea	Slow-healing infections
Vomiting	Hyperchylomicronemia
Coma	Skin infections.
Parathesiasis	

(MT) monotherapy

Initiate lifestyle changes and start P'cological

~~HbA1c~~ ≤8%

HbA1c ≤8%
- Metformin (monotherapy)
- ↑ dose gradually 500mg → 1000mg
- Adjust the dose when eGFR <50ml/min

HbA1c >8%

Start with
- Metformin ⊕ Another Oral glucose lowering drug
  - 1st option — DPP-4 inhibitor (Sitagliptin, Vildagliptin)
  - 2nd option - SGLT2 inhibitor (Dapagliflozin, Canagliflozin)

If HbA1c ≥9% may combine with (Gliclazide, Glimepiride) - Sulphonyl ureas with low hypoglycaemic risk in case ∴ DPP4 ⊖ and SGLT2 ⊖ are not available

Date

Pathophysiology

Type-1 DM.

Mostly caused by genetic factors

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T-cells attack on B-cells of pancreas

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Immunity misunderstood the B-cells and recognised it as foreign body So they can attack on B-cell

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It happens because of defoormality in 6-chromosome of Insulin

(TNF-α, CD-8 T cells, Dendritic cells are inflammatory markers)

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B cell destruction

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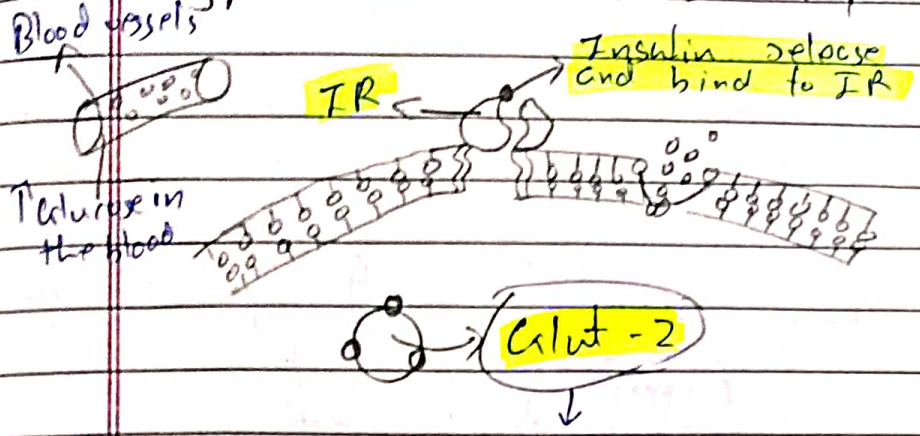
Inhibit insulin production

Diagnosis

Fasting Plasma Glucose
Oral Glucose Tolerance Test [OGTT]
HbA1C
Urine analysis
Glycosuria
Ketone bodies

Page
Date

Type - 2 . Inhibitors DPP4



IR = Insulin Receptor

Activate after insulin bind to the IR

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Glucose is transfer into the cell

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Glycolysis → ATP

If insulin receptor are resistance to the insulin
Glucose is not transfer into the cells

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↑ Glucose level into the blood

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More insulin release from the B-cells

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B-cell ↑ into their size Hypertrophy

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Amylene also release from Bcells with Insulin

Amylene → It cause decrease in the size of B-cells

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Destruction and less insulin ⊕ Production

★ Classification of anti-diabetic drugs.

Biguanides
- Metformin

Thiazolidine diones
- Rosiglitazone
- Pioglitazone

Sulphonyl ureas
- Glimepiride
- Glipizide
- Glibuside

α-Glucosidase
- Miglitol
- Acarbose

Meglitinide
- Repaglinide
- Nateglinide

SGL$_2$ Inhibitors
- Dapagliflozin
- Empagliflozin
- Canagliflozin

DPP-4 inhibitors
- Sitagliptin
- Vildagliptin
- Saxagliptin

GLP-1 Receptor agonist
- Lixagatide
- Exenatide
- Albigatide