



Prevalence of Periapical Abscess Reported in Patients Visiting a Private Dental Hospital - An Institutional Study

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KEYWORDS

Periapical abscess, periapical pathology, prevalence of abscess, retrospective study, innovative technology, novel method

ABSTRACT:

Introduction: Periapical abscess is the most common type of dental abscess which usually originates as microbial infection that deposits in the soft, commonly decayed or decaying pulp of the tooth. Periapical abscess is most commonly associated with non vital teeth. When it is not treated, it may affect the surrounding tooth structures thereby leading to the extraction of the affected tooth. Diagnosis of periapical abscess is done by clinical evaluation and radiographic interpretation.

Objectives: The aim of this study is to analyse the prevalence of periapical abscess in patients visiting a private dental hospital.

Methods: This study is a single centered retrospective study in which the data of patients presented with periapical abscess was collected from a private dental college and hospital in Chennai, India. Patient details were collected from the hospital management system and a total of 108 samples were obtained. The data was tabulated using Excel and then statistically analysed using the latest version of SPSS software.

Results: Among the patients who presented with periapical abscess, patients under the age group of 31 to 40 years old had the most incidence. Patients in the age group of 31 to 40 years old and 41 to 50 years old most commonly had periapical abscess in the upper arch. Likewise, patients under the age group 21 to 30 years old had periapical abscess predominantly in the lower arch. It is also found that females were more likely to have periapical abscess in the upper arch as well as the lower arch. The p value of the correlation graph is found to be 0.238 (>0.05) which is statistically insignificant. Zerodol was the most commonly prescribed analgesic in patients treated for periapical abscess.

Conclusions: Within the limitations of the study, the incidence of periapical abscess is found to be more common in females than in males. The patients belonging to the age group of 31 to 40 years old are more frequently affected with periapical abscess. Proper awareness about periapical abscess will help in the early diagnosis and treatment of the same.

1. Introduction

Periapical abscess is the most common type of dental abscess which usually originates as microbial infection that deposits in the soft, commonly decayed or decaying pulp of the tooth [1]. A dental abscess is essentially an accumulation of purulent discharge (pus) in a localised area associated with a tooth due to disintegration of the tissues [2]. The mechanism of an abscess is that the body

tries to localise the infection and group the microorganism so that they are prevented from spreading to the other parts of the body [3]. A periapical abscess may occur as a result of fractured tooth, dental caries, various periodontal problems, trauma, food lodgement, incorrect brushing technique, poor oral hygiene or a failed root canal treatment attempt [4]. Periapical abscess is a type of odontogenic infection i.e. the infection



emerges within a tooth structure or from a closely surrounding structure [5]. Periapical abscess is the resultant chronic localised contamination of microorganisms at the tip or apex of the root of the tooth [6]. Periapical abscess is most commonly associated with non vital teeth [7]. When it is not treated, it may affect the surrounding tooth structures thereby leading to the extraction of the affected tooth [8].

Symptoms that present with periapical abscess include severe toothache that is enduring in nature which may penetrate to jaw bone, neck or ear region, swollen lymph nodes, pain on chewing, biting or tapping, unpleasant taste in the mouth, varying degrees of mobility to the tooth, the tooth may be elevated in the alveolar socket, sensitivity to hot or cold food items, malaise, discoloured crown of the teeth and swelling of the gums [9]. Diagnosis of periapical abscess is done by clinical evaluation and radiographic interpretation [10]. Clinical evaluation involves analysis of pulpal pathology like dental caries, teeth fracture with the involvement of pulp, discoloration in the crown portion of the teeth and drainage tracts [11]. Radiographic analysis may reveal widening of the periodontal ligament and poor defined apical radiolucent lesion. Treatment of periapical abscess consists of abscess drainage which can be done by root canal treatment, incision and drainage or extraction of the affected tooth [1]. The treatment for periapical abscess also depends on the patient's preference, economic status of the patient, strategic value of the tooth and the prognosis of the affected tooth [13]. Root canal treatment is the mode of treatment in case of restorable teeth whereas in the case of non restorable teeth, extraction is done. Along with the surgical intervention, antibiotics are prescribed to prevent any further infection. Analgesics are also prescribed to control the pain after draining the abscess [14]. The drug of choice is Ibuprofen 400mg while acetaminophen is prescribed to patients who are contraindicated with NSAIDs and aspirin [15]. The possible complications of untreated periapical abscess includes osteomyelitis, cellulitis and Ludwig's angina [16]. Rare complications include septicemia, meningitis and brain abscess. The prospect of periapical abscess is reduced with improved oral hygiene measures [17].

2. Objectives

The aim of this study is to analyse the prevalence of periapical abscess in patients visiting a private dental hospital.

3. Methods

This study was conducted in the outpatient department of Saveetha Dental college and hospital. Patients with periapical abscess were included in the study. The patient details were collected from the hospital management system from a private dental college and hospital in Chennai, India. The data was collected, tabulated and analysed using Excel sheet. Patient records were reviewed and data of 42,000 patients between June 2019 and February 2021 were analysed. A total of 108 samples which suited the criteria were collected with the parameters like age, gender and presence of periapical abscess. These data were cross verified with photographs. Approval from the ethical committee was taken before beginning the study.

The Excel sheet was tabulated according to the parameters. There were both male patients as well as female patients in the study sample. The collected data was later transferred and analysed using the latest version of SPSS software for statistical analysis. Frequency distribution was done to analyse the data. For the chi square test, p value was set as 0.05 as level of significance.

4. Results

This study shows that Patients belonging to the age groups 31 to 40 years old and 41 to 50 years old have the most common occurrence of periapical abscess in their upper arch (10.19%). Periapical abscess in the lower arch is most commonly prevalent in patients within the age group 21 to 30 years (14.81%) followed by 31 to 40 year old age group (13.89%). The rare occurrence of periapical abscess in both the arches is seen in 51 to 60 years age group (1.85%) and 61 to 70 years age group (0.93%). The p value of the correlation graph is found to be 0.238 (>0.05) which is statistically insignificant (Fig 1). It is seen that the incidence of periapical abscess in the upper arch is more in females (22.22%) than in males (17.59%). Likewise, the prevalence of periapical abscess in the lower arch is more in females (31.48%) than in males (25.93%). 2.78% of the males had periapical abscess in both the arches. The p value of the correlation



graph is found to be 0.166 (>0.05) which is statistically insignificant (Fig 2). It is seen that the incidence of periapical abscess in the upper arch is more in females (22.22%) than in males (17.59%). Likewise, the prevalence of periapical abscess in the lower arch is more in females (31.48%) than in males (25.93%). 2.78% of the males had periapical abscess in both the arches. The p value of the correlation graph is found to be 0.166 (>0.05) which is statistically insignificant. In females, zerodol was most commonly prescribed (37.04%) followed by a combination of Paracetamol with Aceclofenac (4.63%), Paracetamol (2.78%) and Aceclofenac (0.93%). 8.33% of the females were not prescribed any analgesic. In males as well Zerodol was most commonly prescribed (33.33%) followed by Ibuprofen (3.70%), Aceclofenac (1.85%), Ketorolac DT (0.93%), Diclomol (0.93%) and a combination of Paracetamol with Aceclofenac (0.93%). 4.63% of the males were not prescribed any analgesic. The p value is 0.076 (>0.05) which is statistically insignificant (Figure 3).

5. Discussion

Inflammation of the pulp and periapical tissues is the main cause of tooth loss in patients worldwide. Information on reasons for and pattern of a treatment are necessary for understanding disease pattern, performance of previous treatments, determination of cost effectiveness and devising future facilities based on patient needs. Our study has found that among the patients who presented with periapical abscess, patients under the age group of 31 to 40 years old had the most incidence. Patients in the age group of 31 to 40 years old and 41 to 50 years old most commonly had periapical abscess in the upper arch. Likewise, patients under the age group 21 to 30 years old had periapical abscess predominantly in the lower arch. It is also found that females were more likely to have periapical abscess in the upper arch as well as the lower arch. A rare occurrence of periapical abscess in both the arches was seen in 2.78% males. Zerodol was the most commonly prescribed analgesic in patients treated for periapical abscess. Akinyamoju AO, et al., set up a retrospective study in Ibadan where the records and files were reviewed from the Oral Pathology department and reported that people in the age group of 20 to 29 were more prone to periodontal lesions [18]. A study by Timothy, et al., has recorded the prevalence of periapical

pathologies in Saveetha Dental College, Chennai. The study shows that periapical pathologies are prevalent in the age group 60 to 70 years and common in male population [19].

Saleh W, et al., conducted a similar hospital based study which recorded the prevalence of periapical abscess in type I diabetic patients, type II diabetic patients and non diabetic patients. The study concluded that a higher prevalence of periapical abscess was seen in diabetic patients when compared with the other patients in the hospital [20]. Katz J, et al., used integrated data of patients from a hospital database and studied the incidence of periapical abscess in osteoporotic patients. The results of the study shows marked increase in occurrence of periapical abscess in patients with osteoporosis [21]. Prevalence of periapical abscess in patients with periodontal problems in the military population was studied by J L Gray, et al., with a sample of 203 patients. Among the periodontal treatment undertaking patients, a majority of female patients were more prevalent to develop periapical abscess when compared to men [22]. This is in accordance with our study where females were reported to have more occurrence of periapical abscess. Rosario, et al., did a cross sectional study among 772 patients. High prevalence of periodontal abscess was associated with various respiratory problems [23]. Fernández Plata R, et al., conducted a study to find the prevalence and severity of periapical abscess in Brazil among children. The prevalence of periapical abscess was found to be 19.5% with the majority of the males affected. This is in contradiction with our study having females predominantly prevalent. More than half the children had pain and swelling associated with the abscess [24]. Under the conditions of this study, it appears that the prevalence of periapical abscesses is significantly higher in females and patients of age group 31-40 years.

This study investigates the prevalence of periapical abscess in patients from a private dental hospital in Chennai, India. Within the limitations of the study, the incidence of periapical abscess is found to be more common in females than in males. The patients belonging to the age group of 31 to 40 years old are more frequently affected with periapical abscess. Zerodol was the most commonly prescribed analgesic in patients treated for periapical abscess. Proper awareness about periapical abscess will help in the early diagnosis and



treatment of the same. Appropriate hygiene measures like tooth flossing, brushing with fluoridated toothpaste and drinking fluoridated water helps in the prevention of dental abscess.

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