

Frequency of *Staphylococcus aureus* in periodontal abscess –a pilot study

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Abstract: Background: Dental abscess is frequently miscalculated in terms of its morbidity and mortality. The aim of the present study was to screen for the presence of *Staphylococcus aureus* in the periodontal abscess. Materials and Method: Twenty five patients participated in the study. The pus was aspirated from the periodontal abscess with 22 gauge sterile needle and transferred into sterile eppendorf tubes. Isolation and identification of *S. aureus* was performed as per standard protocol. Results: *S. aureus* was isolated from 11 (44%) of 25 patients. All patients showed symptoms of chronic periodontitis. Conclusion: Periodontal abscess with the presence of *S. aureus* may result in substantial burden on individuals and the health-care system; hence, early diagnosis and appropriate treatment are extremely important.

Key words: Dental infection, periodontal abscess, *Staphylococcus aureus*,

Date of Submission: 20-09-2017

Date of acceptance: 06-10-2017

I. Introduction

The acute dental abscess is frequently miscalculated in terms of its morbidity and mortality.^[1] A dental abscess is usually presented with a localized collection of pus associated with a tooth.^[2] Periodontal abscess is the second most common type of dental abscess next to periapical abscess.^[3] Periodontal abscesses are a common indicator of dental disease and are associated with multiple potentially life-threatening complications.^[5] Periodontal abscesses are the result of an infection that has extended deeper into gum areas. If left untreated, a severe tooth abscess may become large enough to perforate bone and extend into the soft tissue ultimately resulting in osteomyelitis and cellulitis respectively. Bacteriological agents implicated in causation of dental abscesses comprise of the complex mix of strict anaerobes and facultative anaerobes.^[3] Among the facultative anaerobes, *Staphylococcus aureus* forms one of the major bacterial etiologies of dental abscess.^[5] *S. aureus* can result in mild to life threatening infections. This bacterium colonizes the skin and nasal cavity often causing abscesses. Nevertheless, the bacteria can invade the bloodstream (called bacteremia) and infect almost any site in the body, predominantly heart valves (endocarditis) and bones (osteomyelitis). The bacteria also tend to accrue on medical devices in the body, such as artificial heart valves or joints, heart pacemakers, and catheters inserted through the skin into blood vessels.^[6] Hence the presence of *S. aureus* in the dental abscess may be a predisposing factor for the patients to life threatening systemic infections. The primary purpose of the present study was to screen for the presence of *S. aureus* in the periodontal abscess.

II. Materials and method:

Twenty five chronic periodontitis patients with periodontal abscess from the Department of Periodontics and Implantology, Sree Balaji Dental College and Hospital, Chennai consented to participate in the study. Patients who were on antibiotic therapy within the last six months were excluded. Diagnosis of a periodontal abscess was based on oral examination

After careful removal of the supragingival plaque with sterile cotton roll, the pus was aspirated from the periodontal abscess with 22 gauge sterile needle and transferred into a sterile eppendorf tubes and transported immediately to the Microbiology department. The pus sample was inoculated onto blood agar and incubated at 37°C for 24 hours. Beta haemolytic colonies on blood agar were further identified for *S. aureus* using standard microbiological procedures.

III. Result

Among the 25 samples screened, eleven were positive for *S. aureus*. The mean of vital periodontal parameters such as probing depth and Clinical attachment were 6.52 ± 1.57 and 8.67 ± 1.70 . All the patients presented with the problems of chronic periodontitis. The prevalence of *S. aureus* was 44%.

IV. Discussion

The periodontal abscess presents as an acute destructive process in the periodontium subsequently leading to localized collections of pus communicating with the oral cavity. The incidence of periodontal abscess is relatively high and it affects the prognosis of the tooth. Periodontal abscesses can develop on the base of persisting periodontitis but can also occur in the absence of periodontitis.^[7] The cause of the development of periodontal abscess originating from chronic periodontitis is the marginal closure of a periodontal pocket, or the pocket lumen might be too tight to drain the increased suppuration due to changes in the composition of subgingival microflora, alteration of bacterial virulence or host defences. Generally, *Staphylococcus* species have not been considered as members of the oral flora or to play an etiological role in the oral and dental infections. However, a number of more recent studies have indicated that staphylococci may be a more common colonizer of the oral tissues.^[8] The results of the present study reveals a higher prevalence of *Staphylococcus aureus* compared to many earlier studies who have reported 0.7 to 15 % from the acute dental abscess.^[9-14] Conversely the present study is well in agreement with Mangundjaja&Hardjwinata 1990.^[15]

V. Conclusion

Dental abscess and its complications position a substantial burden on individuals, communities, and the health-care system; hence, early diagnosis and appropriate intervention are extremely important. A large sample size will further help in assessing the exact burden of *S. aureus* in oral infection.

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IOSR Journal of Pharmacy and Biological Sciences (IOSR-JPBS) is UGC approved Journal with Sl. No. 5012, Journal no. 49063.

Krishnan Mahalakshmi . “Frequency of *Staphylococcus aureus* in periodontal abscess –a pilot study.” *IOSR Journal of Pharmacy and Biological Sciences (IOSR-JPBS)* , vol. 12, no. 5, 2017, pp. 27–28.