

CLINICOPATHOLOGICAL STUDY OF ODONTOGENIC CYST AND TUMOR

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ABSTRACT

Introduction: Jaw cysts are a frequent diagnostic finding. They can be categorized as either odontogenic (the lining of the cystic sac developing from the epithelial remains of the embryonic tooth base) or non-odontogenic (the cyst lining is of another origin). The aim of study is to study the odontogenic cyst and tumor and its associations. **Method:** Cross sectional study of 50 patients with odontogenic cyst and tumor, they were collected in the Ghazi Al-hariri Hospital for Surgical Specialties from period of January 2022 to July 2022 all cases of odontogenic cyst and tumor with site, age and gender included in this study, no any exclusion criteria. **Results:** The current study revealed 50 individuals with odontogenic cyst and tumor, including 38 patients with odontogenic cyst and 12 patients with odontogenic tumor, [62.5%] of patients with Ameloblastoma in mandible, while [75%] of patient's have Odontogenic fibroma in maxilla. [75%] of patients with Ameloblastoma are males, [75%] of patient's have Odontogenic fibroma also males. Rang age of patients with Ameloblastoma is 20-30 years, while rang of patients with Odontogenic fibroma is 10-20 years. [60%] of patients with Dentigerous cyst in maxilla jaw, while [57.9%] of patient's have Radicular cyst in mandible jaw, [63.6%] of patients with Infected and non- infected odontogenic keratocyst in mandible jaw. [60%] of patients with Dentigerous cyst are females, [57.9%] of patient's have Radicular cyst are males. Infected and non-infected odontogenic keratocyst have 42.9 % of them are males and 57.1% of them are females with age range 20-50 years. There is significant association between type of swelling and diagnosis, [66.7%] of patients have Odontogenic tumor diagnosed as Ameloblastoma. [50%] of patients have Odontogenic cyst diagnosed as Radicular cyst. [33.3%] of patients have Odontogenic tumor diagnosed as Odontogenic fibroma. **Conclusion:** Most patients have Odontogenic tumor diagnosed as Ameloblastoma. And most patients have Odontogenic cyst diagnosed as Radicular cyst.

KEYWORDS: Clinical study, odontogenic cyst, odontogenic tumor.

INTRODUCTION

Jaw cysts are a frequent diagnostic finding. You may classify them as either odontogenic (the lining of the cystic sac developing from the epithelial remains of the embryonic tooth base) or non-odontogenic (the cyst lining is of another origin). Studies of the localization of cytokeratin's in the cyst epithelium provided the data for this categorization.^[1,2] Individual KCOTs have a distinct microscopic appearance, clinical course, and biological behavior. When the epithelial dental lamina of the upper and lower jaws proliferates, these growths result.^[2] They are often benign lesions, but their aggressive behavior and high recurrence risk after surgical excision make them a poor surgical candidate. Patients of any age may

be affected, however the majority of diagnoses are made between the ages of 30 and 40. Seventy percent to eighty percent of all keratocysts are located in the upper third molar region (in the maxilla) and the lower third molar region (in the mandible).^[3,4] Long concealed, often asymptomatic, and identified via accidental X-ray inspection, growing odontogenic keratocysts are distinguishable from radicular and follicular cysts by the usual alveolar bulge induced by expansive development.^[5] The lesions tend to expand mostly in the anteroposterior direction, and they may become very large without significantly altering the jaw bone. This kind of lesion may occur alone or in multiples; the latter is rather unusual but not unheard of. Increased

accumulation of hyperkeratotic scales in the cyst lumen causes a greater difference in hydrostatic pressure, which in turn promotes rapid growth due to the increased activity of the epithelial cells of the cyst lining stimulating the osteolytic activity of prostaglandin substances in the cell population of the cyst lining.^[6] Odontogenic keratocysts (OKCs) and Keratocystic odontogenic tumours (KCOTs) have a thin epithelial layer of 8-10 cells. The base layer has palisade-organized, uniform-nucleated cells. Parakeratosis with orthokeratins in the cyst lumen. Basal cell invasion into connective tissue may cause satellite microcysts. Thin cell walls without inflammatory infiltrates are common. In addition to parakeratotic OKC, an orthokeratinised form with a significant granular layer is also documented. Recent OKC versions include the solid variant⁴ and the peripheral OKC.^[7] Microscopic satellite cysts coupled to fragile, thin vacuoles are the major cause of postsurgical recurrence (10-60%). Multiple lesions increase recurrence risk. KCOTs have distinct histological, clinical, and biological characteristics among odontogenic cysts.^[8-10] These lesions have various tumor-like symptoms. OKCs may also develop the nevoid basal cell carcinoma syndrome (Gorlin syndrome).^[11] Several authors have documented aberrant expression of tumor suppressor genes and oncogenes in cyst epithelium, however these studies only occasionally addressed apoptosis and proliferation.^[12] The aim of study is to study the odontogenic cyst and tumor and its associations.

METHODS

Cross sectional study of 50 patients with odontogenic cyst and tumor, they were collected in the Ghazi Al-

hariri Hospital for Surgical Specialties from period of January 2022 to July 2022 all cases of odontogenic cyst and tumor with site, age and gender included in this study, no any exclusion criteria.

SPSS 22 was used to conduct the statistical analysis, and the results were presented in terms of percentages and frequencies for categorical data, and means, medians, and standard deviations for numerical data. Chi-square was employed to analyse the correlation between the variables. Any p-value below 0.05 is considered to be statistically significant.

RESULTS

The current study revealed 50 individuals with odontogenic cyst and tumor, including 38 patients with odontogenic cyst and 12 patients with odontogenic tumor.

Odontogenic tumor

The results of the current study revealed that 12 patients, including 4 patients with odontogenic fibroma and 8 patients with ameloblastoma, were present, [62.5%] of patients with Ameloblastoma in mandible, while [75%] of patient's have Odontogenic fibroma in maxilla. [75%] of patients with Ameloblastoma are males, [75%] of patient's have Odontogenic fibroma also males. Rang age of patients with Ameloblastoma is 20-30 years, while rang of patients with Odontogenic fibroma is 10-20 years as show in table 1.

Table 1: Frequency of site and gender, mean of age of patients according to diagnosis.

Diagnosis	Total	Site		Gender		Age {year} (rang)
		Mandible jaw	Maxilla jaw	male	female	
Ameloblastoma	8	5 (62.5%)	3 (37.5%)	6(75%)	2(25%)	[20-30]
Odontogenic fibroma	4	1 (25%)	3 (75%)	3(75%)	1(25%)	[10-20]
Total	12	6	6	9	3	

Odontogenic cyst

The current study showed that 38 patients were found to have as show in table 2, [60%] of patients with Dentigerous cyst in maxilla jaw, while [57.9%] of patient's have Radicular cyst in mandible jaw, [63.6%] of patients with infected and non-infected Odontogenic

keratocyst in mandible jaw. [60%] of patients with Dentigerous cyst are females, [57.9%] of patient's have Radicular cyst are males. Infected and non-infected odontogenic keratocyst 42.9 %of them are males and 57.1% of them are females with age range 20-50 years. As show in table 2.

Table 2: Frequency of site and gender, mean of age of patients according to diagnosis.

Diagnosis	Total	Site		Gender		Age {year} (rang)
		mandible jaw	Maxilla jaw	male	female	
Dentigerous cyst	5	2 (40%)	3 (60%)	2 (40%)	3 (60%)	[13-40]
Radicular cyst	19	11 (57.9%)	8 (42.1%)	11 (57.9%)	8 (42.1%)	[25-55]
infected and non-infected odontogenic keratocyst	14	10 (63.6%)	4 (36.4%)	6 (42.9%)	8 (57.1%)	[20-50]
Total	38	23	15	19	19	

There is significant association between type of swelling and diagnosis, [66.7%] of patients have Odontogenic tumor diagnosed as Ameloblastoma. [50%] of patients

have Odontogenic cyst diagnosed as Radicular cyst. [33.3%] of patients have Odontogenic tumor diagnosed as Odontogenic fibroma. As show in table 3.

Table 3: Association between types Odontogenic cyst and tumor.

diagnosis	Type	
	Odontogenic tumor	Odontogenic cyst
Ameloblastoma	8	0
	66.7%	0.0%
Odontogenic fibroma	4	0
	33.3%	0.0%
Dentigerous cyst	0	5
	0.0%	13.2%
Radicular cyst	0	19
	0.0%	50.0%
infected and non-infected odontogenic keratocyst	0	14
	0.0%	36.8%
Total	12	38
	100.0%	100.0%

P-value = 0.0001 (significant).

There is no significant association between site of swelling and diagnosis. As show in table 4.

Table 4: Association between site of Odontogenic cyst and tumor.

Diagnosis	Site	
	maxilla	Mandible
Ameloblastoma	5	3
	17.2%	14.3%
Odontogenic fibroma	1	3
	3.4%	14.3%
Dentigerous cyst	2	3
	6.9%	14.3%
Radicular cyst	11	8
	37.9%	38.1%
infected and non-infected odontogenic keratocyst	10	4
	34.4%	19.0%
Total	29	21
	100.0%	100.0%

P-value = 0.44 (not significant).

There is no significant association between gender and diagnosis. As show in table 5.

Table 5: Association between gender and diagnosis.

Diagnosis	Gender	
	Females	Males
Ameloblastoma	2	6
	9.5%	21.4%
Odontogenic fibroma	1	3
	4.5%	10.7%
Dentigerous cyst	3	2
	14%	7.1%
Radicular cyst	8	11
	36%	39.3%
infected and non-infected odontogenic keratocyst	8	6
	36%	21.5%
Total	22	28
	100.0%	100.0%

P-value = 0.7 (not significant).

DISCUSSION

While reports of a lower incidence of these lesions in Sicily (10.4% of all oral and jaw biopsies) and England (12.8% of all oral and jaw biopsies) are in the low range, the prevalence of odontogenic cysts in our research was comparable to those linked to Singapore and Brazil.^[13-16] This disparity may be explained by the fact that oral and maxillofacial surgeons take much more biopsies of odontogenic cysts than they do of other lesions. There will be a corresponding rise in the number of odontogenic cysts seen, albeit regional variations in cyst distribution are possible. The present research found that dentigerous cysts were the most common odontogenic cysts among the studied population, followed by radicular cysts and OKC. These results matched those of Dhanuthai et al.^[17] and Ochsenius et al.^[18], who found that dentigerous cysts were the most prevalent kind of cyst seen in children in Thailand and Chile, respectively. While some research has shown dentigerous cysts to be more frequent than periapical cysts, other research has found the opposite to be true.^[19,20] Sharifian et al. found a frequency of 37.8%, whereas Tortoric et al. found a prevalence of 84.5% in their evaluation of the literature on radicular cysts.^[16,20] We found that radicular cysts were really the second most prevalent kind of cyst. It's possible that this problem arises because Hamadan's maxillofacial surgeons don't routinely refer the periapical inflammatory tissues connected to removed teeth for histological assessments. Inadequate clinical and radiological information supplied to the referred pathologist may also contribute to the high prevalence of inflammatory cysts that cannot be characterized. Contrary to the findings of Jones et al.^[15], calcifying odontogenic cysts have been demonstrated to be rather common. Study procedures may account for discrepancies in findings among research. Some studies, for instance, have solely analyzed developing cancers, while others have only surveyed youngsters. In addition, the results of this study showed that odontogenic cysts were more prevalent in the maxilla than the mandible, which was consistent with the findings of some other studies^[15,16,19], but at odds with the findings of other studies^[15], which reported the same prevalence of odontogenic cysts in both jaws, and Meningaud et al. alstudy.'s which conveyed higher prevalence in mandible.^[21] This research found that the third and fourth decades of life were the highest ages for developing odontogenic cysts. Oral cysts are most common between the ages of 30 and 50, according to research by Ochsenius G et al.^[22] The most prevalent age range, as described by Bataineh et al.^[23] and corroborated by the current research, is the third to fifth decade of life. Tumors of the mouth, or odontogenic tumours, are unusual lesions, yet their prevalence in oral biopsies has varied widely throughout international research.^[24] In this study, the number of odontogenic cysts in female was a little bit higher than in men. Most inflammatory cysts, like radicular cysts. In our study, OKC was the second most common type of odontogenic cyst. However, in most studies, it has been the third most

common type of cyst^[15,16] 2.7% of oral and mandibular samples were classified as odontogenic tumor's based on the pathology results. Reports from the American continent provided further confirmation that the incidence of these lesions was far lower than 2%.^[25] According to our findings, ameloblastoma is by far the most frequent odontogenic tumour. Research conducted in Asian countries yielded similar results.^[14] In addition, research conducted in Africa found the same thing.^[26] It is important to emphasise that some odontogenic cancers may not have been diagnosed or reported because to the limited sample size of this study. Accordingly, more research is needed to determine the frequency of odontogenic tumours and cysts in the United States. The authors also think that patients ought to be prompted to get regular clinical and radiological exams in order to speed up the process of treating oral and maxillofacial cancers and cysts.

CONCLUSION

Most patients have Odontogenic tumor diagnosed as Ameloblastoma. And most patients have Odontogenic cyst diagnosed as Radicular cyst. Most patients diagnosed as Dentigerous cyst occur in maxilla and most of patients diagnosed as infected and non-infected odontogenic keratocyst occur mandible. Mean age of patients have Odontogenic tumor 20-30 years, while Odontogenic cyst 20-50 years.

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