

PERIODONTAL DISEASES IN ASIAN-INDIAN DIABETICS — A STUDY FROM SOUTHERN INDIA

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ABSTRACT

Subjects with diabetes are more prone to develop periodontal diseases (POD). There is a lack of such data from India. This study was done to evaluate the profile of dental disease in Indian diabetic subjects with a special emphasis on the presentation of POD. A total of 704 (male 425, female - 279), with a mean age of 50.5 ± 10.4 years and a mean diabetic duration of 8.2 ± 6.5 years were analysed. The common presenting complaints were pain (7.2%), swelling (12.6%), caries (48.6%), bleeding gums (7.5%) and hypersensitivity (7.5%). None of the subjects in the study presented with any injury. POD was present in 87.2% and all of them had calculus. Missing teeth were present in (n=432) 61.4%. Mobility was present in 52.1%. While mobility and loss of teeth showed an increasing trend with increasing age, POD showed a decreasing trend with age. POD was not significantly related to the HbA_{1c} values, or duration of diabetes. There is a high prevalence of POD among Indian type 2 diabetic subjects. This emphasizes the need for education regarding oral hygiene.

KEYWORDS: Periodontal disease, Diabetes mellitus; Asian Indians.

INTRODUCTION

Subjects with diabetes are more prone to develop periodontal diseases (POD) [1-3]. There are a number of studies in the European population regarding POD in diabetes [1,2]. There is a lack of such data from India. Epidemiological studies in India have shown that prevalence of diabetes is high and is increasing, especially in the urban population [4-7]. It has increased from 5% in 1986 [6] to 8.2% in 1992 to 11.4% [5] in 1997 among the adults in urban areas [4]. Data on the vascular complications of diabetes in type 1 and type 2 diabetes are available [8-9], but there is a lack of data on POD in Indian diabetic subjects. This study was taken up to evaluate the profile of dental disease in Indian diabetic subjects with a special emphasis on the presentation of POD.

MATERIAL AND METHODS

All type 2 diabetic patients seen at the hospital during May 1999 to May 2000 presenting with complaints related to dental diseases were studied. The total number was 704 (male 425, female-279), with a mean age of 50.5 ± 10.4 years and a mean diabetic duration of 8.2 ± 6.5 years. The presenting complaints were recorded. They were examined for different abnormalities.

Definition of the abnormalities

Gingivitis: Inflammation of the gingiva (gums) and bleeding due to inflammation.

Recession: Exposure of the root surface of the teeth by an apical shift in the position of the gingiva.

Attrition: Mechanical wear and tear of the tooth.

Mobility : Loose teeth

Calculus : An adherent calcified or calcifying mass that forms on the surface of the natural teeth and dental prostheses.

Edentulous: Missing teeth

Presence of caries and hypersensitivity were also recorded. POD was defined as the presence of any one or more of the following.

1. Periodontal pockets - increase in the depth of the sulcus (between the tooth and gingiva).
2. Pain related to an abscess and swelling near the pockets with or without exudate.
3. Mobility of teeth due to a chronic destructive process.

In all the study subjects, glycosylated haemoglobin (HbA_{1c}%) was available. Details of age and duration of diabetes were recorded.

Statistical Analysis

Missing teeth, mobility and POD were the commonest abnormalities observed, and were analysed in relation to the HbA_{1c} levels, duration of diabetes and age of the patients. Trend χ^2 was used for analysis.

RESULTS

The common presenting complaints were pain

(7.2%), swelling (12.6%), caries (48.6%), bleeding gums (7.5%) and hypersensitivity (7.5%). None of the subjects in the study presented with any injury. Table 1 shows the abnormalities observed on detailed dental examination. Missing teeth were seen in (n=432), 61.4%. Mobility was the next common abnormality which was present in 52.1% of study subjects.

Table 1: Abnormalities on Dental Examination

Abnormalities	Number	Percentage
Gingivitis	27	3.8
Recession	62	8.8
Attrition	262	37.2
Erosion	11	1.6
Mobility	367	52.1
Calculus	614	87.2
Missing teeth	432	61.4
Periodontitis	614	87.2

Mobility, missing teeth and total POD being common abnormalities, they were analysed in relation to the glycemic control (HbA_{1c} categories), duration of diabetes and age of the patients. Table 2 shows the effect of age on mobility, missing teeth and POD. While the mobility and loss of teeth showed an increasing trend with increasing age, POD showed a decreasing trend with age. POD was present in 94% of subjects aged ≤ 40 years. Table 3 shows the relationship of duration of diabetes with the three specific abnormalities. Loss of teeth showed significantly increasing trend (Trend $\chi^2=10.7$, P=0.001). Loss of teeth and POD were not significantly related to the HbA_{1c} values.

Table 2: Mobility, Missing teeth and Periodontitis in Relation to Age

Age (years)	Mobility		Missing teeth		Periodontitis	
	n	%	n	%	n	%
≤40	43	39	46	41.8	103	94
41-50	134	53.8	144	57.8	216	86.7
51-50	133	56.1	155	65.4	205	86.5
>60	37	53.0	87	80.5	90	83.3
Trend χ^2	4.16		36.3		4.31	
P value	0.04		0.001		0.04	

Table 3: Mobility, Missing Teeth and Periodontitis in Relation to Duration of Diabetes

Duration of diabetes (years)	Mobility		Missing teeth		Periodontitis	
	n	%	n	%	n	%
<5	141	49.3	163	57.0	249	87
6-10	113	54.5	126	61.0	180	87
11-15	77	60.0	78	61.0	116	91
>15	36	43.3	65	78.3	69	83
Trend χ^2	0.05		9.09		0.05	
P value	0.78		0.003		0.83	

Table 4: Mobility, Missing Teeth and Periodontitis in Relation to HbA_{1c} %

HbA _{1c} %	Mobility		Missing teeth		Periodontitis	
	n	%	n	%	n	%
<7	26	38.2	37	54.4	63	92.6
7-8	66	52.8	80	64	111	88.8
>8-9	37	39	54	56.8	95	78.9
>9-10	46	50	56	60.9	81	88.8
>10	192	59.2	205	63.3	284	87.7
Trend χ^2	10.7		0.94		0.20	
P value	0.001		0.33		0.65	

DISCUSSION

Diabetes and periodontal disease (POD) have a complex connection and diabetic subjects are at an increased risk of developing POD [1-3]. The glycemic control is adversely affected by the presence of POD [10,11]. It has also been reported that the severity of POD is directly related to the glycemic status [12]. We observed that POD in diabetic subjects was not significantly related to the duration or the HbA_{1c}. This could probably be due to the fact that a large percentage of them had POD within a short duration of onset of diabetes. It may be that hyperglycemia per se, rather than its severity and duration, was an important risk factor for POD. Most of the studies on diabetes and POD had shown that POD was more prevalent in diabetic than non-diabetic subjects, while a few studies from Finland [13], Sweden [14] and United States (1) failed to do so. In this study, we have not compared the prevalence of POD in the diabetic and nondiabetic groups. The most striking feature of the study was that majority (82.7%) of the diabetic subjects with dental problems had POD. Oral

hygiene has a significant role in controlling dental diseases. Diabetic subjects with hyperglycemia tend to have conditions favourable for bacterial growth. Moreover POD being a preventable disease, mere education and hygienic measures will prevent the occurrence of POD in Indian diabetics. The need for education on dental hygiene and care in diabetic subjects is highlighted by the findings of the study.

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