

Oral Manifestations and Dental Treatment Considerations for Diabetes - A Review

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Abstract

Diabetes mellitus affects people of all ages, and its prevalence has been increasing. Providing safe and effective medical care for patients with diabetes requires an understanding of the disease and familiarity with its oral manifestations. The goal of therapy is to promote oral health in patients with diabetes requires, to help prevent and diagnose diabetes in dental patients receiving routine oral care and to enhance the quality of life for patients with this incurable disease.

Keywords: Diabetes mellitus, Hypoglycemia, Insulin, Oral symptom

Diabetes mellitus comprises a clinically and genetically heterogeneous group of metabolic disorders manifested by abnormally high levels of glucose in the blood. This abnormally high level of glucose in the blood is brought about by insulin deficiency caused by pancreatic b-cell dysfunction, insulin resistance in the liver or muscle tissue, or a combination of both. It is known that chronic hyperglycemia leads to long-term damage of various organs, such as the heart, eyes, kidneys, nerves and vascular system.

The American Diabetes Association released a new classification and diagnostic criteria for diabetes mellitus in 1997, and this was modified in 2003 [1]. The new classification divides this metabolic disorder in to four general categories: type 1, type 2, idiopathic and gestational diabetes mellitus [2].

Aim

To present this review in front of all dental faculties is basically Indian population is a hub of diabetes and every Indian dentist face diabetes patient regularly in their private practice or in institutional OPDs to treat or manage them. This review definitely helps them or acquainted them to treat or manage diabetes mellitus patient.

Type 1 diabetes mellitus

Type 1 diabetes mellitus results from cellular-mediated Immune b-cell destruction, frequently leading to total loss of insulin secretion. Type 1 diabetes mellitus is usually reported in children and young adolescents [3].

Gestational diabetes mellitus

Gestational diabetes mellitus is defined as glucose intolerance of various degrees that is first detected during pregnancy. Gestational diabetes mellitus is detected by screening of pregnant women for clinical risk factors, and, among at-risk women, testing for abnormal glucose tolerance, which is usually, but not invariably, mild and asymptomatic. Gestational diabetes mellitus appears to result from the same broad spectrum of physiological and genetic abnormalities that characterize diabetes outside of pregnancy. Indeed, women with gestational diabetes mellitus are at high risk of developing diabetes when they are not pregnant. Thus gestational diabetes mellitus provides a unique opportunity to study the early pathogenesis of diabetes and to develop interventions to prevent the disease 258 [3].

Idiopathic diabetes

Some forms of type 1 diabetes have no known etiology.

These patients have no evidence of autoimmunity but present with permanent

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insulinopenia and are prone to ketoacidosis. Such patients represent a minority of patients with type 1 diabetes, and the majority of these patients are of African or Asian ancestry. This form of diabetes is strongly inherited, lacks immunological evidence of b-cell autoimmunity, and is not human leukocyte antigen associated Type 2 diabetes mellitus, previously defined as noninsulin-dependent diabetes, results from insulin resistance and to a certain extent altered insulin production. It is associated with micro vascular (i.e. retinal, renal, possibly neuropathic), macro vascular (i.e. coronary, peripheral vascular) and neuropathic (i.e. autonomic, peripheral) complications [4].

Other Genetic Syndromes Sometimes Associated with Diabetes

These include Down's syndrome, Klinefelter's syndrome, Turner's syndrome, and Wolfram syndrome [5].

Systemic considerations for Diabetes Signs and symptoms

Onset of symptoms is rapid in type 1 diabetes; include the classic triad of polyphagia, polydipsia and polyuria as well as weight loss, irritability, drowsiness, and fatigue. Symptoms of type 2 diabetes develop more slowly, and frequently without the classic triad, rather these patients more 1) obese, with 2) pruritus, 3) peripheral neuropathy and 4) blurred vision.

Opportunistic infections including oral and vaginal candidiasis, recurrent infections and impaired wound healing. An insulin deficient patient with acute hyperglycemia, often have a fruity' breathe [6].

Oral manifestations of Diabetes

Gingivitis and Periodontitis: Patients with uncontrolled diabetes show exaggerated response to local factors leading to the sequelae of gingivitis, periodontitis and alveolar bone loss. This is characterized by greater loss of attachment, increased bleeding on probing, increased tooth mobility, increased bone loss and delay of post-surgical healing of periodontal tissues and recurrent periodontal abscesses. Phagocytosis and leukotaxis [1]. Recurrent infections of oral cavity Diabetic patients are more prone to suffer from multiple and recurrent infections because of increased blood glucose level and compromised host immune response. Recurrent periodontal abscess is typically seen in patients with uncontrolled diabetes.

Dry socket: It is a complication of extraction which occurs due to dislodgement of blood clot formed postoperatively. It is most common after mandibular teeth extractions because of reduced blood supply to the mandible caused by atherosclerosis caused by long standing diabetes [7]. Use of epinephrine in local anesthetics' further reduces blood supply to the area, thereby increasing the likelihood of dry socket.

Salivary dysfunction: People with diabetes usually complain of xerostomia, i.e. dry mouth and experience salivary gland dysfunction or stomatopyrosis. A common, yet poorly understood orofacial neurosensory disorder, burning mouth syndrome, has been associated with diabetes mellitus. They may experience long-lasting oral dysesthesias which would adversely affect oral hygiene maintenance.

Peripheral neuropathies: Peripheral neuropathies have oral implications as well. It may impair the patient in using devices for oral hygiene maintenance. Neuropathies like retinopathy could cause blindness in diabetics which in turn would affect daily oral and prosthesis hygiene.

Dysphagia: It may also result due to altered strength, speed and/or coordination of the cranial nerve musculature [8]. Dental caries it could be said that dental caries occurs as a sequelae to other oral manifestations in diabetics [6].

Dental Treatment Considerations for Diabetic Patient

Antibiotic coverage: patients with poorly controlled diabetes are at risk of developing oral complications because of their susceptibility to infection and sequelae, and likely will require supplemental antibiotic therapy. Dentoalveolar surgery with antibiotic coverage may help prevent impaired and delayed wound healing [7].

Adjustment of Insulin

Dentoalveolar surgery, orofacial infections, and the stress of dental procedures can increase serum glucose levels and metabolic insulin requirements. Therefore, dentists must consider modifying medical therapy in consultation with the patient's physician. e.g. patients whose dental condition is controlled with insulin usually will require increased insulin dosages in the presence of an acute oral infection [2].

Medications used by dental professionals may require adjustment of diabetes associated therapies. e.g. epinephrine can antagonize the effects of insulin and result in hyperglycemia, small amounts of systemic corticosteroids can severely worsen glycemic control ,patients taking oral hypoglycemic agents who are placed on steroid therapy may require short term insulin therapy to maintain glycemic control. Alternatively, hypoglycemia can be promoted by aspirin ,sulfa antibiotics and antidepressants [9].

Conclusion

Diabetes mellitus is a disease of adults as well as children mostly seen in Indians which could result either due to insulin deficiency or resistance to insulin, or both. Diabetes mellitus is classified as Type I diabetes mellitus (insulin dependent), Type II diabetes mellitus (non-insulin dependent) [1], and gestational diabetes and other specific types. Oral manifestations include gingivitis, periodontitis, recurrent periodontal abscess, delayed healing of wounds, dry socket, oral candidiasis, xerostomia, neurosensory disorders ,which result in glossodynia, stomatopyrosis or burning mouth syndrome [10]. Most diabetic patients can easily be managed on an outpatient basis in dental office. Preferred appointment timing is in the morning. Prophylactic antibiotic coverage is usually necessary in order to prevent infections [11].

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