

Review Article



ORAL GLUCOSE TOLERANCE TEST: AN ESSENTIAL TOOL TO MAKE THE DIAGNOSIS OF DIABETES

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ABSTRACT

Diagnosis of diabetes defines a group at high risk for micro- and macro-vascular disease. The diagnostic criteria (table 1) were established by the NDDG and WHO in 1979-80. For individuals with symptoms of diabetes, such as excessive thirst and urination or unexplained weight loss, only elevated FPG (≥ 140 mg/dl) or random plasma glucose ≥ 200 mg/dl is required to confirm the diagnosis. Oral glucose tolerance test is used not only to diagnose diabetes, but also help to provide additional information about the body's ability to metabolize blood glucose. Higher OGTT values are likely to reflect diet, lifestyle problems and problems of insulin functioning. Information in regard to reliability of the oral glucose tolerance test is important, as some conditions (common cold), or food (caffeine), or lifestyle habits (smoking) may alter the results of the oral glucose tolerance test.

Keywords: Diabetes mellitus, oral glucose tolerance test, gestational diabetes.

INTRODUCTION

Diabetes mellitus (DM) is a disease common in all parts of the world and recognized as one of the leading causes of death in the world¹⁻². DM is the serious endocrine disorder that affects more than 100 million people worldwide (6% of the population) and in the next 10 years it may affect about five times more people than it does now³⁻⁴. In India, the prevalence rate of diabetes is estimated to be 1-5%⁵⁻⁶. Approximately 10% of diabetic patient have type 1 diabetes mellitus, remainder have type 2⁷.

DM is a metabolic syndrome, characterized by a loss of glucose homeostasis that result in impaired metabolism of glucose and other energy- yielding fuels such as lipids and proteins⁸. DM is a chronic disease caused by inherited and/or acquired deficiency in production of insulin by the pancreas, or by the ineffectiveness of the insulin produced. This deficiency results in abnormal high concentrations of glucose in the blood, which in turn damage many of the body's systems, in particular the blood vessels and nerves⁹. The long-term effects of DM include dysfunction and failure of various organs¹⁰. Hyperglycemia is an important factor in the development and progression of the complications of diabetes mellitus¹¹.

Definition

Diabetes mellitus is a metabolic disorder initially characterized by a loss of glucose homeostasis with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both¹².

Without enough insulin, the cells of the body cannot absorb sufficient glucose from the blood; hence blood glucose levels increase, which is termed as

hyperglycemia. If the glucose level in the blood remains high over a long period of time, this can result in long-term damage to organs, such as the kidneys, liver, eyes, nerves, heart and blood vessels.

The diabetic patients usually show varied symptoms of polyurea, polydypsia and polyphagia. In severe forms, weight loss may be seen, in some cases, symptoms may be absent, and consequently hyperglycemia may remain undetected causing vascular damage, even prior to the detection of the disease. Diabetics are prone to develop secondary complications like nephropathy¹³, ketoacidosis¹⁴, neuropathy¹⁵, retinopathy¹⁶, atherosclerosis¹⁷ and cardiovascular problems^{18,19}. In addition, diabetics are immunocompromised and are readily susceptible to microbial infections and more so with opportunistic fungal infections^{20,21}.

CLASSIFICATION

In 1997, the ADA issued new diagnostic and classification criteria¹; in 2003, modifications were made regarding the diagnosis of impaired fasting glucose (IFG)². The classification of diabetes includes following four clinical classes: ^{22,23}

- Type 1 diabetes (results from beta-cell destruction, usually leading to absolute insulin deficiency).
- Type 2 diabetes (results from a progressive insulin secretory defect on the background of insulin resistance).
- Other specific types of diabetes due to other causes, e.g., genetic defects in β cell function, genetic defects in insulin action, diseases of the exocrine pancreas (such as cystic fibrosis), and drug or chemical induced (such as in the treatment of AIDS or after organ transplantation).

