ORIGINAL ARTICLE

CLINICO-RADIOGRAPHIC STUDY OF ODONTOGENIC CYSTS AT A TERTIARY CARE CENTRE

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Background: Cysts of the jaws constitute an important pathology in the oral and maxillofacial region and are broadly classified as odontogenic and non-odontogenic. Objective of this study was to document the clinical and radiographic presentation of odontogenic cysts at a tertiary care centre. **Methods:** In this descriptive case-series, patients presenting with features of suspected cystic lesions of the jaws were investigated using radiographs and incisional biopsy. Subjects showing clinico-radiographic features of odontogenic cyst(s) with subsequent confirmation on histopathological examination were included. **Results:** A total of 112 subjects were investigated for suspected jaw cysts and cystic diagnosis of odontogenic cysts was confirmed in 100 patients with 53 males (53%) and 47 females (47%). The age range of patients was from 12–55 years. Radicular cyst was the most commonly diagnosed odontogenic cyst (63%) followed by dentigerous cyst (22%) and odontogenickeratocyst (14%). Anterior maxilla was the most affected site (44%) followed by posterior mandible (30%). **Conclusion:** Odontogenic cysts constitute an established pathology affecting the jaws with varying frequency. This study augments the data cited from Western countries and re-emphasizes the need for early diagnosis and prompt management. It also highlights the differences in the presentation of odontogenic cysts as observed in the current series.

Keywords: Cyst, Jaws, Odontogenic, non-odontogenic.

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INTRODUCTION

Cysts of the jaws constitute an important pathology in the oral and maxillofacial region and are broadly classified as odontogenic and non-odontogenic. The prevalence of odontogenic cysts is reported to be higher than the non-dontogenic variety.[1] Odontogenic cysts deserve attention because of their potential complications including damage to supporting dental tissues/jaw bone, root resorption, local sensory deficits due to nerve involvement and even neoplastic changes in the cysticlining.[2] Large cysts may also cause pathological jaw fractures especially that of the mandible.[3]

Many studies have reported that radicular cyst is the most common of odontogenic cyst followed by dentigerous cyst and keratocyst.[1,4] A male predilection is reported in many large series on odontogenic cysts.[4–6] The most common anatomic sites of occurrence of odontogenic cysts are the maxillary incisor/canine region and mandibular molar region.[5] It has also been reported that developmental cysts are generally more common in the younger age-group.[7]

Provisional evaluation is based on history, clinical and radiographic examination. Clinical examination should include assessment of the dentition (vitality, mobility and missing teeth), site, size and consistency of swelling, aspiration of fluid and local sensory deficits. Radiographic views include intra-oral (periapical and occlusal) along with orthopantomogram (OPT) and oblique lateral views. CT scans can be used to evaluate large and/or aggressive lesions.[8] Nevertheless biopsy of cystic lining is essential for a definitive diagnosis. Treatment modalities for odontogenic cysts include surgical enucleation with or without prior marsupialization. For aggressive lesions curettage and peripheral ostectomy and even local resection may be considered.[9] The use of endoscopically assisted enucleation of jaw cyst is also reported in the literature.[10]

This study was conducted to document the clinical and radiographic presentation of odontogenic cysts and record the relative frequency at a tertiary care centre.

MATERIAL AND METHODS

It was a descriptive case-series conducted over a period of ten months at de' Montmorency College of Dentistry, Lahore, Pakistan from April 2004-07 Subjects showing clinico-radiographic features of odontogenic cyst(s) with subsequent confirmation on histopathological examination were included in this study. Informed consent was obtained from all subjects. Purposive non-probability sampling technique was used and variables like demographic data, presenting complaint(s), and clinical findings including site of occurrence, presence or absence of swelling, tooth mobility/vitality, discharge, fluctuance, nerve involvement and the aspiration of fluid in the cystic lesion were recorded. Likewise radiological

features of the cysts were recorded as seen on intraoral radiographs (periapical and occlusal), OPT, and oblique lateral views. CT scans were obtained for large and aggressive lesions. Radiographic features which were recorded including appearance (unilocular/multilocular), size, root resorption of adjacent teeth and involvement local anatomical structures. Data was analysed using SPSS-16. The age of the subjects was described by simple statistics like mean and the most commonly affected age-group was identified. Differences noted between the association of age, gender and location of odontogenic cysts were tested by Chi square test as the outcome was mainly of qualitative in nature. The admitted level of significance was $p<0.05$.

RESULTS

A total of 112 patients were assessed clinically and underwent an incisional biopsy for suspected odontogenic cysts. Positive histological diagnosis of an odontogenic cyst was confirmed in 89.28% of cases (n=100). The cases which were not odontogenic cysts included unicystica meloblastoma (n=8), periapical granuloma (n=2) and non-odontogenic cysts (n=2). There were53 (53%) males. The highest number of cases (42%) wasobserved in the 11–20 years age-group. The mean age was 26.18 ranging from 12–55 years. The most frequent type of cysts was the radicular cyst (63%) including 5 cases of residual cysts. This was followed by dentigerous cysts (22%), keratocysts (14%), and one lateral periodontal cyst (1%). Dentigerous cysts were more frequent in the second and third decade of life, radicular cysts were also more frequent in the second decade, residual cysts were more frequent in the fourth decade and keratocysts were more frequent on the third and fourth decades of life.

Regarding the site of the cysts, 58% of cysts were seen in the maxilla and 42% in the mandible. In the maxilla, the most affected region was the anterior (n=44), whereas in the mandible, posterior region was more affected (n=30). Correlation between gender and site of the cysts were examined, a female predilection was seen only for anterior mandible ($p>0.05$).

The most frequent location of inflammatory cysts (radicular and residual) was the maxilla, and for developmental cysts (keratocysts and dentigerous cysts) was the mandible, mainly in the posterior region. Left side (n=50) was affected more than the right side (n=38). Twelve percent of the cases were present across the midline (n=12).

The most common presenting complaint was swelling that was present in 49% of subjects (n=49). Other symptoms, by decreasing order of appearance were pain (n=18), discharge of fluid (n=8), tooth mobility (n=4), altered lower lip sensation (n=3), reduced mouth opening in (n=2) and sinusitis (n=1). In majority of patients these complaints were seen in a variable combination. Lastly some cases of (n=6) cysts were discovered on routine radiological examination and all of these were diagnosed as odontogenic keratocysts on histopathology.

Tenderness in the affected was the most common clinical presentation (n=76), followed by swelling (n=55). Other clinical signs included presence of a discharging sinus (n=11), mental nerve paresthesia (n=3). In majority of the subjects, fluid could be aspirated from the cystic lesions (n=94).

The most common radiographic presentation of the cysts was a unilocular radioluceny (n=89), while the remaining cystic lesions presented as multilocular radiolucencies (n=11). All radicular cysts presented as a unilocular radiolucency in a periapical location; no lateral radiolocuceny was seen in this category of cyst. Root resorption was observed in 10% and divergence of adjacent teeth root in 5% of radicular cysts. All dentigerous cysts also presented as a unilocular radiolucency with posterior mandible being affected the most 72.72% (n=16). Impacted third molar was the most commonly involved tooth, i.e., 81.81% (n=18). Keratocysts predominantly presented as a multilocular radiolucency (n=11).

Cyst-size, as measured on the radiographs, ranged from 1–8cm with a mean of 2.24cm. Radicular cysts on the whole were smaller lesions (mean=1.58 cm) as compared to dentigerous cysts (mean=3.22 cm) and odontogenic keratocysts (mean=3.67 cm). All the cases were unilateral and in 14 patients with keratocysts, no case of Gorlin Coltz syndrome was identified. The lateral periodontal cyst (n=1) occurred in a 40-year-old male, located on the maxilla in the anterior region. It was an incidental radiological finding and the histological diagnosis confirmed the clinical diagnosis, 82% of patients had total removal of the lesion with enucleation and the remaining lesions were treated with marsupialization followed by enucleation.

Table-1: Age distribution of subjects diagnosed with odontogenic cysts

Age	Male	Female	Total
11–20	20	22	42
21–30	17	9	26
31–40	12	10	22
41–50	4	5	9
51–60	-	1	1
Total	53	47	100

Table-2: Site and gender distribution of odontogenic cysts

Site of Involvement	Males	Females	Total
Anterior Maxilla	24	20	44
Posterior Maxilla	8	6	14
Anterior Mandible	5	7	12
Posterior Mandible	16	14	30
Total	53	47	100

DISCUSSION

In our study in addition to the local community, patients are referred by general dental practitioners and primary care centres from a large catchment area. Despite the enormous body of literature available on odontogenic cysts worldwide[1,4–6] little if any studies have been done in this regard on any population group in this region. The highest frequency of odontogenic cysts was recorded in the second decade and the mean age of subjects was less than that reported by Bataineh *et al*[5] and Meningaud *et al*.[11]This difference may be attributed to a higher number of patients with a history of dental trauma amongst younger patients in our series who represented 82.75% of radicular cysts. We noted a slight overall male predilection and our results are in accord with the other studies.[6]

Regarding the relative frequency of various odontogenic cysts, our results are compareable to other large-scale studies.[4–6,11] The data from these studies also confirms that radicular cyst is the most common variety of odontogenic cyst followed by the dentigerous and keratocyst. However, studies conducted in children report a higher frequency of developmental cysts for obvious reasons.[12] We recorded four varieties of odontogenic cysts in our study. This is most probably related to a relatively small sample.

Regarding the site of the cystic lesions, our observations are in concurrence with those cited by others.[5] However, a higher ratio of odontogenic cysts has been reported in the mandible in some studies.[11] Again this may be related to the fact that we had a substantial number of younger patients who developed radicular cyst following dental trauma to maxillary anterior teeth. The radiographic presentation of odontogenic cysts in our study showed features which are consistent with the contemporary literature.[13] Radicular and dentigerous cysts presented exclusively as unilocular radiolucencies, while keratocysts were observed to be multilocular in the majority of the cases. Similar observations have been reported in the past.[14] We observed that 52% of subjects diagnosed with a radicularcyst had evidence of un-restored caries. There was a positive history of dental trauma in the remaining 48% subjects. In future large multicentre studies may be conducted to document the incidenceof radicular cysts in the recent years and compare it to past data.[1] Such studies may provide useful reflection on programs aimed at prevention/prompt management of caries and trauma.

CONCLUSION

Radicular cyst is the most common variety of odontogenic cysts. Early and prompt management of dental caries and trauma is critical to reduce the occurrence of radicular cyst and help avoid consequent damage to local tissues.

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