Diabetes Part1

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Outline

- DM definition.
- DM classification.
- DM pathology.
- DM Symptoms.

DM Definition

- ✓ Abnormal carbohydrate metabolism characterized by *hyperglycemia, due to:*

1. ***Impaired insulin secretion***, relative or absolute.

2. peripheral Insulin resistance in different degrees.

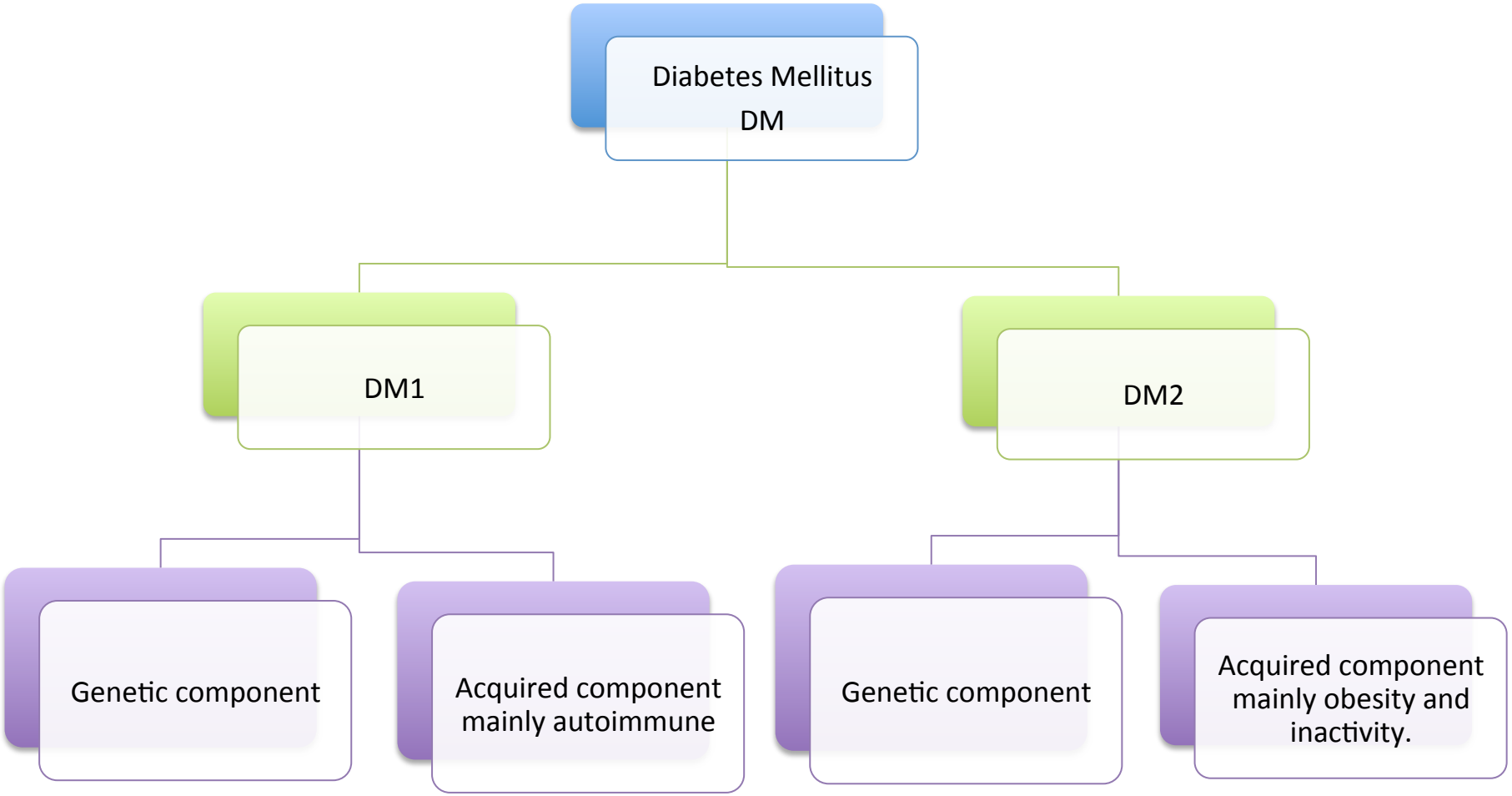
DM

- ✓ It affects 5-10% of adult population.
- ✓ Increasing prevalence in KSA.
- ✓ The 8th leading cause of death
- ✓ The 5th leading cause of KSA(4.6%)★
- ✓ 25%-30% of people with diabetes are undiagnosed.
- ✓ up to 25% already have micro-vascular complications at diagnosis.

DM Types

- The classification of diabetes includes four clinical cases:
- ✓ Type I Diabetes
- ✓ Type 2 Diabetes
- ✓ Gestational Diabetes Mellitus (GDM):
- ✓ Other specific types of diabetes due to other causes, non-pancreatic diseases or drugs.

DM2


Diabetes Mellitus
DM
DM1
DM2
Genetic component
Acquired component mainly autoimmune
Genetic component
Acquired component mainly obesity and inactivity.

1. Type 1 Diabetes mellitus
DM1

- ✓ “insulin- dependent diabetes” or “juvenile-onset diabetes,”
- ✓ DM1 patients often present with acute symptoms of diabetes and markedly elevated blood glucose levels.

DM1

A. Immune Mediated:

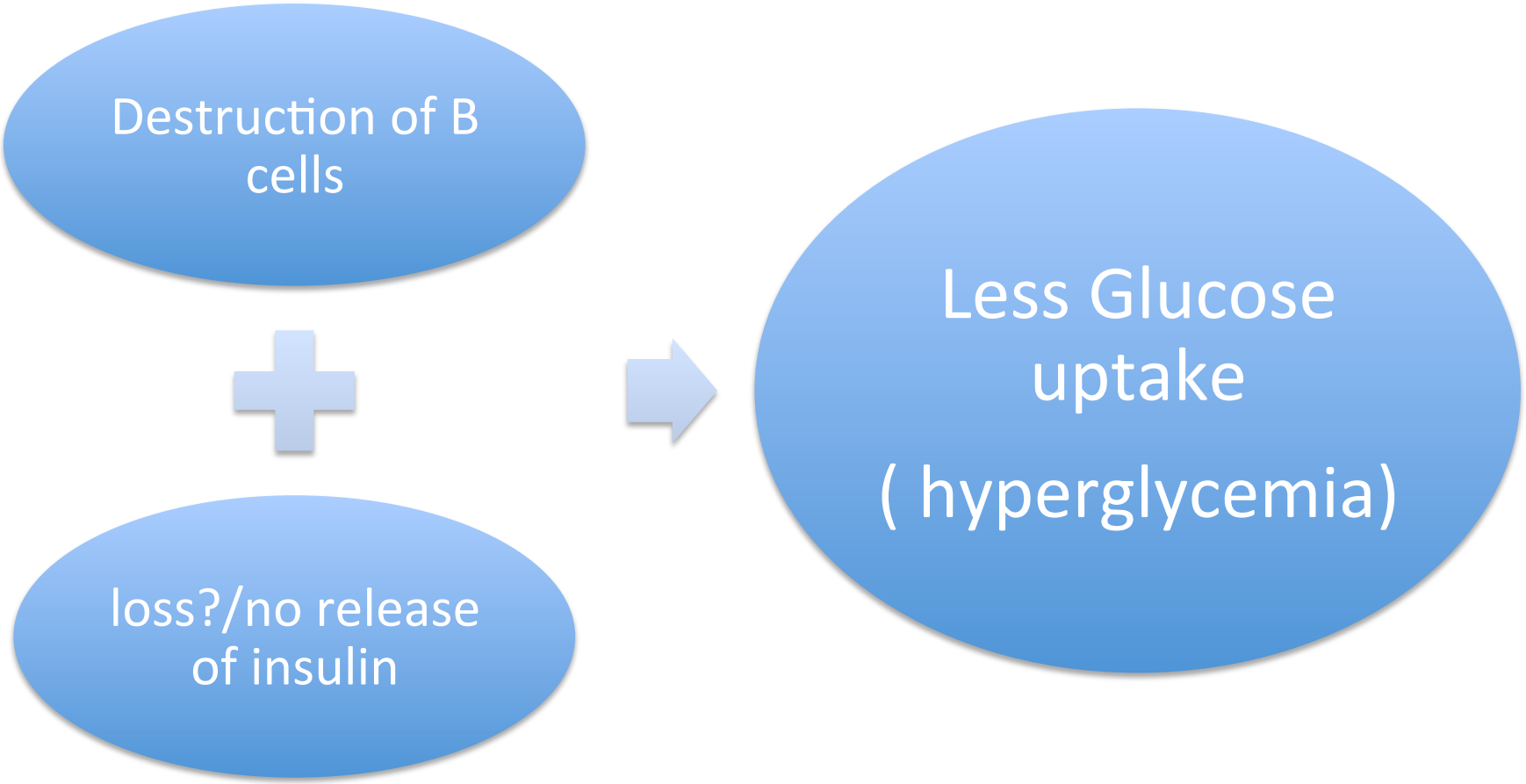
- Cellular-mediated autoimmune destruction of the pancreatic b-cells
- 5–10% of diabetes.
- strong HLA associations, with linkage to the DQA and DQB genes.
- Presence of one or more of autoimmune markers:
- ✓ islet cell autoantibodies, autoantibodies to insulin, autoantibodies to GAD (GAD65), autoantibodies to the tyrosine phosphatases IA-2 and IA-2b, autoantibodies to zinc transporter 8 (ZnT8).

DM1

B. Idiopathic:

- lacks immunological evidence for b-cell autoimmunity.
- Strongly inherited, and is not HLA associated.

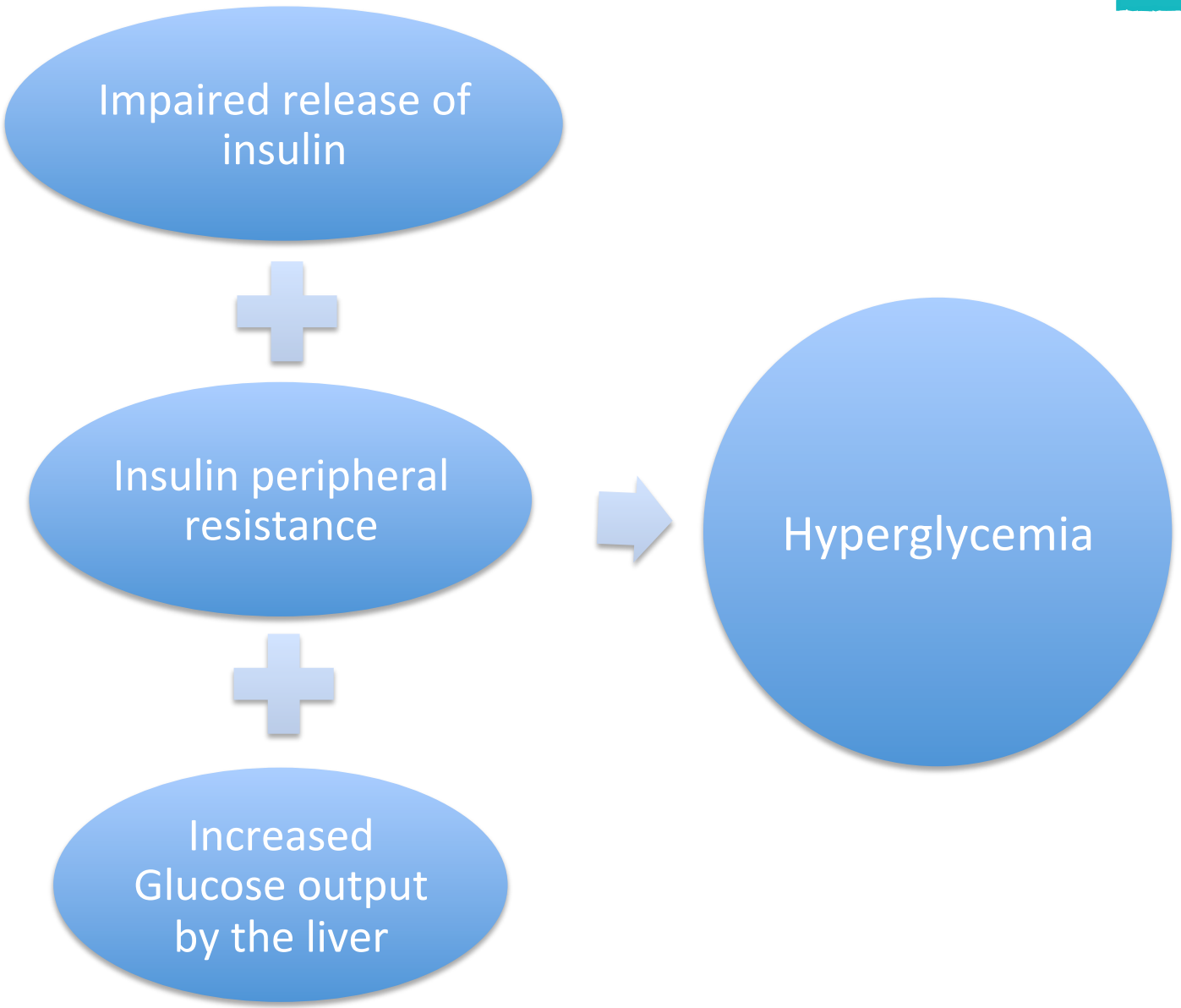
DM1


Destruction of B cells
loss?/no release of insulin
Less Glucose uptake
(hyperglycemia)

DM2

- “non- insulin-dependent diabetes” or “adult-onset diabetes,”
- 90–95% of all diabetes.
- Insulin resistance and usually relative insulin deficiency.
- Less severe >> high risk of developing macro-vascular and micro- vascular complications.

DM2


Impaired release of insulin
Insulin peripheral resistance
Increased Glucose output by the liver
Hyperglycemia

DM symptoms

- Polyuria.
- Polydipsia.
- Polyphagia.
- Fatigue.
- Macro- vascular or micro- vascular complication.
- ketoacidosis.

Variable	DM1	DM2
Primary defect	Autoimmune, T cells, destruction of B cells(anti-islet antibodies)	Increase insulin resistance, progressive b cells failure
Onset	Mostly young <30, sudden	>40, gradual
Male: Female	1: 1	1:2
Symptoms	Polyuria, polydipsia, polyphagia	Polyuria, polydipsia, polyphagia
Obesity	No (<24%)	Yes
Genetics	50% concordance in twins HLA: DR3, DR4	50% concordance in twins No HLA associattion
Affected relatives	5-10%	75- 90%
Islet cells	Sever B cells depletion Early insulitis	Mild B cells depletion+ Amyloid deposits No insulitis
Glucose intolerance	Severe	Mild to moderate
Insulin sensitivity	High(decreased blood insulin)	Low(normal/low blood insulin)
Treatment	Insulin	Lifestyle modification, Oral hypo glycemic agents, insulin
Ketoacidosis	Common(may present with it)	Rare

Summary

- ✓ DM is *hyperglycemia, due to:*

1. ***Impaired insulin secretion***, relative or absolute.
2. peripheral Insulin resistance in different degrees.

- ✓ *DM can be classified into: DM1, DM2, GDM and other specific types DM.*

1. *DM1: total loss of insulin due to B cells destruction.*
2. *DM2: impaired release of insulin and peripheral insulin resistance.*

- ✓ 3Ps: Polyuria, Polydipsia and Polyphagia are the classical symptoms of DM.
- ✓ DM1 can present with ketoacidosis,
- ✓ DM2 can present with the macro-vascular or micro-vascular complications.

References

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