

# Case Study on Diabetes Mellites Type 1

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# **Type 1 Diabetes Mellitus**

Formerly called insulin-dependent diabetes mellitus (IDDM) or juvenile diabetes

T1DM is characterized by low or absent levels of endogenously produced insulin

# Introduction

## Type1 diabetes

- **Insulin Dependent diabetes mellitus, or Juvenile onset DM.**
  - Average onset is in childhood or early adulthood (usually before 30 years of age)
  - Due to **pancreatic islet destruction predominantly by an autoimmune process.**
  - **Cell mediated response:**
    - Type 1 diabetes is caused by a T cell mediated autoimmune destruction of the **pancreatic beta cells.**
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# Pathogenesis of Type 1 DM

- ▶ Pathogenesis of Type 1A DM is explained on the basis of **3 mutually-interlinked mechanisms**:
  - a) Genetic susceptibility.
  - b) Autoimmune factors.
  - c) Certain environmental factors.
- ▶ Pathogenesis of Type 1B DM remains **idiopathic**.





## CLINICAL PRESENTATIONS

- DKA ( most common presentation in pediatrics)
- Classical symptom triad:
  - ✓ polyuria, polydipsia and weight loss
- Accidental diagnosis



## DIAGNOSTIC CRITERIA

- In symptomatic (polydipsia , polyurea, weight loss) children a random plasma glucose  $>11.1$  mmol (200 mg) is diagnostic.
- Hemoglobin A<sub>1c</sub>  $\geq 6.5$  %

**Remember:** acute infections in young non-diabetic children can cause hyperglycemia without ketoacidosis.

# DIAGNOSTIC CRITERIA

modified OGTT (oral glucose 1.75gm/kg max 75 gm) may be needed in

- Asymptomatic children with hyperglycemia (RBS >140)
- Symptomatic with hyperglycemia (RBS between 140 to 200)

- Fasting blood glucose level

**IGT (Impaired glucose tolerance)**

6.0-6.9 mmol (100-126 mg/dl)

**Diabetic**

>=7.0 mmol (126mg/dl)

- 2 hours after oral glucose

**IGT (Impaired glucose tolerance)**

7.8-11.0 mmol (140-200 mg/dl)

**Diabetic**

>=11.1 mmol (200 mg/dl)

- A 12-year-old white girl is brought to the emergency department by her parents due to 12 hours of rapidly worsening nausea, vomiting, abdominal pain, and lethargy. Over the last week she has felt excessively thirsty and has been urinating a lot. Physical examination reveals a lean, dehydrated girl with deep rapid respirations, tachycardia, and no response to verbal commands.



- Type 1 diabetes can be diagnosed at any age, with a peak around 10-14 years. It commonly presents with polyuria, polydipsia, weight loss, and generalized weakness. Other symptoms, such as blurred vision, may occur. Many patients present with diabetic ketoacidosis, an acute complication of type 1 diabetes. These patients have symptoms of dehydration and acidosis such as nausea, vomiting, abdominal pain, tachypnea, tachycardia, lethargy, and altered mental status.

- Rarely, a patient is diagnosed with type 1 diabetes during routine blood tests. The condition is diagnosed long before its chronic complications have developed.

- Diagnosis can be made on the basis of any of the following:
  1. In a symptomatic patient, random plasma glucose of  $>200$  mg/dL ( $>11$  mmol/L)
  2. Fasting plasma glucose  $>126$  mg/dL ( $>7.0$  mmol/L)
  3. Plasma glucose  $\geq 200$  mg/dL ( $\geq 11$  mmol/L) 2 hours after 75 g oral glucose
  4. Glycosylated hemoglobin (HbA1c)  $\geq 6.5\%$  ( $\geq 48$  mmol/mol).