



Gum Health and Diabetes-relationship Between the Two Conditions

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Received: November 03, 2021

Published: January 01, 2022

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Abstract

Diabetes mellitus is a common problem in our day to day life. It is very much responsible for body damage. Likewise, oral health is not just limited to oral cavity only. It is associated with systemic health also. Periodontitis or infection of supporting tooth tissues is considered as the sixth complication of diabetes mellitus. It follows a two way relationship with diabetes. Gum health can be a key health indicator in diabetic individuals due to presence of abscesses and poor wound healing. There can be chances of halitosis also. Similarly diabetic individuals can have periodontal conditions like clinical attachment loss and bone destruction. So in both the conditions there is a need to develop a comprehensive outlook to treat both the conditions in a best way.

Keywords: Diabetes; Oral Health; Periodontitis; Abscess; Infection

Introduction

Diabetes mellitus is a chronic disease characterized by hyperglycaemia and insulin resistance. The 3 classic symptoms –Polydipsia (excess thirst), polyphagia (excess Hunger) and Poly-urea (excess urination) are characteristic of high blood sugar. In addition there are general body symptoms like skin infections (Candidal predominantly), Xerostomia (dry mouth due to excess thirst), impaired wound healing, wasting of muscles and mental confusion (caused due to diabetic ketoacidosis). Development of insulin resistance or decreased capacity of insulin (in pancreas by beta cells) is the cause of Diabetes Mellitus. It is a common problem found in developing countries like India. If we exclude general factors like stress, life style, genetic predisposition and host susceptibility, oral diseases come along as an important risk factor for diabetes mellitus category.

Oral health and diabetes association

Oral health is usually avoided by all of us since the impact is not known to us. Oral health is very important for maintenance of systemic health. We mostly are aware that diabetes mellitus has 5 major complications including Retinopathy (eyes), Nephropathy (Kidney), Cardiac myopathy (heart), Neuropathy (nerves) and En-

cephalopathy (brain) but Oral disease (especially Periodontitis) is its sixth complication also. Both are related in a two-way manner. Periodontitis is basically inflammation of gingiva (gum) and supportive tooth apparatus (bone and ligament). This disease slowly and slowly destroys the connective tissue of gum lining and internal matrix of bone. This disease has many variants ranging from aggressive periodontitis to refractory periodontitis among which chronic periodontitis and refractory could be associated with diabetes mellitus.

Pathogenesis

Diabetic individuals have the preponderance to develop periodontal abscesses due to weakened immunity. Presence of certain inflammatory markers like Prostaglandins and Matrix metallo-proteinases are considerably higher in both diabetes and periodontitis which are responsible for both tissue destruction and weakened host immunity. Even periodontitis is an etiological agent for diabetes because it causes increase in deposition of AGEs or advanced glycation-end products. They are nothing but end products after body metabolism of glucose and related metabolic products. These are responsible for affecting the insulin resistance and causing diabetes.

Diagnosis

Diabetic individual has lot of clinical findings. These individuals often complain of bad breath or halitosis. This halitosis is acetone type in nature. Almost all the features of chronic periodontitis can be found like Clinical attachment loss (causing root exposure i.e. gingival recession and deepening of sulcus popularly called as periodontal pocket), moderate to severe bone loss (horizontal or vertical) and tooth mobility. Even due to weaken body metabolism there can be chances of refractory periodontitis-a condition characterized by persistent dental infections which are not resolved by antibiotic therapy. Not only Periodontitis but dental caries too can be found in diabetic individuals due to xerostomia or decreased salivation. This caries can be rapidly progressive also. Even individuals have greater amount of bone loss as compared to others.

Treatment

Treatment involves combination therapy involves both medications and mechanical therapy. Mostly narrow spectrum and broad spectrum antibiotics (in some cases) are used concurrently to prevent progression of infection and support health of tissues. Oral prophylaxis is routinely done along with symptomatic treatment. For mobility splinting is used, root exposure is treated with soft tissue grafts while bone loss is treated with augmentation and hard tissue grafts. Presence of abscess is treated with incision and drainage (with professional recalls) while both curettage and flap surgery are done to debride gingival infections. Fixed partial dentures and Implants are commonly employed in replacing missing teeth while removable prosthesis is avoided due to presence of exaggerated bone loss. Also number of professional recalls are increased to observe trends in healing since diabetic individuals have very slow or delayed healing.

Complications

Periodontal abscess spread rapidly in diabetic individuals. These abscesses may give rise to Ludwig's angina and space infections. Both these conditions are very fatal for human beings because they cause respiratory failure and finally death. So it is a considerate point during treatment of diabetic individual. Another problem is excess amount of bone loss. No doubt that with advancing age amount of new bone formation becomes less than amount of bone resorption, in diabetic individuals this bone loss is more than normal individual. This creates a big problem for removable partial denture since it becomes loose after every 6-12 months. Hence, fixed prosthesis is selected in these cases. Outmost care is taken to provide least trauma to tissues during surgery as healing pattern is delayed in diabetic individuals.

Precautions

Dental treatment is not contraindicated in diabetic individuals but precautions are required during implant placement and periodontal surgery. Blood sugar needs to be controlled during surgery since delayed healing can cause septicaemia. Another factor is rapid development of hypoglycaemia (low blood sugar) during dental procedure. Hence antibiotic prophylaxis is done sometimes preoperatively and patients are always advised to have some or light breakfast before surgery.

Special considerations in COVID-19

Covid-19 a pandemic is causing a lot of havoc to human life. Dentistry is also suffering from it from it. No doubt there are no emergency conditions in dental diseases but diabetic individuals require special attention during this world pandemic for both systemic and dental causes. Medications are of outmost importance during dental abscesses and periodontal pockets. Recalls are not possible hence patients can do self-cleansing by warm saline rinses or povidone-water solution. In addition, video consultations to review the present condition of gingiva should be encouraged to avoid physical visits to clinics since these individuals are prone to develop COVID-19.

Conclusion

So we can now clearly agree both diabetes and oral health are deeply related. Diabetes can trigger the development of oral disease and any oral disease can create septic environment for progression of high blood sugar. Ignoring one can cause fatal emergencies. So there is a need for both clinicians and patients to be totally aware of the relationship between the two and treat them in a systemic manner.

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