International Journal of Research in Health and Allied Sciences

Journal home page: www.ijrhas.com

ISSN 2455-7803 Index Copernicus value 2016 = 68.10

Original Article

Assessment of Microflora in Periodontitis Patients: A Microbiological Study

[1]Deepak Kumar, [2]PrabhjotKaur

[1]PG student, Department of Periodontics, [2]Senior Lecturer, Department of Oral Pathology & Microbiology, Desh Bhagat Dental College & Hospital, Punjab

ABSTRACT:

Background: The normal oral flora is in a balance between pathogens and commensals that requires regular cleaning to be maintained. A decrease in oral hygiene is quickly followed by the build-up of oral biofilms on tooth surfaces and, if left untreated, will progress to gingival inflammation and possibly periodontitis, alveolar bone loss, and loss of teeth. Hence; we conducted the present study to assess the microbial flora in periodontitis patients. **Materials & methods:** The present study included assessment of the microbial flora of the periodontitis patients. A total of 20 periodontitis patients were included in the present study. Sub gingival samples were collected from the most pathological site of the patients using sterile periodontal Gracy curette. The collected samples were sent to the laboratory for microbiological investigation where assessment of microbial flora was done based on the method as previously described in the literature.All the results were analyzed by SPSS software. **Results:**In the present study, we included a total of 20 periodontitis patients. A total of 40 samples were obtained from them; 20 pre-treatment and 20 post-treatment. A significant fall in the anaerobic bacterial count was seen in patients after periodontal therapy. **Conclusion:** Anaerobic bacteria play important role in causation of periodontitis.

Key word: Microflora, Periodontitis.

Corresponding author: Dr. Deepak Kumar, PG student, Department of Periodontics, Desh Bhagat Dental College & Hospital, Punjab India

This article may be cited as: Kumar D, Kaur P. Assessment of microflora in periodontitis patients: A microbiological study. Int J Res Health Allied Sci 2018;4(1):17-19.

INTRODUCTION

Periodontitis can be defined as the presence of gingival inflammation at sites where there has been a pathological detachment of collagen fibers from the cementum and the junctional epithelium has migrated apically.[1, 2]The inflammatory response of the periodontal tissues to infection is influenced by environmental factors as well as by genetic factors. The primary microbial factor contributing to periodontitis is a shift in the content of the oral microflora, while the primary immunological factor is the destructive host inflammatory response.[3, 4]

The normal oral flora is in a balance between pathogens and commensals that requires regular cleaning to be maintained. A decrease in oral hygiene is quickly followed by the build-up of oral biofilms on tooth surfaces and, if left untreated, will progress to gingival inflammation and possibly periodontitis, alveolar bone loss, and loss of teeth. It is likely that differences in host-defense mechanisms, including antimicrobial protein profiles, determine whether bacterial colonization progresses to overt disease.[5- 8] Hence; we conducted the present study to assess the microbial flora in periodontitis patients.

MATERIALS & METHODS:

The present study was planned in the department of periodontology of the dental institute and included assessment of the microbial flora of the periodontitis patients. Ethical approval was taken from institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol. A total of 20 periodontitis patients were included in the present study. Clinically diagnosed all new cases of chronic periodontitis were included in the study and patients with history of systemic conditions such as diabetes mellitus, nutritional deficiencies, pregnant woman, antibiotic usage in the last 3 months and patients with history of undergoing any dental procedures in the last 3 months were excluded. We collected the samples twice, one in pretreatment and post-treatment periods after phase I therapy (scaling and root planning [SRP] along with amoxicillin and metronidazole for 1-week). Sub gingival samples were collected from the most pathological site of the patients using sterile periodontal Gracy curette. The collected samples were sent to the laboratory for microbiological investigation where assessment of

microbial flora was done based on the method as previously described in the literature.[9, 10] All the results were analyzed by SPSS software. Chi- square test and student t test were used for assessment of level of significance. P- value of less than 0.05 were taken as significant.

RESULTS

In the present study, we included a total of 20 periodontitis patients. A total of 40 samples were obtained from them; 20 pre-treatment and 20 post-treatment. Mean age of the patients was 52 years. Out of 20, 15 were males and 5 were females. A significant fall in the anaerobic bacterial count was seen in patients after periodontal therapy.

Table 1: Semi-quantitative colony results

Pre-treatment	Post-treatment	t-value	P-value
7.7×10^5	2.1×10^5	3.99	0.02

DISCUSSION

In the present study, we observed a significant fall in the anaerobic bacterial count post-treatment in patients undergoing treatment of periodontitis. Laleman I et al examined the effect of tongue cleaning with a tongue scraper (TS) or toothbrush (TB) in patients with periodontitis. The tongue is a possible reservoir for bacterial (re)colonization of the periodontal tissues in patients with periodontitis. Eighteen systemically healthy, untreated moderate to severe adult patients with periodontitis with some degree of tongue coating were randomly assigned to the use of a TS or TB for cleaning the tongue. Microbial load of the saliva and tongue dorsum, amount of tongue coating and patient perception about tongue cleaning were studied at baseline and 2 weeks later. Two weeks of tongue cleaning with either a TB or a TS, did not influence the microbiological counts, neither in the saliva, nor in the tongue coating, even though tongue coating was significantly less. The patients themselves experienced no differences in breath odour or taste sensation after 2 weeks of tongue cleaning; however, they felt that their tongue was cleaner at the end of the study compared to baseline. No differences could be detected between the uses of a TS vs a TB. In patients with periodontitis, tongue cleaning does not influence the bacterial load in the saliva or on the tongue dorsum.[11]Benachinmardi KK et al undertook the study to know the nature of oral microbiota in chronic periodontitis in this region of India and also the semiquantitative study in pre- and post-treatment group and to determine antibiotic susceptibility pattern for aerobic isolates. The present study was conducted on 60 cases. Material was collected from the subgingival pockets in patients with chronic periodontitis attending the Periodontology, Outpatient Department. Clinical samples were transported to the laboratory in fluid thioglycollate medium. Initially Gram's stain and Fontana stains were done. Aerobic, anaerobic, and microaerophilic culture were put up. Antibiotic sensitivity test was done for aerobic isolates. Sixty samples yielded 121 isolates of which 78.34% were polymicrobial, 11.66% were monomicrobial and oral commensals were grown in 10% cases. Out of 121 isolates 91.74% were anaerobic, 7.43% were aerobic and 0.83% weremicroaerophilic. Fusobacterium species was the most common isolate among anaerobes. Using “paired t-test” “P” value was significant indicating significant reduction in colony count after phase-I periodontal therapy. This study showed that anaerobic bacteria are important cause of chronic periodontitis, along with aerobes and microaerophilic organisms. Fusobacteriumspp, Bacteroides fragilis, Porphyromonas spp and Prevotella intermedia are the most common anaerobic pathogens.[12] Edwardsson S et al presented the composition of the cultivable microbiota colonising periodontal pockets of different depths among 2 patient-groups classified as non-responsive (NR-group; 11 participants) or responsive (R-group; 10 participants) to periodontal treatment. Microbiological samples from three types of pocket (< 4 mm deep A-samples; 4-5 mm B-samples; > 5 mm C-samples) were analysed by cultural methods for putative periodontitis pathogens, microbial groups constituting > or = 5% of the total cultivable flora and opportunistic pathogens. Actinomyces naeslundii, A. israelii, Bacteroides forsythus, Fusobacterium spp, Porphyromonas gingivalis, Prevotella intermedia, Peptostreptococcus micros, anaerobic streptococci and facultative anaerobic streptococci were most prevalent. Actinobacillus actinomycetemcomitans, Staphylococcus aureus, enteric rods and yeasts were less prevalent. The periodontitis pathogens Bacteroides forsythus, Fusobacterium spp, Porphyromonas gingivalis, Prevotella intermedia and Peptostreptococcus micros constituted together (on average) < or = 23% of the viable counts in the A- and B-samples of both patient groups and in the C-samples of the R-group. In the C-samples of the NR-group their mean counts were 45%. Correlations were found between smoking habits and the five pathogens in the C-samples and in pooled pocket depth samples. The results show that groups of periodontopathogens should be considered a causal factor in therapy-resistant periodontitis. Further, smoking and deep pockets can enhance a shift in the balance of the subgingival microflora predisposing a site to disease and a susceptible host may be the pre-requisite to therapy-resistant periodontitis.[13]

CONCLUSION

From the above results, the authors concluded that anaerobic bacteria play important role in causation of periodontitis. However; future studies are recommended.

REFERENCES

1. Daniluk T, Tokajuk G, Cylwik-Rokicka D, Rozkiewicz D, Zaremba ML, Stokowska W. Aerobic and anaerobic bacteria in subgingival and supragingival plaques of adult patients with periodontal disease. Adv Med Sci. 2006;51(Suppl 1):81–5.

2. Aas JA, Paster BJ, Stokes LN, Olsen I, Dewhirst FE. Defining the normal bacterial flora of the oral cavity. J ClinMicrobiol. 2005;43:5721–32.
3. Kuboniwa M, Inaba H, Amano A. Genotyping to distinguish microbial pathogenicity in periodontitis. Periodontol2000. 2010;(54):136–59.
4. Savage A, Eaton KA, Moles DR, Needleman I. A systematic review of definitions of periodontitis and methods that have been used to identify this disease. J ClinPeriodontol. 2009;36:458–67.
5. Gersdorff N, Miró X, Roediger M, Geffers R, Toepfer T, Huels A, et al. Gene expression analysis of chronically inflamed and healthy human periodontal ligament cells in vivo. Dent Res J (Isfahan) 2008;5:5–11.
6. Kinane DF, Peterson M, Stathopoulou PG. Environmental and other modifying factors of the periodontal diseases. Periodontol 2000. 2006;40:107–19.
7. Avila M, Ojcius DM, Yilmaz O. The oral microbiota: Living with a permanent guest. DNA Cell Biol. 2009;28:405–11.
8. Al-Ahmad A, Roth D, Wolkewitz M, Wiedmann-Al-Ahmad M, Follo M, Ratka-Kruger P, et al. Change in diet and oral hygiene over an 8-week period: Effects on oral health and oral biofilm. Clin Oral Investig. 2010;14:391–6.
9. Loomer PM. Microbiological diagnostic testing in the treatment of periodontal diseases. Periodontol 2000. 2004;34:49–56.
10. Mineoka T, Awano S, Rikimaru T, Kurata H, Yoshida A, Ansai T, et al. Site-specific development of periodontal disease is associated with increased levels of Porphyromonas gingivalis, Treponema denticola, and Tannerella forsythia in subgingival plaque. J Periodontol. 2008;79:670–6.
11. Laleman I1, Koop R2, Teughels W1, Dekeyser C1, Quirynen M1. Influence of tongue brushing and scraping on the oral microflora of periodontitis patients. J Periodontal Res. 2018 Feb;53(1):73-79. doi: 10.1111/jre.12489. Epub 2017 Oct 17.
12. Benachinmardi KK et al.Microbial Flora in Chronic Periodontitis: Study at a Tertiary Health Care Center from North Karnataka. J Lab Physicians. 2015 Jan-Jun; 7(1): 49–54.
13. Edwardsson S1, Bing M, Axtelius B, Lindberg B, Söderfeldt B, Attström R. The microbiota of periodontal pockets with different depths in therapy-resistant periodontitis. J ClinPeriodontol. 1999 Mar;26(3):143-52.

Source of support: Nil **Conflict of interest:** None declared