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SHORT COMMUNICATION

Clinicomorphological Spectrum of Odontogenic Cysts and Fibro-osseous Lesions of Jaws: A Single Institute Experience

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ABSTRACT

Introduction: A retrospective analysis of odontogenic cysts and fibro-osseous cell lesions of jaws reported in our institute was done based on clinical and histopathological characteristics of lesions.

Materials and methods: Biopsies of lesions received between years 2000 and 2010 were reviewed, and patients' history, clinical, radiological, and histopathological characteristics were analyzed.

Results: One hundred and six biopsies received during the study period were analyzed. These lesions were more frequently seen in males than females, in a younger age group, and the commonest location was mandible. They mostly presented as radiolucent, slow-growing, and painless lesions.

Conclusion: Odontogenic keratocysts (OKCs) constituted majority of cysts, while fibrous dysplasias constituted majority of fibro-osseous lesions.

Keywords: Cyst, Fibro-osseous, Fibrous dysplasia, Keratocysts, Odontogenic.

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INTRODUCTION

The jaws are host to a wide variety of cysts and neoplasms due to the tissue involved in tooth formation. Nests of odontogenic epithelium (with or without their associated mesenchymal counterpart) are normally found in the jaw and have the potential to develop into cysts or tumors.[1] Another source of cysts in this region is related to breakdown of ectodermal lining cells during the union or fusion of various embryonic processes of the region, through the formation of entrapped epithelium-lined nests.[1]

Jaw lesions have a wide range of pathologic features but similar imaging appearances. Hence, familiarity of embryologic characteristics and secondary findings is crucial. Patient's age at manifestation, prevalence, location within jaws, cystic or solid appearance, and effect of the lesion on adjacent structures should be considered in making the diagnosis. Despite this information, many lesions are impossible to differentiate without biopsy.[2-7]

Traditional histopathology continues to be the mainstay for diagnosis of these lesions as immunohistochemistry and molecular techniques have had, as yet, little impact in this area.

AIM OF THE STUDY

The aim of the present study was to perform clinicopathological, radiological, and histological analysis and study the prevalence of odontogenic cysts and fibro-osseous lesions of jaws reported in our institute and compare them with other reports.

MATERIALS AND METHODS

A retrospective study was performed on 106 patients who had undergone surgery for jaw lesions between the years 2000 and 2009. Patients' history, clinical, radiological, and histopathological characteristics were analyzed. Hematoxylin and eosin (H&E) stain was used on sections of buffered formalin-fixed tissues.

RESULTS

Histological classification of odontogenic cysts was done based on current classification of jaw cysts by Regezi.[8]

Clinical Findings

About 58.5% (62/106) were male and 41.5% (44/106) were female patients. The mean age of presentation was 25 years (Graph 1). Mandible was affected in 63% (67/106), while maxilla was affected in 37% (39/106).

Table 1 shows the commonest clinical presentation as swelling (82 cases) with mostly slow growth (29 cases) and rapid growth in two cases. Swellings were mostly

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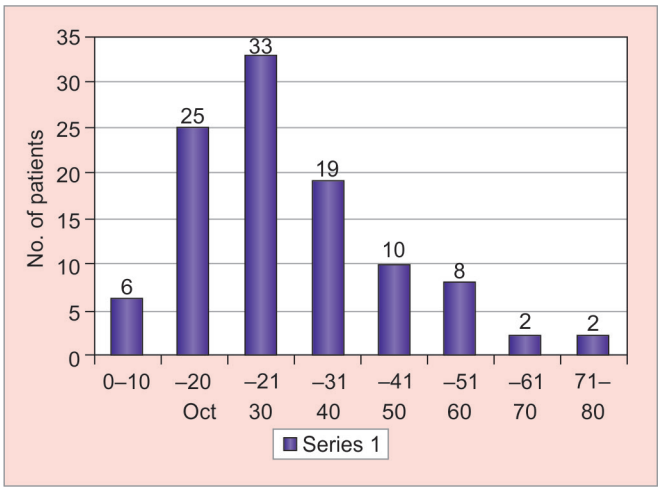

Graph 1: Age distribution of lesions

Table 1: Presenting symptoms in patients

Features	*No. of cases*
Swelling	82
Lesions associated with pain	14
Painless lesions	15
Lesions with slow growth	29
Lesions with rapid growth	2
Impacted tooth	13

painless (15 cases) and were painful in 14 cases. Thirteen cases presented with impacted teeth.

Radiological Findings

Of the 106 cases, 32 cases had radiological findings unavailable for study. Majority of the remaining lesions were radiolucent (70 cases), while 4 were radio-opaque.

Among the radiolucent lesions, 13 were multilocular and 20 unilocular, while in remaining 73 cases it was not specified. Three out of the four cases which were radio-opaque on radiology were cases of fibrous dysplasia and showed the classical ground-glass appearance.

Table 2: Distribution of various lesions

Lesion	*No. (%)*
A. Odontogenic cysts	92 (86.8)
Odontogenic keratocyst	40 (43.5)
Radicular cyst	32 (34.7)
Dentigerous cyst	18 (19.6)
Residual cyst	2 (2.1)
B. Fibro-osseous lesions	14 (13.2)
Fibrous dysplasia	8 (57.2)
Fibroma	3 (21.4)
Ossifying fibroma	3 (21.4)

Histopathological Findings

About 86.8% of the lesions (92/106) were odontogenic cysts (Table 2). Among these cysts, majority were OKCs (Fig. 1) constituting 43.47% (40/92) of the cysts, with most of these patients being in the 21 to 30 years age group, in which 28 were males while 12 were females. Mandible was the most commonly affected bone.

Moreover, OKCs were followed in prevalence by radicular cysts (Fig. 2) constituting 26% of all cysts (24/92), with majority being in 11 to 20 years age group. Both mandible and maxilla were equally affected bones. Majority were unilocular radiolucent swellings.

Dentigerous cysts (Fig. 3) were next in frequency constituting 19.5% (18/92) of all cysts, majority being in the age group of 11 to 20 years, with males (13/18) being more commonly affected and mandible (9/18) being the more commonly affected bone; 11/18 cases presented with impacted tooth.

Dentigerous cysts were followed by inflammatory cysts constituting 8.6% (08/92) of all cysts and one case each (1.0%) of residual and simple cysts.

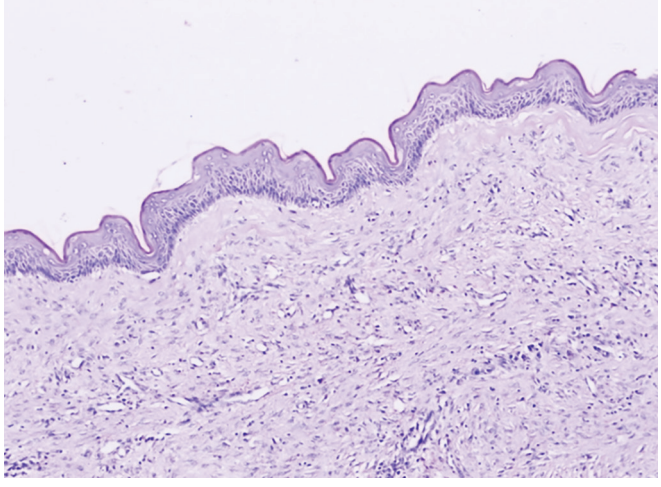

Fig. 1: Odontogenic keratocyst showing corrugated stratified squamous epithelium with polarized basal nuclei (H&E, 10×)

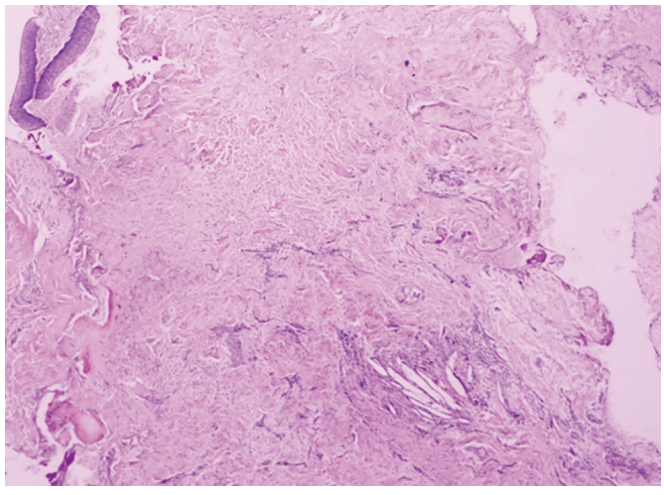

Fig. 2: Radicular cyst with spongiotic epithelium and collection of foamy macrophages, lymphocytes, and cholesterol clefts in the wall (H&E, 10×)

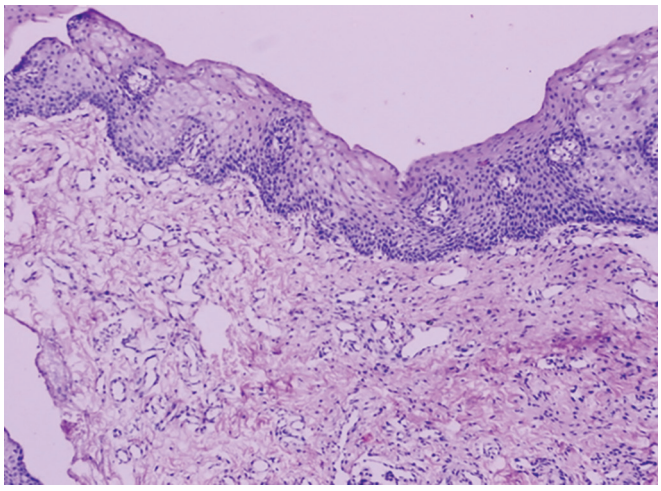

Fig. 3: Dentigerous cyst with thick fibrous wall and flattened nonkeratinized epithelium (H&E, 20×)

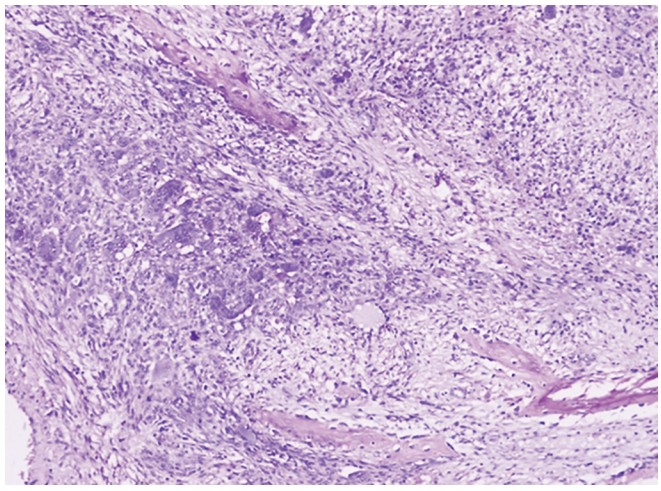

Fig. 4: Fibrous dysplasia showing fibrous tissue with osseous trabeculae resembling Chinese letters (H&E, 20×)

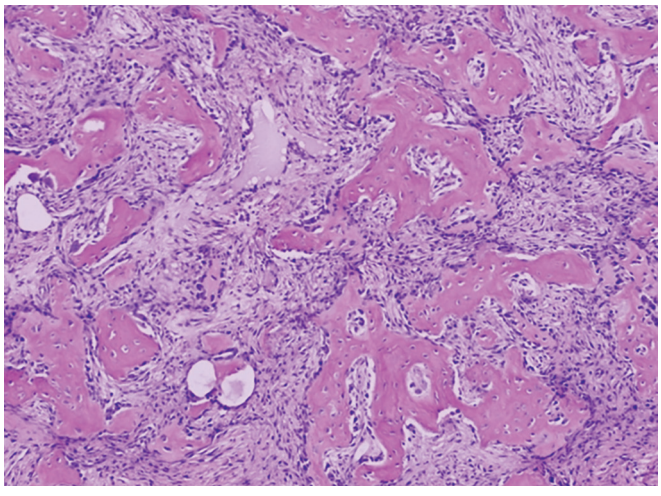

Fig. 5: Ossifying fibroma showing cellular fibrous tissue with bone formation rimmed by osteoblasts (H&E, 20×)

Fibro-osseous lesions constituted 13.2% of the lesions (14/106). Among these lesions, fibrous dysplasias (Fig. 4) constituted commonest lesions (57.14%; 8/14), presenting mostly (4/8) in the 11 to 20 years age group and affecting males more frequently (5/8). Three cases presented with a ground-glass appearance on radiology.

Fibrous dysplasias were followed in prevalence by fibromas constituting 21.4% of lesions (3/14). Three cases (21.4%) were of ossifying fibromas. Most of the ossifying fibromas (Fig. 5) presented as swellings in 31 to 40 years age group, with all three being females and all affecting the mandible.

DISCUSSION

The aim of the present study was to analyze various odontogenic cysts and fibro-osseous lesions of jaws reported in our institute between the years 2000 and 2009. In our literature search, we did come across a few studies similar to ours.[4,7,9]

One hundred and six cases of odontogenic cysts and fibro-osseous lesions of jaws reported in our institute were reviewed. Males (58.5%) outnumbered the female patients. As most of the patients were in the age group of 21 to 30 years, we can conclude that these are lesions of young age. Mandible was the commonly affected bone.

Most of the lesions presented as painless swellings (82 cases) with mostly slow growth (29 cases) and 13 presented with impacted teeth. Majority of these jaw lesions were radiolucent (70) lesions on radiology. Among the radiolucent lesions, most (20 cases) were unilocular lesions predominated by radicular cysts. Three cases of fibrous dysplasia showed the classical ground-glass appearance, which is similar to the study by Vegas Bustamante et al,[9] where four of their cases of fibrous dysplasias showed ground-glass appearance[9] on radiology.

Among odontogenic cysts and fibro-osseous lesions reported, cysts constituted majority of lesions (86.8%). Most common among cysts were OKCs, which constituted 43.47% of all cysts. In other studies, however, OKCs constituted only 10% of cysts of jaws.[2,3] The cause of high incidence of these lesions in our study could be due to geographical variations. Mandible was the most affected bone, with most patients being in the age group of 21 to 30 years and presenting mostly as radiolucent lesions in radiology. These findings coincide with those reported by Scholl et al[4] and Dunfee et al.[5]

In this study, OKCs were followed in prevalence by radicular cysts, which constituted 26% of jaw cysts. This is in contrast with the number reported by Scholl et al,[4] Dunfee et al,[5] and Mortensen et al,[6] who state that radicular cysts are commonest jaw cysts. Most of our cases presented between 11 and 20 years of age, which is in coincidence with the age incidence reported by Rosai.[1]

After radicular cysts, dentigerous cysts constituted the next commonest cystic lesion (19.5%) in our study. This finding of ours correlates with that of Koseoglu et al study,[7] where these cysts constituted the third most common lesions. The patients in our study were mostly in the 11 to 20 years age group with number of males being more and mandible being the commonest site. These lesions were also associated with impacted teeth in most cases. These findings are similar to those of Koseoglu et al,[7] Scholl et al,[4] and Dunfee et al.[5]

Among the fibro-osseous lesions, fibrous dysplasia was the commonest constituting 57% of these lesions and occurring in the 11 to 20 years age group. These findings are similar to those of Regezi.[8] Although males were commonly affected in our study, females were more affected in the study by Vegas Bustamante et al.[9] Most of these lesions had ground-glass appearance in radiology, both in our study as well as by Vegas Bustamante et al.[9]

Fibrous dysplasias were followed by three cases of fibromas (21.4%) and three cases (21.4%) of ossifying fibromas. Most of the ossifying fibromas presented as swellings in 31 to 40 years age group, with all three cases being females and all affecting the mandible. These findings coincide with those of McFarland et al.[10]

CONCLUSION

In our present study, an attempt was made to study the prevalence of various odontogenic cysts and fibro-osseous lesions of jaws as well as their clinical, radiological, and histopathological features.

Cysts were found to constitute most of the lesions of the jaws. Odontogenic keratocysts rather than radicular cysts constituted more common jaw cysts, the cause of which could be geographical variations. Among the fibro-osseous lesions, fibrous dysplasias were more in prevalence, which coincided with the findings in different studies. These lesions affected males more commonly than females. Mandible was more commonly involved than maxilla. Most of the lesions were radiolucent in radiology.

These varied lesions arise from both odontogenic and nonodontogenic sources with a variety of cystic and solid appearances. Patients' history, site of lesion, its borders, its internal architecture, and its effects on adjacent structures are helpful in narrowing the differential diagnosis. In most cases, these lesions must be surgically removed and examined microscopically to accurately establish the diagnosis.

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