Original Research Paper

Volume-9 | Issue-8 | August - 2019 | PRINT ISSN No. 2249 - 555X

Dental Science

PREVALENCE OF CHRONIC PERIODONTITIS IN INDIVIDUALS WITH A FAMILIAL HISTORY OF DIABETES MELLITUS - AN ORIGINAL RESEARCH

Sneha Suresh* — Assistant Professor, Netaji Subhas Medical College and Hospital, Bihta, Patna. *Corresponding Author

Anshuman Gautam — Reader, Department of Periodontology, DR BR Ambedkar Institute of Dental Sciences, Patna.

ABSTRACT

AIM: Aim of this study was to see if there was a prevalence of chronic periodontitis in individuals with a familial history of diabetes mellitus.

METHOD: A total of 300 subjects were selected aged between 25 and 55 years .Questionnaires were distributed among the participants regarding the familial history of diabetes mellitus and presence of diabetes mellitus with chronic periodontitis.

RESULT: In our present study it was found that the prevalence of chronic periodontitis in individuals with a familial history of diabetes mellitus was highly significant among those who had a history of diabetes than those who did not have a history of diabetes mellitus.

Furthermore, few studies have shown this clinical entity is more prevalent in subjects with a positive diabetic heritage .

However, further studies need to be carried out with a larger sample size to come to a more conclusive result.

KEYWORDS : familial history; chronic periodontitis ; diabetes mellitus

INTRODUCTION:

A great deal of controversy has existed concerning the role of diabetes mellitus in periodontal disease. There are historic reports describing diabetic periodontopathy as a distinct clinical entity. Some studies suggest that the presence of diabetes alters the course of inflammatory periodontal disease resulting in a more severe tissue response to local etiology. Conversely, other reports failed to observe any relationship between these two chronic diseases.

Epidemiologic reports also disclose varying results of incidence, prevalence and severity of periodontal disease in the diabetic population. Classically listed as oral complications in diabetes are xerostomia, periodontal and periapical abscesses, burning or tender mucosa, loose teeth, gingiva of a violaceous hue, vascularopathy and gingival inflammation. As with any of the dermal lesions in the diabetic, the overriding oral problem is infection. Although the signs and symptoms are assigned to the diabetic group, they do not appear uniformly in individuals. Most clinicians would agree that the vast majority of diabetic patients rarely present with any of the aforementioned list of oral complications. However, one does have occasion to see the isolated case of diabetes with fulminating oral infection.

Furthermore, diabetics and individuals genetically predisposed to diabetes (recently reclassified "**Potential Abnormality of Glucose Tolerance**" or Pot AGT) may be found with severe periodontopathies, the etiologies of which cannot be explained by local factors alone. In an attempt to explain this perplexing entity investigators have examined many factors, viz., diabetic control, nutritional variances and such biochemical alterations as tissue glycogen levels and vascularopathies. Since infection and severe inflammation appear to be one of the most unpredictable and devastating complications in the diabetic, attention has been directed to the neutrophilic granulocyte and its role in antibacterial defence. Mowat and Baum (1971) demonstrated a decreased neutrophil chemotaxis index in diabetics with infections. Decreased neutrophil phagocytosis, decreased leukotaxis, and a decreased leukocyte index have been found in diabetic populations. Several studies have shown that a premature rapid periodontitis is coincident in individuals with neutrophil dysfunction.

The objective of this study is to find the prevalence of chronic periodontitis in patients with a familial history of diabetes mellitus.

MATERIALAND METHODS:

300 subjects were selected from the Department of Periodontics, AB Shetty Memorial Institute of Dental Sciences.

Questionnaires were distributed to individuals who have a familial history of diabetes mellitus.

The questionnaire included diet and a history of diabetes mellitus.

Inclusion Criteria :

- A familial history of diabetes mellitus
- Age group between 25 – 55

Exclusion Criteria :

- Any history of systemic diseases other than diabetes mellitus type 2
- Subjects taking any multivitamin supplements since 6 months or mre.

RESULTS:

TABLE : 1

Frequency distribution table showing the history of diabetes mellitus among 300 subjects who have a familial history of diabetes mellitus. It shows that 17 % had a history of diabetes while 83% did not have a history of diabetes mellitus.

	Frequency	Percent
no	249	83.0
yes	51	17.0
Total	300	100.0

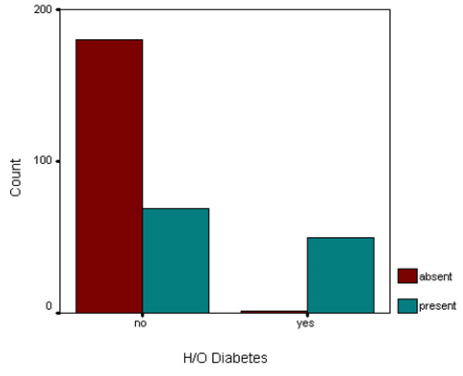
TABLE : 2

Frequency distribution table showing the presence of chronic periodontitis among 300 subjects who have a familial history of diabetes mellitus. It shows that 39.7 % had chronic periodontitis while 60.3% did not have chronic periodontitis.

	Frequency	Percent
absent	181	60.3
present	119	39.7
Total	300	100.0

GRAPH : 1

It shows the association between the history of diabetes and chronic periodontitis among 300 subjects who have a familial history of diabetes mellitus.



DISCUSSION and CONCLUSION:

The results of the present survey show that the prevalence of chronic periodontitis among individuals with a familial history of diabetes mellitus was not significant. However, there was significance seen in the association of chronic periodontitis with those individuals who had a history of diabetes mellitus.

This result is in accordance with other investigations which show a link between diabetes mellitus and periodontitis. Both diseases are thought to share a common pathogenesis that involves an enhanced inflammatory response that can be observed at the local and systemic level. The inflammatory response is mainly caused by the chronic effects of hyperglycemia and specifically the formation of biologically active glycated proteins and lipids that promote inflammatory responses. Periodontal infection represents a complication that may be involved in altering systemic physiology in diabetic patients. Since periodontitis can be more than just a localized oral infection, the effects have been hypothesized to be far-reaching. Severe chronic forms of this disease can result in systemic response to the bacteria and bacterial products that are disseminated due to breakdown of the periodontal apparatus. The interrelationships between diabetes and periodontal disease provide an example of systemic disease predisposing to oral infection, and once that infection is established, the oral infection exacerbates the progression of systemic disease. Accumulation of advanced glycation end products (AGEs) as a result of the chronic hyperglycemic state or diabetes, coupled with the presence of infection and an exaggerated host response, may provide a viable explanation for the clinical outcomes observed in diabetic patients with periodontal disease.

However, a study done by J A McMullen et al showed that the Chemotaxis dysfunction of neutrophils in Pot AGT (Potential for Abnormal Glucose Tolerance) is long lasting or permanent in nature. The transient effects of glucose upon neutrophils such as osmotic alterations or glycosylation of proteins would not be expected in Pot AGT individuals. The presence of decreased neutrophil function in the Pot AGT group is of considerable etiopathologic interest.

Other studies also support that there are biochemical changes taking place at the cellular level in individuals who have diabetic relatives and that these changes occur years before the onset of clinical diabetes.

REFERENCES:

1. Williams, J. B.: Diabetic periodontoclasia . J Am Dent Assoc , 1928,15:523.
2. Zilz, J.: Statistical observations on diabetics and pyorrhea alveolasis. Dent Cosmos , 1915,57: 102
3. Cohen, D. W., Friedman, L., Shapiro, J., Kyle, G. C, and Franklin, S.: Diabetes mellitus and periodontal disease: Two year longitudinal observations. Part I. J Peridontol 1970,41: 709.
4. Berniek, S., Cohen, D. W., Baker, L., and Laster, L.: Dental disease in children with diabetes mellitus. J Periodontol ,1975,46: 241.
5. Sznajder, N., Carrara, J., Rugna, S., and Sereday, M.: Periodontal findings in diabetic and nondiabetic patients. J Periodontol 1978,49: 445.
6. Glavind, L., Lund, B., and Löe, H.: The relationship between periodontal state and diabetes duration, insulin dosage and retinal changes. J Periodontol 1968,34: 341.
7. Hove, K., and Stallard, R.: Diabetes and the periodontal patient. J Periodontol 1970,41: 713.
8. Nichols, C, Laster, L., and Bodak-Gyovai, L.: Diabetes mellitus and periodontal disease. J Periodontol 1978,49: 85.
9. Gottsegen, R.: Dental and oral considerations in diabetes mellitus. NY State J Med 1962,62: 389.
10. Goldman, H. M., and Cohen, D. W.: Periodontia 1973 , 5: 233.
11. Finestone, A. J., and Boorujy, S. R.: Diabetes mellitus and periodontal disease. Diabetes 1967,16: 336.
12. Frantzis, T. G., Reeve, C. M., and Brown, A. L.: The ultrastructure capillary basement membranes in the attached gingiva of diabetic and non-diabetic patients with periodontal disease. J Periodontol 1971,42: 406.
13. Aguilar, L.: Alteraciones ultrastructurales vasculares en la bncia del bnfermo prediabetico. Rev Invest Salud Publica ,1970,30:37.
14. Savin, J.: Bacterial infections in diabetes mellitus. Br J Dermatol 1974,91: 481.
15. National Diabetes Data Group: Classification and diagnosis of diabetes mellitus and other categories of glucose intolerance. Diabetes 1979,28: 1039.
16. Mowat, A. G., and Baum, J.: Chemotaxis of polymorphonuclear leukocytes from patients with diabetes mellitus. Engl J Med 1971,284: 621.
17. Phair, J.: Neutrophil dysfunction in diabetes mellitus. J Lab Clin Med 1975,85: 26.
18. Miller.E., and Baker, L.: Leukocyte functions in juvenile diabetes mellitus: Humoral and cellular aspects. J Pediatrics 1972,81: 979.
19. Hill, H,, Sauls, H., Dettloff, J., and Gine, P.: Impaired leukotactic responsiveness in patients with juvenile diabetes mellitus. Clin Immunol Immunopathol 1974,2: 395.
20. Genco, R. J., and Cianciola, L.: Relationship of the neutrophil to host resistance in periodontal disease. Alpha Omegan 1977,10: 31.
21. Cianciola, L., Genco, R. J., Patters, M., McKenna, J., and van Oss, C: Defective polymorphonuclear leukocyte function in human periodontal disease. Nature 1977, 265: 445.
22. Cianciola, L., Bernat, J., Park, B., and Genco, R. J.: Periodontal disease in juvenile diabetics. IADR Abstr. 1978.
23. Molenaar, D. M., Palumbo, P., Wilson, W. R., and Ritts, R.: Leukocyte Chemotaxis in diabetic patients and their nondiabetic first degree relatives. Diabetes 1976,25: 880.
24. Camerini-Davalos, R., Caulfield, J. B., Rees, S. B., Lozano- Castaneda, O., Nladjian, S., and Marble, .: Preliminary observations on subjects and prediabetes. Diabetes 1963,12: 508.
25. Jackson, W. P. U.: Present status of prediabetes. Diabetes 1960,9: 373.
26. Camerini- Davalos, R ., and Cole, H. S.: Vascular and Neurological Changes in Early Diabetes. New York, Academic Press, 1973.
27. McMullen, J. ., Legg, M., Gottsegen, R., and Camerini-Davalos, R.: Microangiopathy within the gingival tissues of diabetic subjects with special reference to the prediabetic state. JAm Soc Periodont1967,5: 61.
28. Van Dyke, T., Horoszewicz, H., Cianciola, L., and Genco, R. J.: Intrinsic neutrophil Chemotax is dysfunction and humoral chemotactic factor inactivator in localized juvenile Periodontitis. Infect. Immun 1980,27: 124.
29. Rateitschak, R., Dossenbach, W., and Muhlemann, H.: Schweis. Mschr Zahnheilk 1966,76:621.
30. Van Dyke, T., Reilly, ., Horoszewicz, ., and Gagliardi,and Genco, R. J.: A rapid, semiautomated procedure for the evaluation of leukocyte locomotion in the micropore filter. J Immunol Methods 1979, 31: 271.
31. Snedecor, G. W., and Cochran, W. G.: Statistical Methods, ed 6, Ames, Iowa University Press, 1973.