Classification and Criteria for Diagnosis of Diabetes Mellitus: Recent Proposal

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Abstract

Diabetes mellitus is a disease characterized by hyperglycemia and glycosuria. WHO/NDDG report published in 1979 classified Diabetes Mellitus in five categories. The expert committee working under American Diabetic Association suggested proposals for the change in classification and criteria for diagnosis. These are summarized below UPMA 49:202, 1999).

Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia resulting from defect in insulin secretion, insulin action or both.

The growth and knowledge regarding the etiology and pathogenesis has led many individuals and groups in diabetic community to express the need for revision of nomenclature, diagnostic criteria and classification of diabetes. An international expert committee working under sponsorship of American Diabetic Association reviewed the classification in light of the comments, suggestions received and last 18 years literature and proposed suggestions to the National Diabetic Data Group (NDDG) and World Health Organization (WHO).

NDDG/WHO report published in 1979 classified diabetes mellitus into five categories based on glucose intolerance, phenotypic variation and evidence of genetic, immunological and clinical studies and clinical presentation of diabetes in different ethnic groups and tropical countries. The five categories were:

• Type I diabetes mellitus (IDDM)
• Type II diabetes mellitus (NIDDM)
• Malnutrition related diabetes mellitus (MRDM)
• Gestational diabetes mellitus (GDM)
• Impaired glucose tolerance (IGT)

The revised classification proposed by the committee is based on etiology and pathogenesis. It is proposed after taking in due consideration the data and rationale accepted in 1979[1].

• Type 1 and 2 diabetes are suggested to be Type 1 and 2. The reason being II can be read as number 11. The terms IDDM and NIDDM are eradicated.

• Type 1 diabetes is idiopathic; and is caused by absolute deficiency of insulin secretion. It is due to an autoimmune process and can lead to ketoacidosis if not treated promptly. Those for which autoimmune specific cause can be assigned are not included in this category[2].

Type 2 diabetes is due to a combination of resistance to insulin action and an inadequate compensatory insulin secretary response[3].

Term malnutrition related diabetes has been eliminated because protein deficiency alone cannot be responsible for diabetes. Fibrocalculus pancreatopathy (formally subtype of malnutrition related diabetes) has been reclassified as disease of exocrine pancreas.

IGT term has been retained. Analogous intermediate stage of fasting glucose is named impaired fasting glucose (IFG).

Other types of diabetes depending on their pathogenesis are named accordingly:

a) Immune mediated diabetes

This results from cellular mediated immune destruction of bela cells of pancreas.

b) Maturity onset diabetes of young (MODY)[4]

It occurs before twenty five years of age. It results due to monogenetic defect in Beta cell function.

c) Genetic defect in insulin action

Genetically determined abnormality of insulin action.

d) Disease of exocrine Pancreas

Any process that diffusely injures the pancreas can cause diabetes e.g. Pancreatitis, Pancreatic carcinoma.

e) Endocrinopathies

Several hormones anatagonize insulin action e.g. Growth hormone, Cortisol, Glucagon, Epinephrine.

f) Somatostatinoma

g) Aldosteronoma induced hypokalemia can cause diabetes by inhibiting the insulin action[5].

h) Infections

Certain viruses have been associated with beta cell destruction e.g. Rubella.

i) Uncommon forms of immune mediated diabetes:

Some uncommon forms include Stiffman syndrome due to high titers of GAD autoantibodies[6-8].
Systemic Lupus Erythomatosis (SLE) due to insulin receptor antibodies

g) Genetic syndromes associated with diabetes:

lnclude Down's syndrome, Kleinfelters Syndrome[9,10].
Revised Criteria for Diagnosing Diabetes

The criteria for diagnosis have been revised and proposed by the committee which is as under[4]:

IFG Normal Fasting glucose: FPG Impaired fasting glucose: FPG> 110 mg/dl (6.1 mmol/1) and <126 mg/dl (7 mmol/l).

Diagnosis of diabetes is made by either 2 FPG of >126 mg/dl on two different occasions or 2 RBS >199 mg/dl on two different occasions or I FPG >126 mg/dl + I RBS >199 mg/dl.

OGTT

It is performed in doubtful cases. The glucose load used is 75 G in adults. Normal glucose tolerance: 2 hour post glucose <139 mg/dl (7.8 mmol/1). Impaired glucose tolerance: 2 hour post glucose _1 39 mg/dl (7.8 mmol/l) and <199 mg/dl (11.1 mmoI/1).

Provisional diagnosis of diabetes: 2 hour post glucose >199 mg/dl (11.1 mmol/1)).

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