



ISSN : 0973-7057

Recent trend in the classification of Diabetes mellitus

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Received , 20th November, 2014; Revised: 20th December, 2014

Abstract : Diabetes is a group of metabolic diseases in which a person has high blood sugar either because the body does not produce enough insulin or because cells do not respond to insulin. It is a 3rd leading disease after cancer and heart disease which affects 4-5% of world population. The current estimate of 40 million diabetic individuals in developing countries, may be revised to approximate 65 million in a little more than one decade with 18-20 million persons with diabetes in India alone. The WHO study group on diabetes made major revision in 1985 and concluded major group of diabetes mellitus as Type I (IDDM), Type II (NIDDM). Gestational diabetes, pancreatotomy, acromegaly, cushing syndrome. But recently few more type of diabetes have been added in the light of recent investigations, these are malnutritional related diabetes mellitus (MRDM), Maturity onset diabetes of young (MODY), Latent auto immune diabetes of adult (LADA) and statistical risk of diabetes;

.Keywords: IDDM, NIDDM, GDM, MODY, MRDIVI, LADA.

INTRODUCTION

Diabetes mellitus has been known to mankind since antiquity as Honeyed urine disease or Madhume. However the role of Pancreas was described by Mr. Joseph von and Mr. Oskar Minkowski in 1889 and finally Mr. Banting and Mr. Best revolutionized the treatment of diabetes by Insulin injection therapy and won Nobel prize in the year 1889. In relation to this Mr. Banting is honoured by world diabetes day Nov. 14 on his birthday. Diabetes mellitus is a 3rd leading disease after cancer and heart disease. It is a disease of modern life, the busy stressful and short of time often named as silent killer. It is a group of metabolic disease in which a person has high blood sugar either because the body does not produce enough insulin or because cells do not respond to insulin. It has classical symptoms of polyuria. Polydipsia and Polyphagia. It affect 4-5% of world population. The number of people with diabetes in 3rd world countries is likely to show a steep increase during the next decade.

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Socio economic changes resulting in alternation in life style may act as additional contributory factors. Current statistical data reveals that 18-20 million persons are diabetic in India alone. Therefore it needs urgent attention and close examination through both cross sectional and longitudinal studies.

CLASIFICATION :

The WHO study group on Diabetes mellitus made one major revision in 1985 in its earlier recommendation and suggested following major groups of Diabetes mellitus-

TYPE I : It is characterized by loss of insulin producing B cell of Islet of Langerhans in the Pancreas. Thus in these Patients, the production of insulin is extremely low or non-existent and life can be sustained only with supplementation of insulin from external sources. Therefore this type of diabetes is called 'Insulin dependent' diabetes mellitus (IDDM). This diabetes usually affects children or adults before the age of 30. This was traditionally termed Juvenile diabetes. This diabetes generally has an abrupt onset with increased thirst and appetite, excessive urination and weight loss. Occasionally it may be diagnosed when the patient presents for the first time in ketoacidosis or coma. Diabetes ketoacidosis is a

serious complication that is characteristic of IDDM and if left untreated, often a fatal one. Dr. Backkesscov added anew concept by using-Immunofluorescence Method. According to him, In this patient islet cell antibodies and Insulin auto antibodies as well as 64 k antigen are found. This 64 k antigen is Glutamic acid dicarboxylase (GAD), which facilitates the biosynthesis of Inhibitory Neurotransmitter GABA (Gamma amino butyric acid) which inhibit the formation of Insulin. This 64 k auto antibodies are present in >80% of IDDM patients and may even be detected several year prior to clinical onset. It is proved as a useful Pathological method for the identification of IDDM patients.

TYPE II: It is the most common type. Mostly it occurs after the age of 40. It is characterized by insulin resistance and reduced insulin secretion. Patients with this diabetes are not dependent on insulin, thus this diabetes is also called “Non insulin dependent diabetes mellitus” (NIDDM). Classically NIDDM patients are obese, they are not dependent on insulin for prevention of ketonuria and are not prone to ketosis. However it is worth emphasizing that patient with NIDDM may develop ketosis under stressful situation eg-Fulminating infection, burns, trauma or surgery, when insulin administration becomes mandatory.

TYPE III: is Gestational diabetes or GDM. It resembles type II diabetes in several respects, it is characterized by a combination of relatively inadequate insulin secretion and ill responsiveness of body tissue to insulin. It occurs in about 2-5% of all pregnancies and may improve or disappear after delivery. GDM is fully treatable but requires careful medical supervision throughout the pregnancy. About 20-25% of affected women develop type II diabetes later in life. An untreated gestational diabetes can damage the health of the fetus or mother like-Microsomia (High birth weight), congenital cardiac, C.N.S. anomalies, skeleton muscle malformation, Hiperbilirubinemia (R.B.C destruction). In this way such diabetic raises the risk of complication during pregnancy as well as increasing the potential that these children of diabetes mother will also become diabetic in future.

MRDM (Malnutrition Related Diabetes Mellitus)- In 1982 an additional major class of undernourished diabetic young people were recognized in tropical developing countries. It is a diabetes of younger age usually below the age of 30 often mixed with IDDM. As the name indicates it is

the history of Malnutrition in childhood, present often in 30-60% of all cases of youth diabetes in several developing countries. Its clinical features include-

- Characteristic leanness with subnormal body mass index.
- Moderate to severe hyper glycaemia.
- Non - Prone to Ketosis in the absence of stressful situations.
- Requirement of large dose of insulin for metabolic control.
- Stunting or growth retardation may provide a more sensitive criterion for the diagnosis of MRDM.
- MRDM has been subdivided into 2 sub - classes, namely

A - Fibro calculous Pancreatic diabetes (FCPD) which is characterized by formation of stones in the Pancreatic duct with an extensive fibrosis.

B - Protein deficient Pancreatic diabetes (PDPD) associated with protein malnutrition in early childhood.

29% of MRDM patient were recorded in Pancreatic calcification, while 71% were diagnosed as Protein deficient sub - type. Apart from above there are few more types of diabetes, added in the light of recent researches.

1. MODY - Maturity onset diabetes of the young. It is due to the genetic defects of B cell in Young.

2. LADA - Latent auto immune diabetes of adult. It is the type 1 diabetes develop in adult.

3. Statistical risk classes - These include individuals who are not diabetic at the time of study but are at higher risk of developing diabetes in future.

There are a - Previous abnormality of Glucose tolerance.

b - potential abnormality of Glucose tolerance.

Rests are Pancrectomy, Acromegaly, Cushing Syndrome,

Hyperthyroidism, cystic fibrosis, chronic Pancreatitis are also

responsible to create diabetes.

CONCLUSION

WHO study group on Diabetes mellitus recently made one

Major revision and suggested the classification listed in the •

following table on the basis of few prerequisites.

1. The classification should require only simple'

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clinical measurement or descriptive observations that are readily obtainable and have biological significance.

2. The classes should be as precise and well defined as current knowledge of aetiopathology of diabetes allows, so that each class contains as nearly a homogeneous subset of the diabetic population as possible.

3. The terminology should be precise and well defined and should attempt to describe the phenotypic expression of the underlying abnormality.

4. The classification should be acceptable on a global basis and be able to incorporate new research findings of aetiopathology of diabetes or any of its clinical classes, as and when these are made available.

Table : Classification of diabetes mellitus and allied categories of glucose intolerance.

*%

A-Clinical classes :

Insulin dependent diabetes mellitus (IDDM)

Non-Insulin dependent diabetes mellitus (NIDDM)

Malnutritional related diabetes mellitus (MRDM)

including Fibro calculus diabetes mellitus (FCPD)

Protein deficiency pancreatic diabetes (PDPD) other types, associated with certain conditions of syndroms : Pan creatic disease, disease of hormonal aetiology, drug or chemical induced conditions, abnormalities of insulin or its receptors,

certain genetic syndromes, and miscellaneous Impaired glucose tolerance (obese, non obese, or associated with certain conditions and syndromes)

- Malnutritional onset diabetes of the young (MODY)

- Gestational diabetes mellitus (GDM)

- Latent auto immune diabetes of adult (LADA)

B- Statistical risk classes :

- Previous abnormality of Glucose tolerance:

- Potential abnormality of Glucose tolerance.

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