

DIABETES MELLITUS : AN OVERVIEW

(for people with diabetes and their families)

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Diabetes mellitus is a condition in which either the pancreas gland in the body does not produce enough insulin, or it produces sufficient insulin but the body's cells are unable to use that insulin properly. This condition hampers the utilisation of food for providing energy for the needs of the body. In order to understand diabetes, it is necessary first to know how our body uses food to make energy.

How food is utilised ?

The food we eat is composed of protein, fat and carbohydrate. Protein is used to build and re-pair body tissues. When food contains excessive amount of: protein, the extra protein is converted into fat). Fat is a reserve source of; energy, Fats are stored in the body in the form of fatty acids for use during long periods without food. Carbohydrate is the most readily ; usable source of energy. It is present in cereals, fruits, milk and vegetables. The body changes' the carbohydrates into a simple sugar called GLUCOSE. Glucose is absorbed into the blood stream. When amount of glucose in blood rises, the B cells of the pancreas (a gland situated near the stomach) are signalled to release a hormone called INSULIN. Insulin helps to move glucose from blood stream into various cells of the body (the cell being the smallest functional unit of body). Insulin is a sort of key that opens the door to each cell, so that glucose can get into, the cells; each cell of the body needs glucose for its work and survival. Extra glucose is changed to glycogen

by insulin, and is then stored in liver and skeletal muscle for future use. Some glucose is changed into fats also.

What happens in diabetes ?

In diabetes, as mentioned earlier, either the pancreas does not produce enough insulin, or¹, the body's cells are unable to use insulin properly. Glucose cannot get into the cells, because either the key (insulin) is not there, or, the locks (components of the cells); are defective. Glucose level in the blood rises higher and higher, as glucose is not being properly utilised. The cells 'starve in the, midst of plenty:',' When: the concentration of glucose in the blood reaches a certain level (180-200 mg%), called . the 'renal threshold', the kidneys begin to remove glucose from the blood and spill it into the urine.

Signs and symptoms:

1. Tiredness, fatigue, lack of energy: Cells of body do not get glucose for energy production, so one feels tired!
2. Increased urination: Since excessive; glucose is passed into urine, an increased amount of water is passed to dissolve this glucose.
3. Increased thirst : Excessive urination causes a lack of body water and one feels more thirsty.
4. Weight loss : Due to improper utilisation of food and water loss.

5. Hunger : Because food does not get converted into energy.

6. Others : Itching, slow healing of cuts and bruises, and changes in vision.

Types of Diabetes :

Insulin dependent diabetes mellitus (IDDM, or type I diabetes) : This type of diabetes occurs most often but not exclusively in children, youth and young adults. Previously, it was called juvenile diabetes also. These diabetics produce very little or no insulin, and must inject themselves with insulin daily, besides diet control, for survival.

Non-insulin dependent diabetes mellitus (NIDDM or Type II diabetes) : This type of diabetes often develops during adulthood and with aging. Previously it was referred to as maturity onset diabetes. The pancreas of the person with this type of diabetes does make insulin, but either it is not sufficient or the cells of the body do not use it properly. It can

usually be controlled % diet and exercise alone, or by a combination with oral drugs. However, in certain conditions, insulin may be essential for these patients too.

What causes Diabetes ?

The cause of diabetes is largely unknown at this time, but there are a number of factors which seem to increase a person's chances for developing it.

1. Heredity: People who have history of diabetes in their family have a greater chance of developing diabetes, than those who have no family history of diabetes.

2. Overweight and sedentary life style : People with NIDDM often are overweight and/or lead a sedentary life style. In fact, being overweight might have contributed to the development of their diabetes.

3. Age : The prevalence of diabetes increases progressively with the age of the population. In India, the overall prevalence of

Random blood glucose	Oral GTT	
	Fasting	Post Prandial
DM likely : greater than 180 mg%	DM=greater than 120 mg%	= greater than 180 mg%
Uncertain : 80—180 mg%	*IGT less than 120 mg%	120—180 mg%

*IGT=impaired glucose tolerance; needs care, may progress to frank diabetes.

diabetes in persons over the age of 15 years is about 2%; above age 40 years, nearly 4% Indians among 100 have diabetes. However, no accurate figures are available regarding the occurrence of diabetes in children in our country.

Diagnosis :

When diabetes is suspected on the basis of signs and symptoms, a single blood sugar estimation in excess of 180mg% (venous blood)

indicates diagnosis of diabetes. If it is below 80mg%, diabetes is unlikely. If it lies between these two values, an oral glucose tolerance test (OGTT) should be done.

Treatment:

The major goal of treatment is to help you maintain good health. This is accomplished by diet control, exercise and oral drugs (if required) in NIDDM, and insulin, diet and exercise in IDDM.