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ORAL HEALTH AND DIABETES MELLITUS-REVIEW

*Dr. Isha Rastogi

Mayo Institute of Medical Sciences and Hospital, Barabanki

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ABSTRACT

Many medical illnesses have taken a toll on human lives. Of these diabetes has been an aggravating and aggressive one. It affects entire body where oral health is also disturbed. Oral picture is full of gingival, periodontal problems, bone lesions and blood disorders. The dentist uses his skill and knowledge to help such patients in society. The aim of this review is to throw light on problems that can be easily diagnosed and treated if oral care is thoroughly sought and rendered.

INTRODUCTION

Of the several menaces that are harming human body, diabetes mellitus is one of them. It not only has general complications but its oral manifestations are also deleterious. The prevalence of diseases increases with age and many geriatric patients have undiagnosed cardiac disease or diabetes. Knowledge of the pathophysiology of these common systemic diseases will be increasingly important to dentists in the future (Catherine Kilmartin 1994).

DIABETES MELLITUS

“Diabetes mellitus” (Ira B. Lamster *et al* 2008) is a group of disorders characterized by elevated levels of glucose in the blood and abnormalities of carbohydrate, fat and protein metabolism. A number of oral diseases and disorders have been associated with diabetes mellitus, and periodontitis has been identified as a possible risk factor for poor metabolic control in subjects with diabetes. It is a chronic, metabolic illness (Danielle Cristina de Lima *et al* 2008). It causes premature renal, ocular, neurological, cardiovascular problems. Type 2 is noninsulin-dependent diabetes. It has higher susceptibility to infections with oral health also being at stake.

ORAL LESIONS

DM in oral region (Straka M 2011) incurs diseases, also called oral complications of DM:

- Gingivitis and periodontitis (previously called paradontosis)
- Periradicular osteolytic inflammatory lesions and their various forms (acute and chronic periapical osteolytic lesions, odontogeneous abscesses, granulomas)
- Loss of teeth
- Xerostomia and changes of saliva composition
- Lesions of oral mucosa and tongue

The increased prevalence (Perrino 2007) of periodontal disease in diabetics is an example of an oral/systemic relationship. The systemic inflammatory (Skamagas *et al* 2008) response generated by inflamed periodontal tissue may in turn exacerbate diabetes, worsen cardiovascular outcomes, and increase mortality. Thus, oral medical and surgical physicians are vital in treating oral pathology, recognizing new cases of diabetes, and counseling people with diabetes to promote oral health. Maria Rozeli S. Quirino *et al* 1995 stated that hyposalivation was the main complaint of diabetic patients, especially in uncontrolled ones. Symptoms such as alteration of taste, burning mouth and signs of salivary gland enlargement, mainly parotid, could be associated to the disease. Erythematous candidosis was the prevalent type observed, associated to the use of upper total denture or

prosthesis (denture stomatitis). Other lesions observed such as varicosities of the tongue and the presence of Fordyce granules was related to age and not to the disease. Hyperplastic lesions were correlated to poor conditions of the total prosthesis, long time of usage and local modifications of the hard support tissues. No pathognomonic lesions of the oral mucosa could be associated to diabetes mellitus. Reduced salivary flow (Danielle Cristina de Lima *et al* 2008) and low salivary buffering affects oral restorative procedures and causes inadequate hygiene of dentures, dry mouth (xerostomia), mastication, speech problems, dry lips and lack of adaptation to dentures. Burning mouth syndrome (BMS) has been attributed secondarily to diabetes, poor glycemic control, and diabetic neuropathy (Paul A. Moore *et al* 2007). Dry mouth (Danielle Cristina de Lima *et al* 2008) is uncomfortable and potentially harmful oral symptom caused by a decrease in salivary secretion rate (salivary gland hypofunction). Elderly population, primarily (due to increased use of drugs have susceptibility to disease). Also erosion and ulceration of mucosa (at base of complete denture) occur with ketonic breath (sweet breath). Blood coagulation results with tissue regeneration times above normal. Some other significant oral disturbances are seen which are periodontal disease, residual bone resorption, periodontal abscess, gingival overgrowth, vascular alterations, and candidiasis.

Also it has been reported (Daniluk *et al* 2006) that the occurrence rate of oral *Candida albicans* in patients with dentures (diabetic and non-diabetic, cancer and non-cancer patients) was higher than in patients without dentures ($p < 0.05$). A study (by B. Dorocka-Bobkowska 1996) showed that the adherence of *C. albicans* to palatal epithelial cells from patients with NIDDM non insulin dependent diabetes mellitus had a significant increase compared with that observed in cells collected from the controls. This study supports the view that NIDDM predisposes to *Candida*-associated denture stomatitis. The oral mucosa (Danielle Cristina de Lima *et al* 2008) also loses resilience (which is necessary for good adaptation of complete denture) and reduced salivary flow causes denture instability. The salivary buffering capacity is decreased. It is responsible for the maintenance of oral pH in order to guarantee tooth integrity and to inhibit acid production by bacterial plaque. Because of this the oral mucosal lesions are more frequent in complete denture-wearing subjects with diabetes.

CLINICAL ORAL HEALTH CHECKLIST FOR DIABETES

Beatrice K. Gangara *et al* 2011 have written that fortunately, most oral tissues can be examined easily and palpated by any health care provider. Good illumination with a lamp, flashlight, headlamp, or otoscope light is important. All surfaces of the tongue should be examined. The tip of the tongue can be gently grasped with a 2-inch cotton gauze square to stabilize and manipulate the tongue, or a wooden tongue depressor may be used to retract, depress, or lift the tongue. The tongue depressor can also be used to retract soft tissues to examine the other oral surfaces, including the buccal and labial mucosa, floor of mouth, hard and soft palate, periodontium, and teeth. White areas on the surface of the mucosa should be wiped with a gauze square to see if they wipe off or indicate an integral mucosal alteration.

CLINICAL IMPLICATIONS are

Most complete denture (Danielle Cristina de Lima *et al* 2008) wearers report a combination of dry mouth sensation and oral, functional symptoms. Low salivary buffering capacity and reduced salivary flow require special care and greater attention on the part of the dentist. A lack of awareness (Awatif Y. Al Maskari *et al* 2011) of oral complications exists among both diabetics and health providers; an understanding of the way diabetes affects oral health -is necessary for both clinicians and patients, therefore research in this field should be encouraged; the need for regular follow-up of patients with diabetes mellitus by both dentist and physicians; the major role that dentists should play in recognising the signs and symptoms of diabetes and their oral complications; advice and counselling for diabetic smokers regarding smoking cessation, and vigorous treatment of oral infection either bacterial or fungal in these patients, especially if they have poor glycaemic control is to be implemented.

Microvascular and macrovascular complications (Bajaj *et al* 2012) of DM were found to be significantly higher among diabetics with oral diseases. The presence of oral manifestations in patients of DM indicates poorly controlled glycemic status and requires evaluation to detect long-term complications. Knowledge of oral comorbidity among people with diabetes is generally poor and suggests the need for appropriate health education and health promotion to improve the oral health of diabetic patients. Maura Bruno 2012 emphasized that modest weight loss (7 percent of body weight) and regular physical activity (150 minutes per week) are important in the prevention and treatment of prediabetes and T2DM. Following a carbohydrate-controlled diet that is limited in fat and cholesterol will help patients with T2DM achieve normoglycemia and reduce their risk of developing diabetes complications. M.R. Gillis 2010 gave 5 key elements for the treatment strategy:

Education: Develop curriculum resources for diabetes care providers and oral health care providers and create inter professional learning experiences to foster an interdisciplinary approach to diabetes care. Develop educational resources for individuals with diabetes on the importance of oral health in diabetes management.

Dissemination: Provide effective and efficient means of distributing educational resources to professionals, the public, governments, the media and industry. Use multiple methods of delivery, including print and electronic means, to facilitate distribution.

Advocacy: Reduce the disparities faced by the diabetes community in accessing oral health care. Identify barriers and develop strategies and programs to meet the oral health care needs of individuals with diabetes. Work with industries that influence health behaviour to reduce the effects of modifiable risk factors.

Navigation: Identify key stakeholders, such as national dental and diabetes organizations, who have an inherent interest in oral health-diabetes initiatives to advance this often overlooked aspect of diabetes management. Secure financial support through public and private sources to launch and

sustain programs in health promotion, prevention and primary care.

Guidance: Monitor health indicators, undertake a periodic review of evidence and encourage knowledge translation in order to provide sound recommendations to legislators for health policy development.

Conclusion

Diabetes mellitus is a devastating medical illness in itself. Proper care of overall body is mandatory. As the mouth is the mirror of all diseases, it should be carefully examined and diagnosed. The dentist is the best person who can help to lessen the problems associated with such an endocrine, non communicable disorder.

REFERENCES

- Danielle Cristina de Lima *et al* 2008. Oral manifestations of diabetes mellitus in complete denture wearers. *J Prosthet Dent* 2008; 99:60-65.
- B. Dorocka-Bobkowska *et al* 1996. Non-insulin-dependent diabetes mellitus as a risk factor for denture stomatitis. *Journal of Oral Pathology & Medicine*, 25: 411-415.
- Paul A. Moore *et al* 2007. Burning mouth syndrome and peripheral neuropathy in patients with type 1 diabetes mellitus. *Journal of Diabetes and its Complications*. Volume 21, Issue 6, Pages 397-402.
- Catherine M. Kilmartin 1994. Managing the medically compromised geriatric patient . *The Journal of Prosthetic Dentistry*. Volume 72, Issue 5, Pages 492-499.
- Ira B. Lamster *et al* 2008. The relationship between oral health and diabetes mellitus. *J Am Dent Assoc*; 139:19S-24S.
- Daniluk T *et al* 2006. Occurrence rate of oral *Candida albicans* in denture wearer patients. *Advances in Medical Sciences*. Vol. 51, suppl 1, page 77-80.
- Maria Rozeli S. Quirino *et al* 1995. Oral Manifestations of Diabetes Mellitus in Controlled and Uncontrolled Patients. *Braz Dent J*; 6(2): 131-136 .
- Straka M 2011. Oral manifestations of diabetes mellitus and influences of periodontological treatment on diabetes mellitus. *Bratisl Lek Listy*; 112(7):416-420.
- Awatif Y. Al Maskari *et al* 2011. Oral Manifestations and Complications of Diabetes Mellitus A review. *SQU Medical Journal*, Volume 11, Issue 2, pages 179-186.
- Bajaj S *et al* 2012. Oral manifestations in type-2 diabetes and related complications. *Indian J Endocr Metab*; 16:777-9.
- Beatrice K. Gangara *et al* 2011. Non periodontal oral manifestations of diabetes- a framework for medical care providers. *Diabetes Spectrum*, Volume 24, Number 04, pages 199-205.
- Maura Bruno 2012. The integration of diet and nutrition lifestyle management strategies into the dental office visit for diabetes risk reduction and management. *The Journal of the American Dental Association*; 143, 1320-1323
- M.R. Gillis 2010. A Place for oral health in diabetes management. *JCDA*, Vol. 76, No. 2, 1-3
- Skamagas M *et al* 2008. Update on diabetes mellitus: prevention, treatment, and association with oral diseases. *Oral Dis*; 14(02):105-14.
- Perrino MA 2007. Diabetes and periodontal disease: an example of an oral/systemic relationship. *N Y State Dent J*; 73(05):38-41.
