Status of periodontal health in patients with type 2 diabetes mellitus at a teaching hospital of North India

Sir,

Both type 2 diabetes mellitus and periodontal disease are common diseases in India. Asian Indians have a racial predisposition that makes diabetes epidemic in our country.[1]

Periodontitis is a chronic inflammatory disease characterized by periodontal pocket formation, loss of connective tissue attachment and alveolar bone resorption which eventually results in tooth loss. In recent years, a biological link has been established between the two diseases and periodontal disease has been cited as the sixth complication of diabetes mellitus after microangiopathy (including neuropathy, nephropathy and retinopathy), macrovascular disease and delayed wound healing.[2] It has been a well-recognized fact that periodontal disease is commoner and severe in patients with diabetes mellitus and becomes worse with progression of diabetes.[3] Hyperglycemia impairs gingival fibroblast synthesis, resulting in the loss of periodontal fibers, pocket formation, loss of connective tissue attachment and alveolar bone resorption.[4] In addition, advanced glycation end product accumulation in the periodontium affects phagocytic migration and activity of polymorphonuclear and mononuclear phagocytic cells, leading to establishment of more pathogenic subgingival flora and consequent periodontal damage.[5]

Many investigators have suggested the possibility of bidirectional relationship between the two diseases, proposing that not only diabetes mellitus increases periodontal disease but also the presence of periodontal disease raises the risk of development of diabetes by inducing insulin resistance and worsens glycemic control and is therefore responsible for other complications of diabetes.[6-8]

Diabetes mellitus and its complications are major burden on health care resources. Therfore, it is important to know about the association of the two diseases of public health importance. There is paucity of Indian literature on this issue and not many properly designed population surveys or cross-sectional studies are available in our population. There is suboptimal awareness among the physicians and patients about this complication of diabetes. We undertook this study to observe the prevalence of periodontal disease in our patients with type 2 diabetes, its relation with duration, glycemic control and other chronic complications of diabetes.

In a cross-sectional study conducted between January and December 2010, we included 200 patients with type 2 diabetes mellitus. Periodontal assessment was done by measurement of probing depth and clinical attachment loss (CAL). Patients were classified as no periodontitis when there was no CAL or bleeding on probing,mild periodontitis when CAL was≥1mm in ≥2 teeth, moderate periodontitis[9] and severe periodontitis[10] when more advanced destruction was present.

We excluded those patients who had history of smoking, pan masala/tobacco chewing, antimicrobial therapy within 1 month, patients on antiepileptic/immunosuppressive agents, pregnant women or patients who never used to brush at least once daily.

The characteristics of the patients are shown in Table 1. Prevalence of periodontitis was observed in 82% patients. Table 2 shows periodontal disease according to glycosylated hemoglobin, and presence of co-morbidities has been shown in Table 3. Mild periodontitis was present in 46%, moderate in 27% and severe in 9% patients. Age, duration of diabetes, macrovascular and microvascular complications (neuropathy, nephropathy and retinopathy) showed positive correlation in univariate analysis, while gender, body mass index (BMI), glycemic control, hypertension and dyslipidemia had no correlation with the periodontal disease status. In multivariate analysis, only duration of diabetes was significantly associated with the presence of severe periodontal disease. Although no correlation could be demonstrated between periodontal disease and glycosylated hemoglobin, the presence and severity of periodontal disease had definite positive correlation with chronic complications of diabetes. Since these complications are related to long-term poor glycemic control, it can be extrapolated that it will also have an impact on periodontal health.

Type 2 diabetes mellitus is a growing health concern in our country. There is definite evidence that presence of type 2 diabetes leads to poor periodontal health and risk increases with duration of diabetes and presence of other chronic complications of diabetes. There is a need to make physicians, dentists and patients more aware of this complication of diabetes mellitus. Oral health care should be an integral part of comprehensive diabetes management from the outset.

Table 1: Characteristics of study patients with type 2 diabetes mellitus (N=200)

Characteristics	
Age (years)	51.94±7.75
Clinical attachment loss in mm (CAL)	3.65±2.4
Duration of diabetes (years)	7.8±4.6
Glycated hemoglobin (%)	8.14± 0.8
Body mass index (kg/m^2)	25.6± 1.83
Periodontal disease prevalence (%)	82%

Data are mean±SD

Table 2: Prevalence of periodontal disease according to glycemic status

HbA1c	Total (n= number of patients)	Mild periodontitis	Moderate periodontitis	Severe periodontitis
<7%	n=11	7	4	-
7-8.5%	n=105	63	29	13
>8.5%	n=47	23	20	4

Table 3: Prevalence of co-morbidities and diabetes-related complications in patients with type 2 diabetes mellitus (N=200)

Name of the complication	Prevalence (%)
Hypertension	61
Dyslipidemia	89
Macrovascular complications	28.5
Retinopathy	36
Nephropathy	26
Neuropathy	44.5
Foot ulcers	4

Ritu Karoli, Jalees Fatima, Roshan Jafri[1], Zeba Siddiqi, Vaibhav Shukla

Departments of Medicine and [1]Dentistry, Era's Lucknow Medical College, Lucknow, Uttar Pradesh, India

Corresponding Author: Dr. Ritu Karoli, 255/100, Kundari Rakabganj, Lucknow – 226 003, Uttar Pradesh, India. E-mail: ritu.karoli@rediffmail.com

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