

THE PERIO-DIABETES NEXUS

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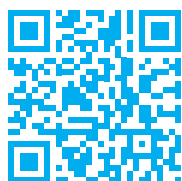
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ABSTRACT

The oral cavity is the gateway to our human system. Whenever the concern regarding the wellness of the general health is mentioned, most often the oral health is overlooked. Scientific evidence over the years has consistently shown the link between periodontal diseases and its impact on the system. Among this perio medicine interface, the increase in prevalence of both periodontal disease and diabetes mellitus has become an issue of global concern. Thus, awareness has to be contrived among health care professionals to treat patients in an effective manner to achieve overall health and well-being.

KEYWORDS: Periodontitis, periodontal medicine, diabetes mellitus

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INTRODUCTION:

Oral health is a window to our overall health and wellbeing. It can serve as a favourable vantage point for detecting the early signs and symptoms of systemic diseases. The effect of systemic conditions on the periodontium is well established. Nowadays, the influence of periodontal diseases on numerous systemic diseases or conditions like cardiovascular disease, preterm low birth weight infants, cerebrovascular disease, diabetes mellitus, respiratory infections, osteoporosis and stress is of abounding concern. This emerging stream in the field of Periodontology is known as periodontal medicine. Of all the above-mentioned conditions, diabetes mellitus has been extensively researched and proven to have a two-way relationship. The International Diabetes Federation has predicted that India would be leading in diabetes prevalence in the world by 2030. Therefore, it is important to know the ways and means by which even the smallest chances of diabetes could be prevented.

PERIODONTITIS AND DIABETES :

Chronic periodontitis is an inflammatory disease which is mainly caused by periodontal pathogens. The presence and accumulation of bacterial biofilm may cause an irreversible damage to the underlying connective tissue and further destruction of the supporting bone. Although the bacteria are initiating agents in periodontitis, the host response to the pathogens is crucial for the progression of disease. Apart from this, numerous risk factors influence the severity, progression of the disease and response to therapy.

Type II diabetes mellitus is a complex metabolic disorder that is characterized by chronic hyperglycemia and altered lipid metabolism.¹ The primary abnormality is either reduced insulin production or impaired insulin action or a combination of both.

The relationship between periodontitis and diabetes mellitus has been extensively investigated over the past few decades and periodontitis has been considered as the sixth complication of diabetes mellitus.

Diabetes affects oral tissues and brings about

greater periodontal destruction; but many studies have now revealed that periodontal disease leads to poor glycaemic control. In a diabetic patient, though periodontal pathogens dominate, most of the damage to the periodontium occurs by exaggerated host response and the formation of AGE (Advanced Glycation Endproducts) which brings about increased capillary thickening and thus poor wound healing.³ Whereas, in a periodontitis patient, the excess production of inflammatory mediators leads to increased insulin resistance, which is of concern. Thus, it was predicted that a two-way relation exists between the two.

DISCUSSION :

The metabolic defects that contribute to the development of type II diabetes mellitus include an inefficiency of islet β cells to recoup for high glucose levels that are associated with exorbitant food intake, increased glucagon secretion, impaired expansion of subcutaneous adipose tissue, inflammation of adipose tissue, elevated endogenous glucose production and the development of peripheral insulin resistance.⁴

Research has put forth that diabetes is a risk factor for periodontal disease, because it has significant impact on the bone in periodontal diseases. Mealey et al in his study concluded that diabetic patients had a three-fold higher risk of periodontal disease compared with non-diabetic patients after adjusting for age, sex and other confounding factors.⁵ Diabetes mellitus as discussed earlier is a systemic disease associated with conditions that may affect the quality of life. There can be damage to the nervous system, retina, cardiovascular and renal systems. Apart from these secondary complications, research done by Philstrom et al has shown an increased risk of periodontal disease or its greater severity in diabetic patients.⁶ Apart from this, studies on Pima Indians in Arizona by Shlossman M et al⁷ showed greater loss of periodontal attachment and bone loss in diabetics compared to non-diabetic individuals within different age groups, thereby suggesting a possible underlying mechanism between the two.

Evidence for improvement in glycemic levels after periodontal treatment comes from 2 Randomised Controlled Trials (RCT), one such trial was conducted in 1997 by Grossi et al⁸, who showed that periodontal therapy when combined

with systemic antibiotics reduced HbA1c levels in diabetic patients at 3 months. Another Randomised controlled trial (RCT) was conducted in 2018 by D'Aiuto et al⁹, who found that intensive periodontal therapy improved HbA1c levels at 12 months. Thereby showing, effective periodontal treatment helps in the stabilization of serum glucose levels.

However, these results must be interpreted with caution, since the vast majority of studies do not account for patients' medication and their management of diabetes and considering that these medications are often changed and adjusted, possibly together with changes in lifestyle during the study period might have contributed to the results.

Despite the mixed results, AAP(American Academy of Periodontology) Workshop has stated that periodontal disease has a dose dependent negative impact on glycemic control in diabetic patients and evidence of increased risk of diabetes onset in periodontal patients.¹⁰ Thus it is of utmost importance that as dental professionals we must inculcate proper periodontal maintenance especially in diabetic patients, as research has shown that periodontitis was significantly higher in diabetic patients compared to non-diabetic patients.

CONCLUSION :

This bidirectional nexus of periodontitis and diabetes mellitus makes diabetes a disorder of relevance not only to patients seen in our dental office but also to dental professionals. So it is important to raise awareness in both medical and dental fields to refer diabetic patients to the dental professional for periodontal diagnosis and if required treatment. Thus, carefully treated periodontal disease will have a positive effect on the general health of patients with diabetes mellitus and other systemic diseases.

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Nil

CONFLICTS OF INTEREST:

There are no conflicts of interest.

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