

Dental Manifestations in Diabetic and Non Diabetic Patients: A Review

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Abstract:**Aim:**

To make a systemic review of the dental manifestations in diabetic and non diabetic patients.

Objective:

To have the better knowledge about the dental manifestations in diabetic and non diabetic patients.

Background :

Diabetes mellitus is group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action. Uremic syndrome includes changes in the oral cavity. Typical uremic oral manifestations include dry mouth, taste change, and uremic odor. So this review helps us to study the variations of dental conditions in both diabetic and non-diabetic patients.

Reason:

To understand and create the awareness about the dental and the oral Manifestations of diabetic and non diabetic patients.

Keywords:

Education package, chronic renal failure, haemodialysis, salivary PH, oral manifestations.

INTRODUCTION:

Diabetes mellitus occurs due to the body's inability to produce insulin. There is lack of balance between the need and production of insulin in this disease. The prevalence of diabetes in 32 countries shows that incidence has increased from 4% in 1995 to 5.4% in 2015 and the number of people with diabetes will increase up to 122% [1]. Diabetic patients show a higher prevalence of oral problems, dental caries, xerostomia, periodontal disease, sensory disorders, problems with taste, salivary gland stones, infections such as oral candidiasis and mucosal lichen planus. Accordingly, the number of diabetics will reach 300 million in 2025 from 135 million people in 1995.

Because of the possible relationship between periodontal diseases and diabetes mellitus, maintaining appropriate oral health in diabetic patients is important. Oral and dental health improves quality of life of affected patients and plays an important role in nutrition and careful control of glucose [2]. Diabetes is characterized by hyperglycemia, insulin resistance, absolute or relative insulin deficiency, hyperglucagonemia, increased hepatic glucose production and frequently accelerated gastric emptying and obesity .

There are two types of diabetes type(1) insulin dependent diabetes. And Type(2) non insulin dependent diabetes .Additional sets of diabetics include Gestational diabetes mellitus which affects approximately 3% to 5% of the pregnancies and the other conditions [3]. type(2) diabetes is most prevalent compared to type(1) . Approximately 90 to 95% of the people affected by the Type(2) diabetes . [4]

Prevalence of type (2) diabetes is positively associated with the age and minority status. Among the people 65 years or older diabetes prevalence is 3.5 times more greater than the prevalence of the all people of all ages. [3]

The purpose of the report is to review the interrelationship between the dental manifestations in the diabetic and the non diabetic patient.

COMMON MANIFESTATIONS SEEN IN NORMAL PATIENT:

The Dental manifestations is classified into two types:

Subjective findings

Objective finding

Subjective findings:

The subjective findings are involved in the dry mouth, taste change, and the tongue or mucosal pain. To access the subjective findings the patients are asked questions regarding the symptoms [5] .

Objective findings:

Objective findings that were included are uremic odor and the tongue coating, mucosal petechiae, or ecchymosis and the ulceration. Uremic odor are observed by smelling the odor when the patients was talking. [5]

Dental manifestations was recorded for the incidence of caries using mouth mirror and probe. The decayed tooth was recorded as the missing tooth and the filling tooth. All 28 tooth are examined except the third molar. [6]

MANIFESTATIONS SEEN IN DIABETIC PATIENTS:

Diabetes mellitus (DM) is one of the most frequent pathologies that dentists encounter, due to its high prevalence worldwide. It is diagnosed by the repeated obtaining of fasting plasma glucose levels of 126 mg/ dl or higher, or hemoglobin of 6.5% or higher. Diabetes especially [7] if it is not well controlled brings with it a greater risk of periodontal disease, which is the most frequent complication. [11]

For dental treatment, the type of diabetes suffered, the treatment given for the diabetes mellitus (DM) is one of the most frequent pathologies that dentists encounter. Its clinical importance springs from the possible occurrence of acute complications, whose severity could mean an immediate risk for the diabetic patient's life and require

urgent diagnosis and treatment. [8] disease, and the glycemic control status of the patient. It is chronic disorder characterized [9] by:

Hyperglycemia

Major abnormalities in carbohydrate, protein, and fat metabolism

Marked propensity to develop relatively specific forms of the vascular, renal, ocular, and periodontal disease and its other complications. [10]

CLASSIFICATION OF THE DIABETES MELLITUS :

Primary diabetes mellitus,
Secondary diabetes mellitus,
Gestational diabetes mellitus.

Primary diabetes mellitus :

Insulin dependent diabetes mellitus

Non-insulin dependent diabetes mellitus .

Secondary diabetes mellitus :

pancreatic disease

Insulin receptor abnormalities

Endocrinopathies

Malnutrition

Complication if the surgery.

Gestational diabetes :

It is defined as the any degree of the abnormalities that mainly occur during the pregnancy women and it is due to the glucose tolerance .[12]

Treatment :

Only Diet.

Diet with insulin

Diet with oral hypoglycemic drugs.

Dental manifestations and its complications:

Periodontal disease

Fungal disease

Dental caries

Xerostomia

Burning mouth sensation

Premature tooth loss.

Delayed healing

Osteomyelitis .

Drugs used in diabetic patients:

Sulphonurea

Biguanides

α -Glucosidase Inhibitors

Manifestations seen in non diabetic patients:

Tongue abnormalities.

Salivary gland changes

Mucosal disorder

Healthy oral mucosa

Oral candidiasis

Oral lichen plan

Lichenoid drug reactions

Salivary gland changes:

The oral manifestations of diabetes in the salivary glands include sialoadenosis or noninflammatory, non-neoplastic enlargement of the parotid salivary glands, [13,14,15] decreased salivary flow rates [17] and

changes in salivary composition and it is more common in patient. [16,18,19]

Mucosal disorder:

These disorders are related to chronic salivary hypofunction and to the generalized immune dysfunction seen in diabetic patients. [20,21,22]

Tongue abnormalities:

Complete or patchy atrophy of the tongue papilla, resulting in the appearance of a "bald" tongue is also more common in diabetic patients. Focal areas of atrophy may indicate an infection with candida organisms. This fissuring may be the result of a chronic low salivary flow rate, which alters the environment in the oral cavity such that slow-healing soft tissues are more easily traumatized than in nondiabetic patients. [20] A unique condition in which an atrophic "bald" spot is located at the midline, posterior surface of the tongue, anterior to the V-shaped circumvallate papillae, is called median rhomboid glossitis [23]

Healthy oral mucosa:

The oral mucosa is normally protected by saliva when it is adequate in amount and quality. Saliva provides lubrication, cleansing, pH buffering, antimicrobial proteins such as secretory IgA, and aggregation and clearance of bacteria. [24] A health of the oral mucosa is also maintained by good nutritional status [11] and adequate oral hygiene practices.

Oral candidiasis:

Candidiasis may also affect the palatal, buccal, or labial mucosa. Denture stomatitis is a diffuse redness of the mucosa occurring under upper dentures in edentulous patients particularly when patients complain that their dentures do not fit well. [25] The most common symptom is a burning sensation, although patients may also be asymptomatic.

Oral lichen planus:

White areas of the mucosa that do not wipe off may be a sign of a condition known as lichen planus, a chronic subepithelial inflammatory disorder that results in a characteristic lacey or patch-like white pattern over reddened mucosa. [20,26]

Lichenoid drug reaction:

Lichen planus or lichenoid reactions may be symptomatic with pain, burning sensation, and sensitivity to acidic foods. They are associated with an increased risk for dysplastic or cancerous transformation. [27].

CONCLUSION:

Periodontal disease is the main oral manifestations in diabetic patients and non-diabetic patients. Furthermore, burning mouth syndrome, the sensation of a dry mouth and and sialadenosis have been attributed to the disease. People should be aware of this and should take care of their health.

REFERENCE :

- 1) Allen Em, ziada. Hm, o'halloran D, clerehgh v, Allen PF. Attitude awareness and oral health related quality of life in patients. *mar* ;(35):218-23.
- 2) Albas k, Al- lazzams, Al- quadairi A. The effect of oral hygiene instructions on diabetic type 2 patients with periodontal disease. *diabetescare* 1997;20:1183-1197.
- 3) Gavin JR., Alberti, Davidson MB, et al. Report of expert committee on medicine 11th Ed p533.

- 4) Kenny SJ, Aubert RE, Geiss LS. Prevalence and incidence of non-insulin dependent diabetes. In national Diabetes Data group. NIH. pub no: 95-1468. 1995 : IV47-IV68.
- 5) Chung SF, Sung JM, Kwo SC, Huang JJ, Lee SY. Oral manifestations in diabetic and non-diabetic uremic patients receiving hemodialysis. 1999; 6:31-47
- 6) World Health Organisation oral health surveys : Basic method (3rd ed) Geneva: WHO 1987; 196-97.
- 7) Lamster IB, Lalla E, Borgnakke WS, Taylor GW. The relationship between the oral and diabetes mellitus 1992: 19; 628-632
- 8) Rozeli M, Esther G, Claudate R. Oral manifestations in diabetes mellitus in controlled and uncontrolled patients. 1998; 3:51-61
- 9) Loe H. Periodontal disease the sixth complication of diabetes mellitus 1993; 16:324-34
- 10) Therapy for diabetes mellitus and related disorders 3rd edition 1995: 13, 836-840
- 11) Meady BL, Cates TW, American Academy of Periodontology. Diabetes mellitus and the periodontal diseases 2000 September (311): 1333-41
- 12) Ojehanon PL, Akhionbane O. Prevalence of undiagnosed diabetes mellitus among dental patients in Edo states Nigeria. Journal of medicine and biochemical research. 2006; 5:24-28.
- 13) L. Gomez structural and functional salivary disorders in type 2 diabetic patients 1994; 21, 161-165.
- 14) Davidson D. A symptomatic parotid gland enlargement in diabetes mellitus 1983; 18:569-564
- 15) Neville BW, Damm DD. Oral and maxilla facial pathology. Allen (M) Bouquet JE, 2002, P.404-405
- 16) Doods MWJ, Johnson salivary alterations in the type 2 diabetes mellitus: role of salivary flow rate and minerals. Oral surgery, endod 1997; 83:465-70.
- 17) Sreebny LM, Yua Green A. Xerostomia in diabetes mellitus. Diabetes care 15:900-904, 1992.
- 18) Mata AD, Marques D, Rocha S, Francisco H, Santos C, Mesquita Mf, Singh. Effects of diabetes mellitus on salivary secretions and its composition in human mol cell bio chem 261:137-142, 2004.
- 19) Chavez EM, Jaylor GW, Barrel LN, Ship JA. Salivary function and glycemic control in older persons with diabetes. Oral surgery, oral med, oral path, oral radiology 89:305-311, 2000
- 20) de Souza Bastos A, Leite AR, Spin- Neto R, Nasser po, Orrico SR. Diabetes mellitus and oral mucosa alterations: prevalence and risk factors. Diabetes Res clin pract 92:100-105, 2011.
- 21) Moore PA, Rossie K, Myers D, Block HM, Orchard T. Insulin dependent diabetes mellitus and oral soft tissue pathologies. Prevalence and characteristics of the candida and candidial lesions. Oral surgery 89:570-576, 2000.
- 22) Saini R, Al-maweri SA, Saini D, Ismail Wm. Oral mucosal lesions in non-oral habit diabetes patients and association of diabetes mellitus. Diabetes Res clin pract 89:320-326, 2010
- 23) Farman AG. Atrophic lesions of the tongue a prevalence study among 176 diabetic patients. J oral pathol 5:255-264 1976.
- 24) Whelton H: Functions of saliva in saliva and oral health, 3rd Ed Edgar M, Daves C, O' mullane D, Eds. London British Association 2004
- 25) Reamy BV, Derby, Bunt CW. Common tongue conditions in primary care. AM fam phys 81:627-634, 2010.
- 26) Romero MA, Seoane J, Varela- Centelles P, Diz- Dios P, Garcia pola MJ. Prevalence of diabetes mellitus amongst oral lichen PLANUS patients; clinical and pathological characters. Med oral 7:121-129, 2002.
- 27) Doods, MWJ, Yeh C, Johnson DA. Salivary alterations in the type 2 (non-insulin dependent) diabetes mellitus and hypertension. Community Dent. Oral epidermal 28:373-381, 2000.