ORIGINAL RESEARCH ARTICLE

Retrospective Clinic-pathological Study of 106 Odontogenic Cyst among Kashmiri Population

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A B S T R A C T

Introduction. The human jaw bones, main hard tissue of orofacial region can be the sites for development of various conditions such as cysts, neoplasms, or systemic bone diseases. The purpose of the study was to establish the epidemiological profile, according to the variables of sex, age group and anatomic location of odontogenic cysts among the Kashmiri population.

Materials and methods. In this study 706 biopsies, diagnosed during a 7-year period from 2010 to 2017, were analysed in order to evaluate the prevalance of odontogenic cysts. Clinical features obtained from the patient records and microscopic slides were reviewed according to the 2005 World Health Organization classification.

Results. In this 7-year study, 106 cases were diagnosed as odontogenic cysts with the overall prevalence of 13.9%. The prevalence of radicular cyst was 58.4%, dentigerous cyst (22.6%), odontogenic keratocyst (10.3%), calcifying odontogenic cyst (0.009%), lateral periodontal cyst (0.04%) and residual cyst (0.02%). Fifty six percentage of odontogenic cyst were observed in males and 43.3% were seen in females, with a female: male ratio of 1:1.3. Majority of the cases showed prevalence in the third, fourth and fifth decades. Mandible, particularly the posterior region (40.5%), followed by the posterior region of the maxilla (28.3%) were most common anatomic sites of the odontogenic cyst.

Conclusion: The present study showed more prevalence of radicular cysts, dentigerous cysts, and odontogenic keratocysts in Kashmir valley.

Key words: Odontogenic Cyst, Kashmir Valley, Radicular Cyst, Dentigerous Cyst, Odontogenic Keratocyst.

INTRODUCTION

Various conditions such as odontogenic cysts and tumors are originated from tissue remnants of the tooth forming apparatus or are the result of inflammation.[1,2] A cyst is defined as a pathologic cavity containing fluid, semifluid or gaseous contents that are not created by the accumulation of pus; frequently but not always, is lined by epithelium.[3] Odontogenic cyst (OC) is divided into two groups on the basis of their origin: developmental and inflammatory. Developmental odontogenic cysts encompass keratocyst, dentigerous cyst, calcifying odontogenic cyst, lateral periodontal cyst, sialo odontogenic cyst, and eruption and gingival cysts. The inflammatory type includes radicular, residual and paradental cysts.[4] The most frequently diagnosed odontogenic cysts found were radicular cysts (53.5%), dentigerous cysts (22.3%) and odontogenic keratocysts (19.1%), globulomaxillary cysts 2.3%, traumatic bone cysts (TBC) 1.0%, and eruption cysts (EC) 0.7%.[5-8]

Odontogenic cysts are seen mainly in the third and fourth decade of life with a mean age of the patients 41.8 ± 15.8 years. The lesions are common in the mandible than in the maxilla (mandible to maxilla ratio of 3:1) with male predominance.[6] Cystic lesions are important because they result in morbidities such as jaw swelling, pain and sensory disturbances[9] displacement of tooth[10], occlusal alterations and failure of eruption of teeth.[11]

An odontogenic cyst is formed by activation of odontogenic cell rests entrapped within the bone tissue or gingival tissue of the jaws, such as the epithelial remains of Malassez, the dental lamina (cell rests of Serres) and enamel organ. Inflammatory odontogenic cysts are formed due to activation of these cell rests by an inflammatory process. The growth is slow and has a tendency towards expansion.[12] Moreover, some of these lesions have shown neoplastic alterations or aggressive clinical behaviour and tend to recur. Therefore, their correct diagnosis is essential for prompt and appropriate surgical treatment and adequate follow-up.[4] The purpose of the study was to establish the epidemiological profile, according to the variables of sex, age group and anatomic location of odontogenic cysts among the Kashmiri population.

MATERIAL AND METHODS

A retrospective analysis of odontogenic cysts diagnosed histopathologically between 2010- 2017 were reviewed from the case notes and biopsy records of the Department of Pathology, Government medical college and hospital, Srinagar. A total of 760 biopsies were reviewed and 106 cases diagnosed as odontogenic cysts were only included in the study. Hematoxylin/eosin-stained slides of OCs or nonspecific cyst diagnoses were re-evaluated and selected according to the 2005 World Health Organization (WHO)

histologic classification.[13] Lesions with histological findings that were not compatible with odontogenic cysts were excluded from the study. Data regarding different odontogenic, age, gender and anatomic location of all lesions were compiled. In the present study, to assign the location of the odontogenic cysts the jaw was divided into anterior and posterior region, anterior zone was considered from right upper canine to left upper canine in case of maxilla and from right lower canine to left lower canine in case of mandible; while posterior zone was considered the area comprised from the first bicuspid to the ramus/tuberosity area, irrespective of whether it was right or left. Data collected was compiled and tabulated and subjected to descriptive statistics and represented as frequency and percentages using Microsoft ExcelTM software.

RESULTS

Prevalence rate

From a total of 760 oral biopsy specimens retrieved, 106 (13.94%) met the criteria of odontogenic cysts after histopathologic evaluation. The overall frequency of odontogenic cysts over the 7-year period is shown in Fig 1. The prevalence of odontogenic was 13.9%. Individual analysis of the odontogenic cysts are as follows- 62 cases (58.4%) of radicular cyst, 24 cases (22.6%) of dentigerous cyst, 11 cases (10.3%) of odontogenic keratocyst, 1 case (0.009%) of calcifying odontogenic cyst, 5 cases (0.04%) of lateral periodontal cyst and 03 cases (0.02%) of residual cyst.

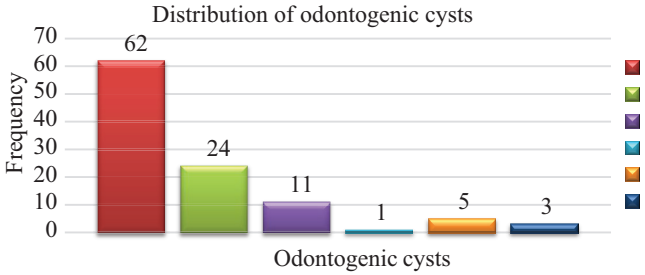

Figure-1: Distribution of odontogenic cysts

Gender

Of all of the odontogenic cysts, 60 cases (56.6%) were observed in men and 46 cases (43.3%) were seen in women, with a female: male ratio of 1:1.3. The most common cyst was radicular cyst (32.07%) in males and 26.41% in females and least common was calcifying odontogenic cyst (0.009%) in males and no case was reported in females.

Age

In the present study, radicular cysts were most frequently seen in the fourth and fifth decades, dentigerous cysts in the third decade, OKC and COC in the fourth decade, lateral periodontal cyst and residual cyst showed a varied age presentation. (Table 1).

Location

Equal distribution of cysts were seen in the mandible (n=53) and in the maxilla (n=53). Regarding the mandible, the posterior region was involved in 40.56% of the cases and anterior region in 9.4%. Regarding the maxilla, the posterior region was involved in 28.3% of the cases and 21.6% in

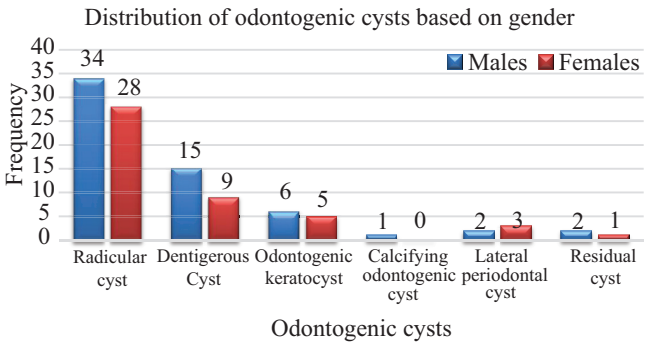

Figure-2: Distribution of odontogenic cysts based on gender

Odontogenic cysts	Age							
	1-10	11-20	21-30	31-40	41-50	51-60	>61	Total
Radicular cyst	0	8	12	20	16	4	2	62 (58.04%)
Dentigerous Cyst	0	2	12	8	2	0	0	24 (22.6%)
Odontogenic keratocyst	0	0	1	7	2	1	0	11 (10.3%)
Calcifying odontogenic cyst	0	0	0	1	0	0	0	1 (0.009%)
Lateral periodontal cyst	0	0	1	2	1	1	0	5 (0.04%)
Residual cyst	0	0	1	1	0	1	0	3 (0.02%)

Table-1: Distribution of odontogenic cysts among different age groups

Odontogenic cysts	Location				Total
	Maxilla		Mandible		
	Anterior	Posterior	Anterior	Posterior	
Radicular cyst	20	21	5	16	62(59.04%)
Dentigerous Cyst	3	5	2	14	24(22.85%)
Odontogenic keratocyst	0	3	2	6	11(10.47%)
Calcifying odontogenic cyst	0	0	0	1	1(0.95%)
Lateral periodontal cyst	0	0	0	5	5(4.76%)
Residual cyst	0	1	1	1	3(2.85%)
Total	53		53		106

Table-2: Distribution of cysts based on location

anterior region. (Table 2).

DISCUSSION

Odontogenic cysts are one of the most common lesions affecting the jaws and many of these cysts share similar clinical and radiographic features.[7] Therefore, the diagnosis of odontogenic cysts should be based on careful examination of clinical, radiographic and histopathologic features. Most of the information regarding the prevalence of odontogenic cysts comes from oral pathology diagnostic services and despite some sampling bias, these services represent a reliable source of information regarding the relative frequency and clinical-pathologic features of odontogenic cyst.[14-16]

The present study was a seven-year-old study to evaluate the prevalence of developmental odontogenic cysts among Kashmiri population in which 62 cases (58.4%) of radicular cyst, 24 cases (22.6%) of dentigerous cyst, 11 cases (10.3%) of odontogenic keratocyst, 1 case (0.009%) of Calcifying odontogenic cyst, 5 cases (0.04%) of lateral periodontal cyst, and 03 cases (0.02%) of residual cyst were seen. The overall prevalence rate was 13.9%. The study by Mosqueda-Taylor et al analyzed 85 cases of odontogenic cysts in Mexico and reported that dentigerous cysts and keratocysts had a higher incidence after radicular cyst, coincident with the results of our study.[15] In 2000, Ledesma-Montes et al studied 3004 odontogenic cysts; 38.8% of the cases were periapical cysts, 35.5% were dentigerous, and 18.8% were OKC.[17]

In another study in 1994 in Nigeria, Ogunlewe et al evaluated 126 cases of jaw cysts in Lagus University; 57.14% of the cases were developmental odontogenic cysts and 22.22% were dentigerous cysts.[18] Koseoglu et al and Oji reported different prevalence rates regarding dentigerous cysts and keratocysts, but the case series included only 90 and 20 patients, respectively.[19-21]

In the present study, 60 cases (56.6%) were observed in men and 46 cases (43.3%) were seen in women, with a female: male ratio of 1:1.3 which is in accordance with other studies.[14,17,22,23] Most of the cysts in our study showed occurence in the third, fourth and fifth decades. These results are consistent and in agreement with the findings in prior studies. [22,14] Elderly patients (>60-year-old) represented the least age group in the present study.[24]

With respect to anatomic location, most odontogenic cysts affected the mandible, particularly the posterior region (40.5%), followed by the posterior region of the maxilla (28.3%). Coherently, these regions have been reported as the most common location of odontogenic cystic lesions in other studies.[7,25] In contrast, a study conducted in Lithuania found a higher frequency of odontogenic cysts in the maxilla, with a proportion of 1.5:1.[26] It should be emphasized that the later study only evaluated radicular and dentigerous cysts, a fact that might explain the differences in the results.[16]

CONCLUSION

A definitive diagnosis of the cyst type can be made on the basis of a delicate balance between the clinical, radiological, and histological findings. Accordingly, a strong interdepartmental relationship between the clinician and histopathologist is essential. Knowledge of the clinical and histological behavior of the odontogenic cyst is needed to ensure early detection and prompt treatment of these noncancerous but potentially destructive lesions. The present study shows more prevalence of radicular cysts, dentigerous cysts and odontogenic keratocysts. Some of the disadvantages of inferences made from hospital based studies could be that some people suffering from cystic lesions might not have reported to the dental school at all and may have been seen by private practitioners and other specialties.

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