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Dental Management Of Diabetic Patients: A Review

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ABSTRACT:
Diabetes Mellitus is described by hyperglycemia resulting from defects in insulin secretion, insulin action or both. Diabetes mellitus (DM) is one of the most frequent pathologies that dentists encounter, due to its high prevalence (MORE THAN 240 MILLION PEOPLE- 382 million people had diabetes in 2013 By 2035, this number is estimated to rise to 592 million. In India 65.1 million people had diabetes in 2013 By 2035, this number will increase by 70.6%) worldwide. patient is diagnosed by obtaining repeatedly of fasting plasma glucose levels of 126 mg/ dl or higher, or glycosylated hemoglobin of 6.5% or higher. Diabetes (especially if it is not well controlled) increase the greater risk of periodontal disease, which is the most frequent complication

Key Words: Diabetes Mellitus, Tooth Extraction, Dental Management, Diabetic Patients

INTRODUCTION:

Diabetes mellitus is a group of metabolic diseases or syndrome characterized by high blood glucose levels (hyperglycemia) and disturbances of carbohydrate, fat and protein metabolism (as insulin plays important role in its regulation) associated either absolute or relative deficiency of insulin (both action and secretion). Insulin is produced in the beta cells of the Islets of Langerhans within the pancreas, and is released directly into the blood stream. Insulin allows blood glucose to enter the cells around the body for use as an energy supply. Glucose is much needed source for the body to function properly. The brain is particularly affected if there is any reduction in blood glucose supply due to its lack of capacity for glucose storage

A deficiency in insulin or a disturbance with its metabolic activity can result in an increased blood glucose level. Hyperglycemia in turn leads to an increase in the urinary volume of glucose and fluid loss, which then produces dehydration and electrolyte imbalance. if severe, may result in coma. The stress of this disease can also result in an increase in level of cortisol secretion. Diabetes in common is the inability of the patient to metabolize and use glucose, the subsequent metabolism of body fat, and the fluid loss and electrolyte imbalance that causes metabolic acidosis. Hyperglycemia and ketoacidosis combined with vascular wall disease that alters the body's ability to manage infection and heal.

Factors stimulating the insulin secretion are glucose, amino acids and gastro intestinal hormones (secretin, gastrin, pancreozymin) whereas factors inhibiting insulin secretion is epinephrine

CLASSIFICATION:

PRIOR CLASSIFICATION BY THE AMERICAN DIABETES ASOCIATION (1975):

Hereditary, primary or idiopathic diabetes

Prediabetes:

- Subclinical, latent or stressdiabetes
- Chemicaldiabetes
- Overt or clinicaldiabetes
- Juvenile or early onsetdiabetes
- Maturity, adult or late- onsetdiabetes

Non hereditary, secondary diabetes:

- Damage to pancreatic islet or removal of pancreatic islettissue
- Damage to other endocrineglands
- Drugs orchemicals

Most recent classification provided by the American diabetes association (1997)

Classification	**characteristics**
Type 1 diabetes mellitus (less common 5 - 10% - usually younger than 30 yrs., thin or normal stature) Formerly called asinsulin dependent (DDM)	Beta cell destruction, usually leading to absolute insulin deficiency, immune mediated idiopathic
Type 2 diabetes mellitus (most common - 90% -95% - usually obese and older) Noninsulin dependant (NDDM)	Insulin resistance with relative insulin deficiency
Other specific types of diabetes mellitus	Heterogenous group in which etiology is established or partially known genetic defects of beta cell function Genetic defects in insulin action Diseases of exocrine pancreas Endocrinopathies Drugs or chemical induced Infections Uncommon forms of immune- mediated diabetes Other genetic syndromes sometimes associated with diabetes
Gestational diabetes mellitus which occur in 5-7%	Any degree of glucose intolerance with onset or first recognition during pregnancy

Classification by Malamed SF, Medical emergencies in dental office (2000):

Type	**Ketosis**	**Islet cell antibodies**	**human lymphocyte antigen association**	**treatment**

Insulin dependent-type 1	Present	Present at onset	Positive	Insulin (mixtures of rapid acting and intermediate acting insulin at least twice daily) and diet
Non-Insulin dependent- Type 2 Non-obese	Absent	Absent	Negative	Eucaloric diet alone or diet+ insulin or sulfonylureas
Obese	Absent	Absent	Negative	Weight reduction and hypocaloric diet+sulfonylureas or insulin for symptomatic control only

Risk factors:

Family history- risk of developing diabetes rises if a close relative such as parent or sibling has the disease

Inactivity

Race type 1- common in Caucasians and European countries where type 2 Is common in people of African heritage, Asians

Overweight individuals

Age the risk of developing type 2 diabetes increases with age especially after 45 years of age Genetics

CLINICAL FEATURES:

ORAL MANIFESTATIONS:

Related to poor glycaemic control

1. Burning mouthsyndrome
2. Altered woundhealing
3. Increased incidence ofinfection
4. Candidal infection-- Median Rhomboid glossitis, Angular cheilitis, Acute pseudomembranous candidiasis of tongue, buccal mucosa andgingiva
5. Bilateral generalized salivary glandenlargement
6. Xerostomia
7. Gingivitis
8. Periodontitis, periodontal abscesses (CHRONIC PERIODONTITIS- multiple abscess, suppuration, mobility)
9. Dental caries
10. Drug related oralmanifestations

- Salivaryhypofunction
- Xerostomia

- Dry mucosalsurfaces
- Gets easilyirritated
- Causing minor mucosal ulcerations, increased susceptibility of fungalinfections
    - Drug induced lichenoid reactions (Metformin) 11.Poor oral hygiene with excess calculus formation 12.Tendency for progressivecaries

DENTAL MANAGEMENT IN DIABETIC PATIENTS:

To minimize the risk of an intraoperative emergency	clinicians need to consider some issues before initiating dental treatment.
Medical history:	Take prior medical history and assess glycemic control at initial appointment.
Glucose levels	Check for Frequency of hypoglycemic episodes Medication, dosage and times. Consultation Dental management considerations

Dental management considerations

Scheduling of visits

- Morningappointment
- Do not coincide with peakactivity.

Diet

- Ensure that the patient has eaten and taken his/her medications asusual.

Blood glucose monitoring Prophylactic antibiotics

- Establishedinfection
- Pre-operation contaminationwound
- Majorsurgery

DURING TREATMENT

- The most complication of DM during the treatment to occur is hypoglycemiaepisode.
- Hyperglycemia

AFTER TREATMENT

- Infectioncontrol
- Dietaryintake
- Medications: salicylates increase insulin secretion and sensitivity avoid asprin.
- Stressreduction
- Changes in medicationregimens
- Management ofemergencies

General management:

Assess the patient's level of glycemic control before initiating treatment

Maintain a close working relationship with patient's physician

Refer patients with signs & symptoms suggestive of undiagnosed or uncontrolled diabetes to general physician

Antibiotic prophylaxis

Dentists should have in-office glucometer and glucose source

- If patient's HbA1c level is>11-12%
- in case If there are signs of recurrent intraoral bacterialinfections

Specific management:

- Use of epinephrine in LA is not contraindicated -- Promotes better anaesthesia Lowers amount of endogenous epinephrine released in response to pain and stress-- Endogenous epinephrine elevate blood glucoselevels
- Oralcandidiasis
- Management of Recurrent herpes simplexvirus
- Management of burning mouthsyndrome
- Surgicalconsiderations
- Periodontal diseasemanagement
- Oral disease management withcorticosteroids

Conclusion

Diabetes mellitus is a metabolic condition affecting multiple organ systems. The oral cavity undergoes changes that are related to the diabetic condition, and oral infections may adversely affect metabolic control of the diabetes. Hence, Oral healthcare professional plays a crucial part of the health care team in screening and monitoring of patients with Diabetes Mellitus.
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