

Radiographical and Clinical Features of Ameloblastoma among patients Visiting the Tertiary Care Hospital

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ABSTRACT

Background: Odontogenic tumors derived from tooth forming apparatus, either epithelial or ecto-mesenchymal or both. Ameloblastoma is a true neoplasm of odontogenic epithelium, represent 1% of all oral ectodermal tumors and 9% of odontogenic tumors. It is a benign tumor that shows an insidious slow growth, locally invasive with high recurrence rate.

Aim: To determine radiographical and clinical features of ameloblastoma in patients reporting to Oral and Maxillofacial Surgery.

Study design: Descriptive Cross-Sectional Study

Place and duration of study: Department of Oral and Maxillofacial surgery, Multan Medical and Dental College Multan during 6 months.

Methodology: A descriptive audit including all patient records with a histopathologically confirmed report of ameloblastoma based on the routine Hematoxylin and Eosin staining during the period of 6 months. Consecutive non-probability sampling technique was used.

Results: A total of 140 patient records were included in this study among whom 95 (67.9%) were male and 45(45%) were female. 123 (87.9%) lesions were found in the mandible, while 17(12.1%) in the maxilla. Swelling was the most commonly reported symptom in 137(97.9%) of the cases. Pain and tooth mobility were among other symptoms. Radiographically, the multilocular appearance accounted for 97(69.3%) while uni-locularity was present in 43(30.7%) of the lesions.

Conclusion: This study concluded that males are more affected with ameloblastoma than females. The 2nd and 3rd decades of life were the most common age group affected. Painless swelling was the most common clinical feature reported in ameloblastoma attributing to late diagnosis.

Keywords: Ameloblastoma, features, multilocular, Radiograph.

INTRODUCTION

Odontogenic tumors are derived from the tooth-forming apparatus, either ecto-mesenchymal or epithelial or both, and constitute a heterogeneous family of lesions having diverse clinical appearances and histopathological features¹. Three commonest odontogenic tumors are an ameloblastoma, an odontomas & keratocyst odontogenic tumors². Ameloblastoma, true neoplasm of an odontogenic epithelium, represents one per cent of entire oral ectodermal tumors & nine per cent of odontogenic tumors. This benign tumors is locally invasive and displays a slow insidious growth, with higher recurrence rate³.

Ameloblastoma has been seen in both the genders equally, showing mandibular to maxillary ratio 5:1, with the common location being posterior area of mandible. Lesion is usually asymptomatic in many patients and detected by routinely radiographic examination. Clinically expansion and swelling of the jaw bone can be noticed⁴. Adeline et al determined that presenting symptoms of an ameloblastoma were mainly swelling (98%), teeth mobility (57%) followed by pain (36%). Ameloblastoma of maxilla tended to occur usually in anterior sites, whereas, Posterior mandibular area was commonly and frequently affected site⁵. Results stated by Liu et al exposed that ameloblastoma usually occur most frequently in mandible (81 %) while less common in the maxilla (19%). Radiographically, it may exist as multilocular or unilocular lesion and the resorption of root is not scarce. In their study, Christopher et al, disclosed that out of all involved ameloblastoma cases, 58% were multilocular and 42% were unilocular radiographically, with resorption of root in forty two per cent cases^{6,7}.

Stomodeum or primitive oral cavity, is lined by the stratified squamous epithelium known as "oral ectoderm". Oral cavity is versatile, performing various functions pertaining to phonation, respiration and digestion¹⁴. Histologically it comprises of mainly non keratinized stratified squamous epithelium, due to functional demands placed on oral cavity⁸. In 1827, Original description of an ameloblastoma was put forward by Carsack. While in 1868, first report in the scientific literature was shaped by Broca. Falkson In 1879, gave first thorough histological

description of term 'adamantinoma'. In 1934, Term ameloblastoma was proposed by Churchill and Ivy because that old/previous term "Adamantinoma", (1885) claimed by Falkson and then later Malassez erroneously inferred hard tissue formation. Since type of enamel organ in ameloblastoma doesn't undergo differentiation to that point of the malformation; hard tissue isn't present in tumor mass. As per Willis (1948), term "ameloblastoma" along with its predecessor/antecedent "adamantinoma" have been misnomers as tumor either didn't develop from the ameloblasts, neither it form enamel, & postulated "it could be better to name them carcinomas of tooth-germ residues", re-supporting his own opinion of malignancy of neoplasm. In 1937, Robinson defined it "benign tumor which is usually nonfunctional, uni-centric, intermittent-growth, anatomically benign & clinically persistent." World Health Organization (1991) well-defined ameloblastoma as "benign nevertheless locally aggressive/destructive tumor with higher tendency to recur/relapse, consisting of the proliferating odontogenic epithelium which is lying in fibrous stroma"^{9,10}.

Mostly it takes place in patients of 20- 50 years with peak incidence in 4th and 5th decades of one's life. Ameloblastoma in kids less than 1 year have also been documented. In (1995), Reichart et al., in his review stated that just 1.8% patients were less than ten years with median age of 35.9 years whereas average age at 1st diagnosis from the developed nations was 39.1 years in comparison to 27.7 years of patients from the developing states¹¹.

Clinically, owing to its intra-osseous origin with the minimal or not at all symptoms, they are thus, seldom detected early. It presents as slow-growing and pain free mass that might reach a substantial size with the swelling being primary worry among most of patients. Other symptoms may appear later and include pain because of super-infection, regional paraesthesia in the exceptional cases, toothache, mobility of tooth as well as oral mucosa's superficial ulceration. Intra-oral bleeding, unhealed tooth extraction site and swift growth of lump in jaw also been described. In more scarce lesions of maxilla, invasion of upper jaw, epistaxis or cheek swelling have been told as the presenting symptoms¹².

The objective of study was to determine /Assess Radiographical and Clinical Features of Ameloblastoma among Patients Visiting the Department of Oral & Maxillofacial Surgery

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METHODOLOGY

Cross-sectional study of six months interval (1st April 2019 to 30th Sept 2019) was conducted at department of OMFS, Multan Medical and Dental College Multan. Sampling technique used was Consecutive non-probability. WHO calculator was used for 95% confidence level, 19% proportion, at margin of error 6.5%, sample size came as 140.

Inclusion Criteria: All histo-pathologically confirmed cases of an ameloblastoma coming to OMFS, comprising both female and male patients, age group eighteen to fifty five years were involved in study.

Exclusion Criteria: Recurring cases of an ameloblastoma were omitted from study.

Research was approved by the institutional Ethical Committee. Informed consent was reserved from all patients about her/his participation in our study. In the case of a minor, approval was achieved from patient's parents or guardian. Detailed history afterwards clinical & radio-graphical examination of patient was done. Radiographic investigations comprise PNS, OPG & CT scan. Biopsy (incisional/excisional) was done under local or the general anesthesia. Biopsy was referred to a single histo-pathologist. Data was collected by using a Performa which gather patient's bio-graphical data & variables for instance radiological presentations, clinical features, and the site of lesion.

Analyzed was done by using SPSS version-17. Frequency & percentages were calculate for the categorical variables clinical features, gender, and radiological. Mean ± SD was also calculated for the numerical variables e.g age. Common radiological and clinical features were also stratified amongst gender and age to see effect modifiers. Post-stratification chi-square test was done keeping a p value equal to or less than 0.05 as a significant. Collected data was then presented in the form of the tables, bar and picture.

RESULTS

A total of 140 cases with ameloblastoma were included in the study among whom 95(67.9%) were male and 45(32.1%) were female. Figure 1. Overall age range of 18-55 years. The 26-36 years age group was the most commonly affected with 65(46.4%) of the cases. Cases below 36 years of age were significant with 77(55%). The frequency of ameloblastoma by age group is shown in Table 1.

Swelling was the most commonly reported symptoms in 137(97.8%) of the cases. Pain was a symptom in only 17(12.14%) of the cases among whom 12(8.5%) were mild, 5(3.6%) were having moderate pain and no case was of severe pain. While history of mobile teeth was recorded in 73(52.1%) of the cases. As shown in figure 2

Regarding the location of the lesion, 123(87.85%) were found in the mandible, while 17(12.14%) were located in the maxilla. The posterior mandible was the most commonly reported site while the anterior segment was the most affected site in the maxilla. No statistical significance was reported between symptoms of the ameloblastoma with relation to the age distribution. As shown in table 3. Similarly, no statistical significance was reported between symptoms of the ameloblastoma with relation to the gender. Cross tabulation of symptoms of Ameloblastoma with gender has been shown in Table 4

A Multilocular appearance was the most common radiographic feature recorded accounting for 97 (69.2%) cases while unilocular lesions accounted for 43(30.7%) of the lesions. There was, however no statistical significance of the radiological features with gender (P>0.05) (Figure 2).

Figure 1: Gender wise distribution of patients

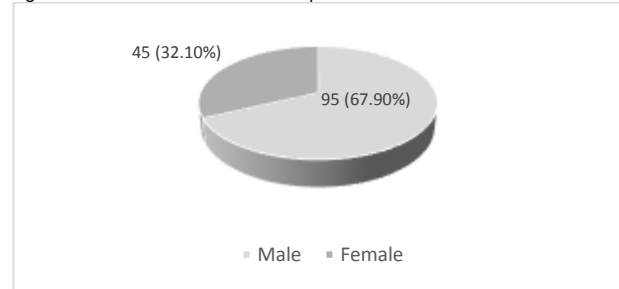


Figure 1: Percentages of Common symptoms of Ameloblastoma

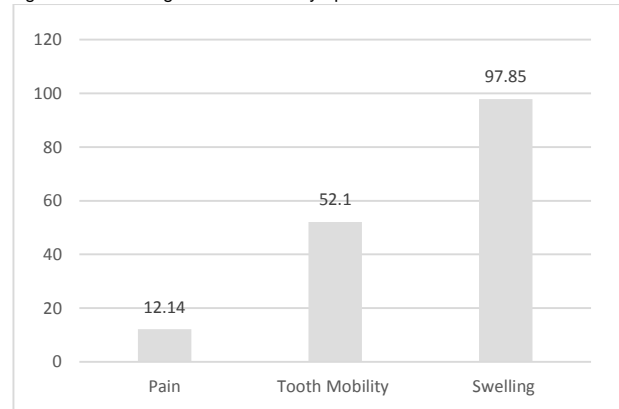


Figure 3: Gender wise distribution of pattern of ameloblastoma

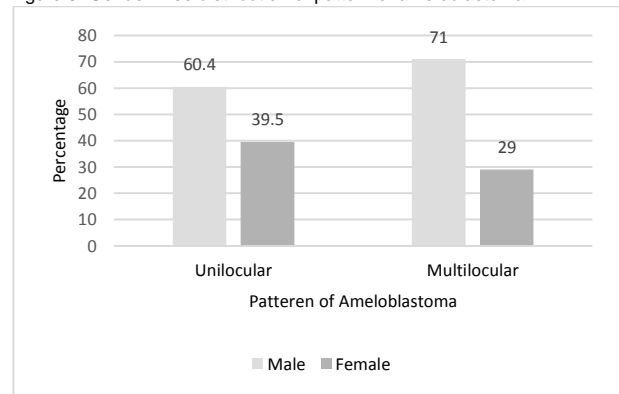


Table 1: Distribution of Ameloblastoma according to age group

Age	Frequency	%age
15-25	12	8.6
26-36	65	46.4
37-47	48	34.3
48-58	15	10.7
Total	140	100.0

Table 3: Cross tabulation of symptoms of the ameloblastoma with age

Age	Symptoms					
	Pain (%)		Tooth mobility (%)		Swelling (%)	
	Yes	No	Yes	No	Yes	No
15-25	1(5.8 %)	11 (9%)	5 (6.8%)	7 (10%)	12 (8.7%)	0
26-36	7 (41.2%)	58 (5.7%)	36 (49.3%)	29 (43.3%)	62 (45.2%)	2(66.6%)
37-47	5(29%)	43 (35%)	24 (32.9%)	24 (35.8%)	48 (35%)	1(33.3)
48-58	4 (23.5%)	11 (8.9%)	8 (10.9%)	7 (10.4%)	15 (10.9%)	0
Total	17 (12.1%)	123 (87.8%)	73 (52.1%)	67(47.8%)	137(97.8%)	3(2.14%)
P value	.679		.826		.353	

Table 4: Cross tabulation of symptoms of Ameloblastoma with gender

Gender	Symptoms					
	Pain		Tooth mobility		Swelling	
	Yes	No	Yes	No	Yes	No
Male	15(15.7%)	80(84.2%)	47 (49.4%)	48(50.5%)	92(67.8%)	2(66.6%)
Female	2(4.4%)	43 (94.5%)	26 (57.7%)	19 (42.2%)	44(32.1%)	1(33.3%)
Total	17(12.1%)	123(87.8%)	73(52.1%)	67(47.8%)	137(66.6%)	3(33.3%)
P value	.127		.358		.521	

DISCUSSION

An ameloblastoma is benign odontogenic tumor having epithelial origin with a higher level of recurrence/relapse which shows locally aggressive behavior¹³. Of all oral cavity's swellings, nine per cent are an odontogenic tumors and inside this group, an ameloblastoma accounts for one per cent of lesions. Ameloblastoma happens with an equal frequency in the both genders & it's less common in maxilla than mandible. It can also occur in three dissimilar clinico-radio-graphic patterns, conventional an intra-osseous/multicystic (eighty six per cent), unicystic (13%) & peripheral (1%). Histological classification subdivides into plexiform, follicular, granular and acanthomatous ameloblastoma^{14,15}.

Objective of current examination was to determine/assess common radiological and clinical features of ameloblastoma. Few reports have been printed, showing that ameloblastoma arises with an equal incidence in women and men^{14,16}. Our current study indicated a small male dominance which is synchronized with investigation done by Tatapudi et al¹⁷ while woman preponderance is stated in studies done in Chile and Mexico^{18,19}. Twenty six to thirty six years age-group was the most commonly affected i.e., 65 patients (46.4% of cases). This relates with results of that study conducted by shoor et al²⁰, in which mean age was stated to be 37.57 year, whereas an examination led by Arotiba et al, age-group of the patients with an ameloblastoma was b/w18-19 years (44%)²¹. Our results are same as reported in another research, where highest incidence was noted in third and the fourth decades¹³.

There is consensus in literature that an ameloblastoma more habitually affect mandible, mainly in its posterior area/region²². Swelling was most commonly stated symptoms, in 99.9% of cases of this present research with related symptoms like purulent discharge, pain, paresthesia and mobility of tooth. Bleeding because of trauma on eating, superficial ulceration, trismus & an extracted tooth socket that was failed to heal were among less documented symptoms. This was like that observation completed by Kim et al²³. A small number of patients also presented with slow growing solitary swelling which is also consistent with those studies done by Simon et al²⁴ and Adeline et al⁵.

Radiological features of this research exposed that Multi-locular appearance was utmost common radio-graphic features involving 69.2% cases whereas uni-locular lesion were 30.7% of cases. Radiological features showed no statistical significance with gender. Most researches re-inforce idea that the ameloblastoma are mostly categorized by multi-locular radiolucencies, which is also concurrent with our findings^{25,26}. A study of kim et al oppose our outcomes where, they saw 59.2% of lesion as uni-locular with well-demarcated border. Out of remaining cases, fourteen were Multi-locular and thirteen were unknown in their appearance²³. In one more study, Montes et al, observed similar results with the predominantly uni-locular lesions²⁷.

CONCLUSIONS

This study has established that ameloblastoma in selected population group was observed more in males as compared to females and have a peak in the 2nd and 3rd decades of life, the patients below 30 years of age formed more than half of the cases. Painless swelling was the most commonly reported symptom attributing to the late diagnosis of the lesion. Most ameloblastomas were of multilocular pattern.

Conflict of interest: Nil

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