Revolution in Diabetes Management and Steps towards Eradication of Diabetes Mellitus

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ABSTRACT
Diabetes Mellitus is a disease of life style modification and genetics which we acquired from our parents in so many generations. The current approach of treatment is some times in appropriate as the external administration of OHA and Insulin are not influencing the development of Beta cells in respect to number and mass. Dietary modifications along with healthy life style since child hood have a role in the development of Beta cells which persist as active Beta cells for rest of the life.

Keywords: Diabetes Mellitus, Prevention’s, Dietary modifications, Yoga and Healthy life style.

AIM
Prevention of Diabetes Mellitus in present and future generations.

INTRODUCTION
Islets cells of pancreas, i.e., Beta and Alfa cells have key role in the regulation of blood sugar and the development of these cells since childhood affects the outcome of this global disease.

BASIC PHYSIOLOGY OF GLUCOSE METABOLISM
Blood sugar is regulated by glucagon and insulin hormones, which are secreted by alpha and beta cells of islets of Langerhans of pancreas, respectively. After the meal when serum glucose level goes up, secretion of insulin occurs which causes uptake, use, and storage of glucose by almost every tissue of the body. Insulin store the glucose in the form of glycogen and fatty acids especially in liver and muscles. Glucagon has the reverse actions and maintains blood sugar level when a person is in fasting stage.

BASIC PATHOGENESIS OF DIABETES MELLITUS
• Decreased Secretion of Insulin
  • Deposition of amyloid and atrophy of beta cells of pancreas.
  • Decreased blood circulation to beta cells due to inactive life style and lipid deposition in arterial circulation, causing atrophy of beta cells.
  • Inactivity of beta cells due to decrease in triggering factors to stimulate beta cells to be hypertrophied or attaining normal growth of beta cells in growing age.
  • Destruction of beta cells by viruses, antibodies, etc.
  • Idiopathic.
• Resistance of Insulin over Cells
  • The receptors over cells become insensitive and not responding to insulin.
  • Destruction of receptors by circulating antagonists.
• Glucagon over secretion.

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METHOD

Persons who are suffering from diabetes were taken for study in two cities of India. The history regarding family history of diabetes, food habit especially sugar intake in childhood, fatty and non-vegetarian diet intake, history of yoga and exercise, and religion are taken as parameters affecting occurrence of diabetes.

Study was conducted for six years from April 2012 to April 2018 and total 282 diabetic patients were studied in detail during this period.

Around 49 patients had history of very low sugar intake in their childhood and among them 24 patients developed high level of diabetes mellitus while 25 patients developed moderate level of diabetes mellitus.

97 patients had history of low sugar intake in their childhood and among them 44 patients developed high level of diabetes mellitus while 40 patients developed moderate level of diabetes mellitus, and 13 patients developed low level of diabetes mellitus.

69 patients had history of moderate sugar intake in their childhood and among them 19 patients developed high level of diabetes mellitus while 35 patients developed moderate diabetes mellitus and 15 patients developed low level of diabetes mellitus.

67 patients had history of high sugar intake in childhood and among them 14 patients developed high level of diabetes mellitus while 24 patients developed moderate level of diabetes mellitus and 29 patients developed low level of diabetes mellitus.

159 out of 282 patients had history of fatty or non-vegetarian diet in their routine meal habit.

115 out of 282 patients had history of yoga and exercise in their routine life habit.

143 out of 282 patients had history of diabetes in one or both their parents.

RESULTS

- Diabetes mellitus and its severity is more common in those people who used to take very little amount of sugar and sweetened product in their childhood and growing period especially up to 18-20 years.
- Diabetes mellitus is also more common in persons who take oily and non-vegetarian diet throughout their child- and adulthood.
- Diabetes mellitus is less common in persons who are doing yoga exercise for pancreas and other physical activities.
- Religion is also important in determining occurrence of diabetes as it is observed that diabetes is less common in Brahmans (sub caste of Hindus) who are used to take plenty of sugar from their childhood as a custom and which is persisting in their generations in comparison to other sub caste of Hindus and other caste in same locality.

DISCUSSION

The following mechanism is proposed for each observation.

- When a person used to take plenty of sugar and sweetened products in childhood and growing age especially up to the age of 18-20 years while the pancreatic cells are still growing, the high amount of sugar in circulation causes—
  - hyper stimulation of hypothalamus and secrete more neurotransmitters to increase higher insulin secretion.
  - hyper stimulation of polypeptides of G.I.T., i.e., glucagons like peptide (GLP-1) and glucose dependent insulino-trophic peptide (GIP) to stimulate higher insulin secretion by stimulating beta cells.
  - high glucose concentrations in circulation directly stimulate beta cells to secrete large amount of insulin.

All these mechanisms cause hyperplasia and hypertrophy of insulin secreting beta cells of pancreas and also lead to the partial atrophy of alpha and delta cells and these beta cells used to secrete large amount of insulin to counter the elevated sugar level and they remain functioning for rest of the life as their efficiency has been increased because of their hyper development.

(If sugar and sweetened products are taken in high amount after growing age, they are not able to cause this effect.)

- The diet which is rich in oil especially saturated fatty oil) and non-vegetarian products causes atherosclerosis in arteries leading to narrowing of arteries and decreased circulation to pancreatic glands thus the beta cells are not fully developed and secreting less amount of insulin, further the lipid which is deposited intracellularly also decreases the formation of insulin in beta cells, and both these factors together cause decreased secretion of insulin.
especially in childhood and early adulthood when the beta cells are growing and for rest of life.

- Diabetes is also less common in persons who are doing yoga regularly. Yoga is the very ancient Indian science which increases the oxygenation of the cells of whole body and increases the functioning of cells. Also some yoga exercises increase the circulation of pancreas gland by rhythmic contraction of the diaphragm and abdominal muscles thus increasing the functioning of pancreas and the insulin secretion.

- In some sub caste of Hindus especially Brahmins in whom the sweet and sweetened products are taken as a custom in most of the families for their generations cause increased sensitivity of the receptors to the insulin over whole body cells leading to less chances of diabetes and it might be because of some genetic changes in due course of generations that causes increased sensitivity of the receptors to the insulin and only the small amount of insulin is sufficient to maintain the blood sugar in normal level.

CONCLUSION

Diabetes Mellitus is a disease in which the treatment either by anti-diabetic drugs or insulin is not sufficient as the requirement of both these remedies increases day-by-day and after a certain levels they cannot be prescribed because of adverse effects of medicine, patients incompatibility, or patients inconvenience.

To control this deadly disease globally, it is mandatory to make our body ready to fight this disease from our childhood and to find the solution from our body itself and this can be achieved by taking large amount of sweetened, non oily, and vegetarian food rich in simple carbohydrate since our childhood to early adulthood with the physical activities and yoga to increase our body insulin and to keep ourself non diabetic and also to share with our future generations to give them steps ahead in Diabetes management.

REFERENCES