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Assessment of Prevalence of Odontogenic Tumors and Cysts in Tamilnadu

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ABSTRACT

Introduction: Odontogenic tumors and cysts involves a significant feature of oral maxillofacial pathology.

Objectives: This study was done to assess the prevalence of odontogenic tumors and cysts.

Methods: Data of odontogenic cysts and tumors diagnosed between 2012 and 2018 were collected from the files of the Department of Oral medicine and oral Pathology.

Results: 89 (88.1%) cases were cyst and 12 (11.9%) were tumors out of 101 cases. Highest number of cyst and tumors lesion were observed during 22-40 (47.2% and 50%) and 41-60-year (34.8% and 33.3%) age duration respectively. Maximum lesions were observed after 6 months of time. Cyst and tumor had more female predilection compared to male. Maximum lesions were observed anterior maxilla and middle and posterior mandible area for both genders. Radicular cyst was predominantly found followed by dentigerous cyst and odontoma, ameloblastoma and other lesions. Prevalence of radicular cyst was statistically highly significant ($P > 0.001$). Radicular cyst (94.1%) were mostly located at anterior maxilla, dentigerous cyst found more at middle and posterior mandible (69.2%). Maximum case of radicular cyst (80.9%) were operated with enucleation while 12.3% by enucleation and 33.3% by excision for dentigerous cyst.

Conclusion: The prevalence of odontogenic cysts was comparable to that described in the literature, with inflammatory cysts occurring most commonly.

Key Words: Ameloblastoma, Dentigerous, Cyst, Tumors, Odontoma

INTRODUCTION

Odontogenic tumors and cysts involves a significant feature of oral maxillofacial pathology. Numerous researches have been done concerning the prevalence of odontogenic cysts and tumors. In Meningaud et al., evaluated odontogenic cysts and operated under it general anesthesia. ¹ It has been observed that the average age of the patients was 41.8 ± 15.8 years. The lesions were quite common in the mandible compared the maxilla (in a mandible to maxilla ratio of 3:1) with male predominance. The most regularly diagnosed odontogenic cysts found were radicular cysts (53.5%), dentigerous cysts (22.3%) and odontogenic keratocysts (19.1%). De-Souza et al.,² evaluated demographic profile of odontogenic cysts among the Brazilian group over a period of 38-year. They concluded that the occurrence of odontogenic cysts amongst the Brazilian population was comparable to other

populations around the world. The average age for the patients suffered was 31.0 years with female predominance and a male to female ratio of 0.78:1. They also observed 68.3% of patients at second and fourth decades of life.

Inflammatory cysts were the most communal odontogenic cysts, while radicular, dentigerous and odontogenic keratocysts accounted for 87.9% of all the cysts. Residual cysts accounted for 4.9% in patients with an average age of 44.5 years. Avelar et al evaluated prevalence of odontogenic cysts among the Brazilian population and found 9.94% odontogenic cysts. ³ Forouzandeh et al.,⁴ evaluated the prevalence of odontogenic cysts based on gender, age, and location. They found 19.5% cysts of the osseous structures while 81.9% of them were odontogenic in origin, 12.4% were pseudocysts. In their study Guerrisi et al found Odontoma, (50.9%) most commonly followed by, Ameloblastoma (18.3%) and

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Myxoma (8.5%).⁵ Fernandes et al.,⁶ showed that odontogenic tumors comprised 1.78% of all oral and maxillofacial lesions, in which 99.4% were benign lesions and only 0.6% was malignant. Ladeinde et al., observed that 308 (96.6%) were intraosseous, and 11 (3.4%) were peripheral (peripheral odontogenic fibroma=7; peripheral myxoma=3; peripheral ameloblastoma=1).⁷

Due to the inconsistencies in data and lack of databases concerning to cyst and tumors, we attempted to conduct this study to estimate the prevalence of odontogenic cysts and tumors in the Tamilnadu population based on the available data.

MATERIALS AND METHOD

This retrospective study was done in the department of Oral medicine and Radiology. Data of odontogenic cysts and tumors diagnosed between 2012 and 2018 were collected from the files of the Department of Oral medicine and oral Pathology. Information regarding demographic profile, location, size of cyst and tumor lesion treatment and histopathological information were obtained from the clinical and levorotary records. Ethics Committee form the institute approval was obtained prior to study. Classification of the cyst and tumor diagnosis referred based on the International Statistical Classification of Diseases and Related Health Problems (ICD-10) published by World Health Organization.

Data was evaluated using the SPSS - 21 (Chicago, IL-USA)) statistical software for Windows. Descriptive statistics and test of significance were suitably applied and used. The level of significance was set at $P < 0.05$.

RESULT

Among the clinical records of 300 maxillofacial cases recovered from the Medical Records Department oral medicine and oral pathology, 7-year period, only 101 confirmed cases. That 89 (88.1%) were cyst and 12 (11.9%) were tumors.

Table 1 indicates distribution of patients according to lesion type. Highest number of cyst and tumors lesion were observed during 22-40 (47.2% and 50%) and 41-60-year (34.8% and 33.3%) age duration respectively. Maximum lesions were observed after 6 months of time. Male distribution of cyst and tumors was 41.6% and 41.7% respectively and for female it was 58.4% and 58.3%. It indicates that female distribution of cyst and tumor was more compared to male. Distribution of lesion was more at above 6 months' duration (Table-2).

Maximum lesions were observed anterior maxilla and middle and posterior mandible area for both genders (Table-3). It was statistically significant ($P < 0.02$). It was observed that

56 cases of radicular cyst were less than 1 cm and 18 were more than 1 cm. 10 cases of dentigerous cyst were less than 1 cm and 5 were more than 1 cm. Similarly, 3 case and 1 case for odontoma and 3 & 1 case in ameloblastoma had less than 1 cm and more 1 cm lesion size respectively. Total radicular cyst was 74 (73.2%) cases, 15 (14.9%) cases were dentigerous cyst, 4 (3.9%) each was for odontoma, ameloblastoma and another lesion (Table-4). Radicular cyst was predominantly found followed by dentigerous cyst and odontoma, ameloblastoma and other lesions. Prevalence of radicular cyst was statistically highly significant ($P > 0.001$). Radicular cyst (94.1%) were mostly located at anterior maxilla, dentigerous cyst found more at middle and posterior mandible (69.2%) whereas odontoma and ameloblastoma found at anterior mandible and middle and posterior mandible commonly (Table-5).

Maximum case of radicular cyst (80.9%) was operated with enucleation while 12.3% by enucleation and 33.3% by excision for dentigerous cyst. 27.4% of odontoma were treated by enucleation (Table-6). It has indicated that most of cyst and tumors were treated by enucleation and excision procedures followed by apicectomy and least by resection.

DISCUSSION

From tooth apparatus or its remnants, lesions such as odontogenic tumors and cysts are tend to arise. In our study, odontogenic tumors and cysts were examined depends on age, gender, nationality, occupation, size, type of the lesion, duration, location, clinical diagnosis and treatment delivered. Odontogenic tumors are unusual lesions of the maxilla and mandible that must be deliberated as a differential diagnosis when examining jaw lesions.⁸

With respects to age, the third and fourth decades of life were the most common age groups in our study. These findings are dependable and in covenant with the findings in earlier studies.^{9,10} Santos et al., however, exhibited a peak incidence in the second decade of life, this difference in age incidence possibly being connected to the major prevalence of odontomas in such an age range, in their study. Elderly patients (>60-year-old) represented the least age group in our study. One of the main difficulties that the dental profession faces is the delivery of care for the elderly.⁸ This age group suffers from deprived individual oral hygiene care aptitudes, decreased capacity to communicate dental problems and pain to others and obstacles to attain dental treatment such as financial, transport, physical, and cognitive obstacles.

Daley et al., found that, out of total 445 (1.11%) odontogenic tumors, 392 (0.98%) were lesions from patients in the usual local drawing area of the biopsy service; 53 were referred from distant centers.¹¹ Mosqueda-Taylor et al in their retrospective study of odontogenic found a total of 349 odonto-

genic tumors, in that 345 were benign (98.8%), and 4 (1.1%) were malignant.¹² Al-Rawi et al found that most of the dominant odontogenic cysts are radicular cysts (69.1%) – followed by dentigerous cysts (7.9%). Odontoma (12.2%) was most predominant among the odontogenic tumors, followed by ameloblastoma (2.9%) For the formation of cysts and tumors, the middle and posterior mandible was the most common anatomic site. 93.4% of patients over 40 years showed odontogenic cysts.¹³

CONCLUSION

Odontogenic cysts and tumors were originating mostly in the middle and posterior mandibular regions, in variable sizes, at the time of diagnosis. Radicular cysts are the greatest predominant among the odontogenic cysts followed by the dentigerous cyst, whereas odontoma is the utmost prevalent odontogenic tumor and seen mostly in the first and second decades of life.

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Author contribution

1. Dr. Kiruthika V: Investigation
2. Dr. Mohan N: Data collection
3. Dr. Karthik R: Manuscript preparation

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Table 1: Dispersal of patient age groups according to lesions type

Age range (years)	Type		P	Duration (months)	
	Cysts (%)	Tumors (%)		<6%	>6 (%)
0-21	12 (13.4%)	2 (16.7%)	0.047	3 (27.2%)	14 (19.4%)
22-40	42 (47.2%)	6 (50%)		5 (45.5%)	34 (47.2%)
41-60	31 (34.8%)	4 (33.3%)		2 (18.2%)	20 (27.8%)
>60	4 (0.4.4%)	0 (0)		1 (9.1%)	4 (5.6%)
Total	89	12		11	72

Table 2: Distribution of patient gender groups according to type of lesions and duration

Gender	Type		Duration (months)	
	Cysts (%)	Tumors (%)	<6%	>6 (%)
Male	37 (41.6%)	5 (41.7%)	4 (36.4%)	30 (41.7%)
Female	52 (58.4%)	7 (58.3%)	7 (63.6%)	42 (58.3%)
Total	89	12	11	72

Table 3: Distribution of patient gender groups based on the location of the lesion

Gender	Location		Duration (months)		Combined locations	P value
	Anterior maxilla, (%)	Middle and posterior (%)	Anterior mandible	Middle and posterior mandible		
Male	8 (25%)	8 (57.1%)	7 (58.3%)	21 (52.5%)	2	0.02
Female	24 (75%)	6 (42.9%)	5 (41.7%)	19 (47.5%)	1	
Total	32	14	12	40	3	

Table 4: Distribution of odontogenic cysts and tumors based on the size of the lesion

Clinical diagnosis	Size (cm)		P values
	<1 %	>1 %	
Radicular cyst	56 (73.7%)	18 (72%)	0.001
Dentigerous cysts	10 (13.2%)	5 (20%)	
Odontoma	3 (3.9%)	1 (4%)	
Ameloblastoma	3 (3.9%)	1 (4%)	
Others	4 (5.3%)	0 (0)	
Total	76	25	

Table 5: Distribution of odontogenic cysts and tumors based on location

Clinical diagnosis	Location				Combined locations	P value
	Anterior maxilla, (%)	Middle and posterior (%)	Anterior mandible	Middle and posterior mandible		
Radicular cyst	32 (94.1%)	10 (71.4%)	4(36.4%)	27 (69.2%)	1 (33.3%)	0.000
Dentigerous cysts	2 (5.9%)	2 (14.4%)	3 (27.3%)	8 (20.5%)	0	
Odontoma	0	1 (7.1%)	2 (18.2%)	1 (2.6%)	0	
Ameloblastoma	0	0	2 (18.2%)	1 (2.6%)	1(33.3%)	
Others	0	1 (7.1%)	0	2 (5.1%)	1(33.3%)	
Total	34	14	11	39	3	

Table 6: Distribution of odontogenic cysts and tumors based on treatment provided

Clinical diagnosis	Treatment				
	RCT/exo/ apicectomy	Enucleation (%)	Excision (%)	Resection (%)	Others (%)
Radicular cyst	12 (75%)	59 (80.9%)	2 (22.2%)	0	1 (100%)
Dentigerous cysts	3 (18.8%)	9 (12.3%)	3 (33.3%)	0	0
Odontoma	1 (6.2%)	2 (27.4%)	1 (11.1%)	0	0
Ameloblastoma	0	1 (13.7%)	1 (11.1%)	2 (100%)	0
Others	0	2 (27.4%)	2 (22.2%)	0	0
Total	16	73	9	2	1

RCT: Root canal treatment