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COMPARISON AND ASSESSMENT OF BACTEREMIA FOLLOWING HAND SCALING AND ULTRASONIC SCALING IN PATIENTS WITH CHRONIC GENERALIZED PERIODONTITIS.

Periodontology

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ABSTRACT

Aim and objectives: This study aims to assess and compare bacteremia after hand scaling and ultrasonic scaling in blood samples of patients with chronic generalized periodontitis.

Materials and methods: A total of 30 patients with chronic generalized periodontitis visiting the department of periodontology, Rajarajeswari dental college and hospital, Bangalore were selected and divided into three groups. Group 1 included 10 blood samples without scaling, group 2 included 10 samples after hand scaling and group 3 included blood samples after ultrasonic scaling. Samples were then cultured in blood agar and total bacterial count was estimated.

Results: The culture showed 10% bacterial growth in hand scaling and 30% bacterial growth after ultrasonic scaling.

Conclusion: The study can be concluded that there is bacteremia in patients with hand and ultrasonic scaling, but comparatively less in systemically healthy individuals.

KEYWORDS

bacteremia, periodontitis, scaling

INTRODUCTION

Bacteremia is a transient, intermittent or continuous presence of bacteria in blood stream, occurs when bacteria enters the blood stream transiently and can be detected by laboratory blood culture techniques. Though bacteremia are transient, it has long been recognized that oral bacteria may cause distant infections. Bacteremia with oral bacteria may play role in pathogenesis of atherosclerosis[1].

Local infection and transient bacteremia due to periodontopathic bacteria can be related to the pathogenesis of the association between periodontal disease and cardiovascular disease by different mechanisms.

Bacteremia frequently occurs after treatment procedures such as extractions, scaling, scaling and root planning, periodontal probing, periodontal surgery, suture removal, orthodontic treatment, restorative dentistry, non-surgical root canal treatment. However, not only professional treatment, but also chewing, subgingival irrigation, and oral hygiene procedures such as tooth brushing and flossing have been reported to give rise to bacteremia.

However, the results showed considerable variability due to the techniques used, timing of blood sample collection, and periodontal status and identification methods for the isolation of microorganisms. Thus, the aim of the study is to assess and compare bacteremia after hand scaling and ultrasonic scaling in blood samples of chronic generalized periodontitis.

MATERIALS AND METHODS

A total of 30 patients (both female and male) with chronic generalized periodontitis visiting the department of periodontology, Rajarajeswari dental college and Hospital, Bangalore were considered. Presence of periodontitis was assessed both clinically and radiographically by Orthopantomogram radiographs. Patients were grouped as follows:

Group 1: 10 chronic generalized periodontitis patients without scaling.
Group 2: 10 chronic generalized periodontitis patients after hand scaling.
Group 3: 10 chronic generalized periodontitis patients after ultrasonic scaling.

Patients in the age group of 30-65 years with chronic generalized periodontitis (CGP), with at least 15 natural teeth present, having bone loss and probing pocket depth of ≥6mm at more than 30%sites and systemically healthy patients were included in the study. The probing pocket depth was measured clinically using William's periodontal probe at all the sites of each tooth.

Exclusion criteria considered were patients with any systemic diseases, patients who received periodontal treatment in last 6 months, smokers, and alcoholics, pregnant and lactating mothers. The study has been approved by the Ethical Committee in Rajarajeswari dental college and hospital Bangalore, Karnataka. Oral and informed consent was obtained from all the participants in the study

Blood was obtained from cubital vein in the antecubital fossa. Prior to each sampling, the site was wiped with isopropyl alcohol to minimize the number of potential skin contaminants, cannulation of the cubital vein was performed, and 3ml of blood was drawn and is transported into BHI bottle. These samples were processed and cultured in blood agar and total bacterial count was estimated.

STATISTICAL ANALYSIS

Descriptive and inferential statistical analysis has been carried out in this study. The results were analysed by using SPSS version 18 (IBM Corporation, SPSS Inc., and Chicago, IL, USA). Results on categorical measurements were presented as frequency (%). Significance was assessed at 5% level of significance. Inferential statistics like Chi-square test/Fischer exact test was used to check the difference between the groups.

Table No. 1: Age Distribution

Age (Years)	W/O Scaling	Hand Scaling	UltrasonicScaling
21-30	2(20)	1(10)	1(10)
31-40	3(30)	3(30)	2(20)
41-50	2(20)	4(40)	4(40)
51-60	2(20)	1(10)	3(30)
>61	1(10)	1(10)	0(0)
Total	10(100)	10(100)	10(100)

P= 0.895
All the three groups were homogeneously distributed
Overall Mean±SD= 43.80±9.97 years

Chart 1: Age distribution

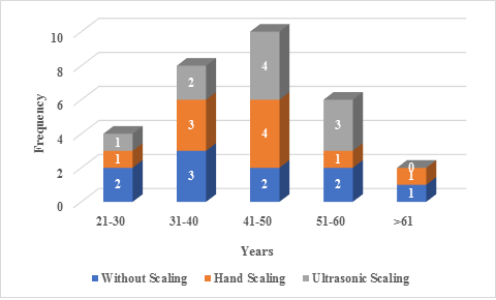


Table No. 2: Gender Distribution

	W/O Scaling	Hand Scaling	Ultrasonic Scaling
Female	2(20)	5(50)	5(50)
Male	8(80)	5(50)	5(50)
Total	10(100)	10(100)	10(100)

P=0.286
All the three groups were homogeneously distributed

Chart 2: Gender distribution

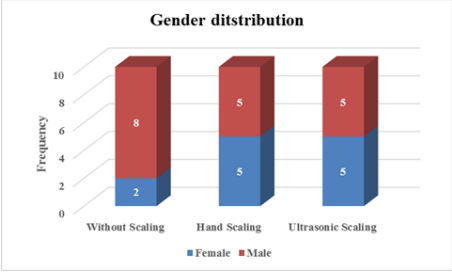
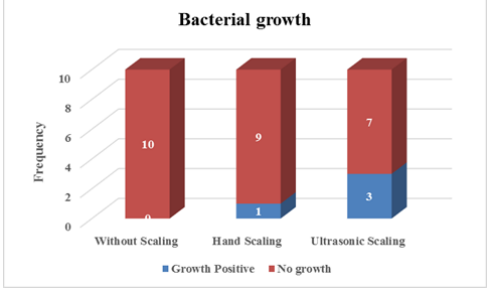


Table 3: Bacterial Growth

	Culture yielded growth of coagulase negative staphylococci after 3 days of incubation N (%)	No growth after 5 days of incubation N (%)
W/O Scaling	-	10(38.46)
Hand Scaling	1(25)	9(34.61)
Ultrasonic Scaling	3(75)	7(26.92)
Total	4(100)	26(100)

P= 0.132
No statistically significant difference in distribution was observed.

Chart 3: Bacterial growth



RESULTS

The study comprised of 30 subjects with groups under examination consisted of same number of patients in each group. [Table 2]. Chi-square test was used to check the difference between the groups. Number of staphylococci in the blood cultures before scaling, after hand scaling and ultrasonic scaling [Table 3]. There was no bacteremia found in group 1 without scaling 10% [1/10] bacteremia was found in group 2 after hand scaling and 30% [3/10] bacteremia was found in group 3 after ultrasonic scaling group.

DISCUSSION

Bacteremia may be defined as transient, intermittent or continuous presence of bacteria in blood stream. Transient bacteremia is been directly related to dental disease and its treatment. This transient bacteremia is associated with acute or chronic oral odontogenic infections, such as Periodontal disease may represent a far greater risk for the development of endocarditis than occasional health-care procedures administered in a professional setting[1].

The objective of this study was to evaluate the presence of bacteria in the bloodstream after scaling in order to know the incidence of bacteremia in periodontitis patients.

Alka et al in 2013 conducted a study and found that 20% bacteremia before scaling and rootplaning and 70% after scaling and rootplaning. In 2005, a study which analyzed patients with periodontitis, reported a frequency of 23% by polymerase chain reaction (PCR) and 13% by culture method aerobic and anaerobic bacteria after full-mouth ultrasonic scaling. A similar study was conducted in 2006 and found 75% aerobic and anaerobic bacteria in periodontitis patients after scaling.

In our study we found no bacteremia in without scaling individuals and found less bacteremia in hand scaling individuals than in the ultrasonic scaling individuals. We also supports the evidence that bacteremia is associated with microorganisms after scaling in chronic periodontitis. Because of prevalence of bacteremia in periodontitis, hand scaling can be done in patients with cardiac diseases, so that they are at lesser risk to atherosclerosis[1].

Limitations of our study is culturing of anaerobic bacteria and newer methods of detection of microorganisms like PCR other than blood culture would have been used for better results.

CONCLUSION

Within the limitations of the study, to the best of our knowledge we can conclude that chances of bacteremia was found in patients with ultrasonic scaling than in patients with hand scaling. Hence it can be concluded that handscaling is a better option in systemically compromised patients.

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