

FREQUENCY OF DIFFERENT ODONTOGENIC CYSTS IN PATIENTS VISITING ORAL MAXILLOFACIAL DEPARTMENT OF DENTAL HOSPITALS IN PESHAWAR

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ABSTRACT

Background and Objective:

The aim of this study was to investigate the relative frequency of odontogenic cysts in two local dental college hospitals.

Methodology:

In this study 90 cysts from both jaws, treated at Khyber College of Dentistry and Sardar Begum Dental College from March 2008 to March 2013 were analyzed in order to evaluate the incidence of these cysts.

Results:

Case history of 52 males and 38 females were analyzed. The age of patients varied from 07 to 70 years, with a mean age of 26.4 ± 13.89 . In this 5-year study of odontogenic cysts, 48 were radicular cysts, 22 were odontogenic keratocysts and 20 were dentigerous cysts. Out of these 46 cysts were present in the maxilla and 44 in the mandible. In the maxilla 46.7% were present in the anterior maxilla and 4.4% in the posterior maxilla. In the mandible 35.6% were present in the posterior mandible and 13.3% in the anterior mandible.

Conclusion:

From the findings of this study we conclude that odontogenic cysts were mostly inflammatory in nature i.e. the radicular cysts and was followed by odontogenic keratocysts. Majority of the cysts were located in the anterior maxilla and posterior mandible regions. The male predilection was higher as compared to females.

Keywords: Odontogenic Cysts, Jaw Lesions, Demographic Study.

INTRODUCTION

A cyst is an epithelial lined pathological cavity having fluid, semi-fluid or gaseous contents and which is not created by the accumulation of pus(1-3).Cysts of the jaws are more common than any other cysts of the body(4).Cysts of the head and neck region are basically divided into Odontogenic, Non-odontogenic, Pseudocysts and neck cysts. Pseudo cysts lack an epithelial lining. Most cysts

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of the jaws with rare exceptions are epithelial lined cysts and usually derived from odontogenic apparatus and its remnants (5, 6).

Odontogenic cysts are the most frequently occurring cysts of the maxillo-facial region. The frequency of common odontogenic cysts in two large scale studies on European and United kingdom populations are 13.8% and 12.8% respectively(5,7).Odontogenic cysts are sub-classified as developmental and inflammatory origin cysts(6).Rests of Mallassez, Reduced enamel Epithelium and Dental Lamina Rests or Glands of Serres are epithelial residues responsible for odontogenic cysts(8) Preoperative diagnosis of Odontogenic cysts (OC) improves the treatment outcome in formulating an appropriate treatment plan and adequately counselling the patients. Odontogenic cysts (OC) represent a major part of lesions of concern to oral health; very few studies have been done in our region to determine the types, frequency, distribution, and demographic characteristics of odontogenic cysts. Hence evaluation of characteristics of OC is vital in primary diagnosis and prompt treatment of the lesion.

The profession (dental and maxillofacial surgeons) mostly encounter with problems in choosing the appropriate treatment for odontogenic cysts. A detailed study of the x-ray and histopathology of the lesions make it possible to give an insight into the pattern and destructive process of the odontogenic cysts, in order to select the most suitable treatment. The aim of this study was to analyze the demographics of cysts by reviewing the specific features of their radiographs and histopathology.

METHODOLOGY

In this descriptive study we analyzed 90 odontogenic cysts from patients treated at the departments of Oral and Maxillofacial Surgery between 2008 and 2013 of two dental hospitals i.e, Khyber Dental College and Sardar Begum Dental College Peshawar. Data was obtained from case reports, imaging and histopathology reports. In every case information about the patient's age, gender, site and histopathological diagnosis of the patient was obtained. The ethical consent was obtained from both the institutes. A Universal sampling technique was used where all patients who fulfilled the inclusion criteria were included in the study. All diagnosed cases of odontogenic cysts, that fit the histological classification of the World Health Organization (2005) were included. Patients with incomplete information, cysts showing tumour formation and non-odontogenic cysts were excluded. All the data was recorded on a structured checklist. Nominal variables like gender and site were presented as frequencies and percentages. Age was taken as a continuous variable. For data analysis Statistical package for Social Sciences (SPSS Version 20) was used.

After retrieving the radiological records, their tissue blocks were obtained from City Medical laboratory Peshawar. Ninety, formalin fixed and paraffin embedded tissue blocks were stored in City Medical Laboratory Peshawar during our data collection period January to March 2013. The samples were stained with routine eosin and haematoxylin stains, fixed in formalin and embedded in paraffin wax. Haematoxylin and eosin stained glass slides thus obtained were reviewed and the diagnosis was confirmed by two consultant histopathologists. The site of involvement in each jaw was subclassified into two main areas as follows: anterior from central incisor to 2nd premolar while posterior from 1st molar to 3rd molar.

RESULTS

In our study 52 were males and 38 were females, being in a percentage of 57.8% and 42.2% respectively. Majority of them (40.0%) were from 21 to 30 years of age group followed by 33% in 11 to 20 years. The patient aged more than 30 years accounted for 22.1% of the total number, while those aged <4 years of age accounted for the smallest proportion (4.4%), as shown in fig.1

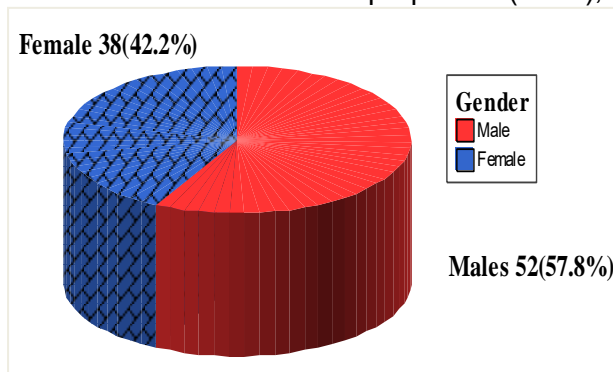


Fig-1: Distribution of Odontogenic cysts according to sex

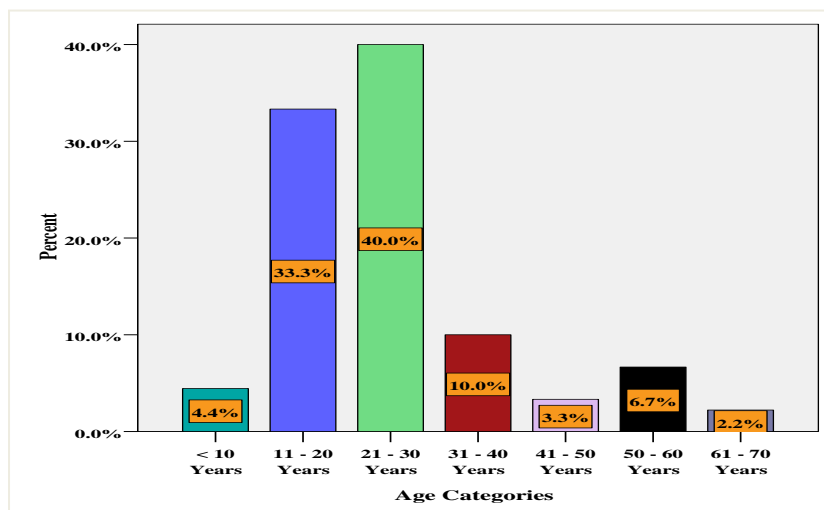


Fig-2: Odontogenic cysts according to age
In figure.1

Among the cysts the most prevalent in our study were found to be radicular cysts 48(53.3%), followed by odontogenic keratocysts 22(24.4%) and then finally dentigerous cysts 20(22.2%).

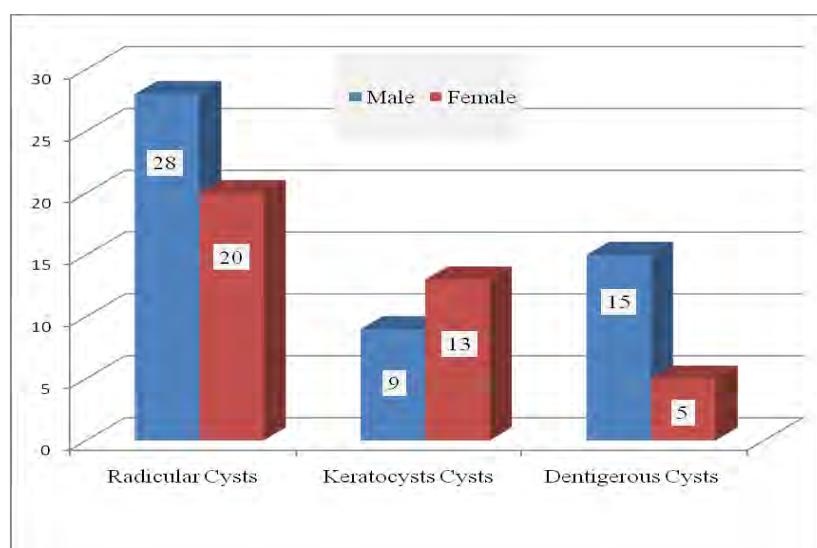


Fig-3: The most prevalent Cysts

The common areas involved are shown in table; radiographs of the odontogenic cysts indicate that majority 42 (46.7%) of them were present in the anterior maxilla, while second common affected site was posterior mandible 32(35.6%). Posterior maxilla was the least affected area, only observed in 4.4%, while anterior mandible's involvement was found among 12(13.3%) of the subjects (see table 3).

Different jaw locations according to Odontogenic cyst:

| Type of cyst | Frequency % | Maxilla | | Mandible | |
|--------------|-------------|----------|-----------|----------|-----------|
| | | Anterior | Posterior | Anterior | Posterior |
| Radicular | 53.3% | 66.66% | 0% | 20.85% | 12.5% |
| Keratocyst | 24.4% | 27.27% | 18.18% | 9.09% | 45.45% |
| Dentigerous | 22.2% | 20.0% | 0% | 10% | 70% |

DISCUSSION

Most of the cysts are not completely diagnosed by radiographic features; therefore, their diagnosis should be based on the careful examination of clinical, radiographic, and histopathological features^{7,9}. Out of 90 of diagnosed cases were 52% were male and 38% females enrolled in our study. This is in accordance with a study conducted on a Nigerian population where 65.2% cysts were present in males 34.8% were present in females¹⁰. In another study conducted in Iran 57.2% and 42.8% cysts were present in males and females respectively¹¹. The greater frequency of odontogenic cyst among males in some areas is possibly explained by the fact that men usually are not very meticulous or aware in their oral health practices and are more prone to lesions as compared to females; hence these factors may lead to cyst formation. This observation coincides with results in various other studies^{7,12,13,14}. Also males may be more prone to receiving trauma to the jaws making them more susceptible to cyst development. This is the same reason given by a study in Brazil¹⁵. Females have less opportunity to avail the health services independently in this region. Hence high costs, immobility of women, restricted decision making and limited information could be major obstacles in seeking appropriate health care, leading to the difference in the ratio of male and female in our study. This has also been reported as the reason for more frequent female involvement in some areas of the world^{16,17,18}. According to our study radicular cysts and dentigerous cyst were more frequent among males than females. However, the keratocysts were slightly more frequent in females than males. Taylor et al conducted a study of the Mexican population, with similar results¹⁹. However a study conducted in Brazil reported female dominance in radicular cysts (3), while another study from Chile also reports that radicular cysts are common in females¹². Developmental cysts i.e dentigerous cysts and odontogenic keratocysts in our study occur mostly in the first two decades of life at a mean age of 26.34 (plus minus sign) 13.84 which are in accordance with a study by Manor et al²⁰. This differs slightly from a study on the oriental population where the mean age for developmental cysts is 30.2 years²¹. Radicular cysts in our study fall mostly in the 21-30 year age group and above and are not present in the deciduous dentition, This result is in accordance with study by a Koeseoglu¹³ and Sharifian et al¹¹, where radicular cysts are seen mostly at an average age of 28.3 years.

After thorough histopathological evaluation of tissue slides, only three common odontogenic cysts radicular cyst, keratocyst and dentigerous cyst were found. Radicular cysts were the most common followed by odontogenic keratocysts and finally dentigerous cysts. This differs from a study on the Iranian population where radicular cysts were the most common, followed by dentigerous and lastly Odontogenic Keratocysts¹¹. Taking odontogenic cysts in general 42 (46.7%) of odontogenic cysts were present in the anterior maxilla while second most commonly affected site was posterior mandible with 32 (35.6%) cases present there. Posterior maxilla was the least affected area. It is similar to the UK (7) and Jordanian population (14). This finding is also supported by Ochsenius et al¹² Prockt AP, Schebela CR, Maito FD, et al¹⁵, Batatineh AB, Rawashdeh MA, Al Qudah MA¹⁴ and Varinauskas V, Gervickas A, Kavoliuniene O²². But according to the Meningaud JP, Oprean N, Pitak-Arnop P, Bertrand JC study conducted in a French teaching hospital mandible was the most common region²³ Avelar et al²⁴ study also shown that mandible was common affected site among their study population. Anterior maxilla is the most common affected site because of esthetic factors,

as the client may wish to preserve their anterior teeth without adequate restorative endodontic treatment and come to the hospitals for that reason.

Going into further details of the location of various cysts anterior maxilla accounted for 32(66.66%), posterior maxilla (0%), anterior mandible 10(20.85%) and posterior mandible for 6(12.5%) of radicular cysts. The distribution of odontogenic keratocysts was anterior maxilla 6(27.27%), posterior maxilla 4(18.18%), anterior mandible 2(9.09%) and posterior mandible 10(45.45%). As for dentigerous cysts in our study in the previously mentioned sequence of sites is 4(20.0%), 0(0%), 2(10%) and 14(70%). These sites are quite in contrast to a study on the Libyan population²⁵ where in the anterior maxilla, posterior maxilla, anterior mandible and posterior mandible radicular cysts were in percentages of 48.64%, 15.31%, 15.76% and 20.27% respectively. Odontogenic keratocysts were also present in percentages of 10.86%, 28.26%, 4.34% and 56.52%. Dentigerous cysts were present in the same sites in percentages of 34.69%, 24.08%, 20.40% and 40.81% respectively.

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