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HISTOPATHOLOGICAL VARIANTS OF AMELOBLASTOMA AMONG PATIENTS PRESENTED TO KHYBER COLLEGE OF DENTISTRY PESHAWAR

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ABSTRACT

Objectives: *To determine the frequency of different Histopathological variants of Ameloblastoma among patients reporting to the Oral and Maxillofacial surgery unit of Khyber College of Dentistry Peshawar.*

Materials and Methods: *A total of 97 histologically diagnosed cases of Ameloblastoma presented at the Khyber college of Dentistry Peshawar kpk Pakistan, over 18 months period were included in this study and data was analyzed descriptively with respect to the patient's ages, gender, tumor location, duration, presenting symptoms and radiographic features.*

Results: *Follicular type was found as the most common (64.9%) variety while the least common was Basaloid (2.1%) and Granular type (2.1%). The age range was (11-70 years) with most commonly affecting 3rd decade (21 to 30 years) of life, mean ±SD of (32.26 ±11.02 years) and was more frequent in males. Follicular Ameloblastoma was commonly found in the Angle and Ramus region of the mandible.*

Conclusion: *Ameloblastoma affects male more frequently than female in the Second and third decades of life. Mandible is more affected than Maxilla at posterior portion. The most frequent type of Ameloblastoma is the follicular type, followed by the plexiform, Acanthomatous and desmoplastic type. The granular and Basaloid types were the least frequent.*

Key words: *Ameloblastoma, Histopathological subtypes/Variants, Biopsy, Benign tumor, Maxillofacial Lesion*

INTRODUCTION

Ameloblastoma is a benign, locally invasive odontogenic tumor[1]. It is a tumor of odontogenic epithelial origin commonly affecting the posterior mandible, Clinically, small lesions are painless swelling, while large lesions are accompanied by pain, numbness, and Paresthesia in the jaw and lip[2]. Paresthesia occurs due to perineural invasion, eggshell crackling, and tooth mobility in certain cases[3]. In comparison to the maxilla, the mandible has a higher prevalence of Ameloblastoma. Up to 80% of cases involve the mandible at posterior region though the maxillary posterior region can be also involved[4]. The most accepted clinical classification of ameloblastoma is having four types including conventional, unicystic, peripheral and metastasizing ameloblastoma[5] histologically and clinically, Ameloblastoma exhibits somewhat conflicting behavior[6]. Histopathologically the variants of ameloblastoma are follicular type, plexiform type, acanthomatous, granular cell variant, desmoblastic and basal cell types[7]. Aggressive surgical excision is the treatment of choice. Patients with conservative surgical removal have a high propensity for it to recur[8]. In addition to other modifications in 2017, the WHO stopped using the term "solid/Multicystic" because the majority of conventional ameloblastoma exhibits cystic degeneration without exhibiting any biologically distinct behaviors[9]. The different clinical presentation and histological variants of ameloblastoma demands different types of surgical approaches[10]. Clinically

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the solid variants demands for an aggressive surgical approach. Similarly the granular cell type is the most aggressive histopathological variant of ameloblastoma[11].

An objective of this study is to determine the frequency of different Histopathological variants of Ameloblastoma among patients reporting to the Oral and Maxillofacial surgery unit of Khyber College of Dentistry Peshawar. This study will help the oral & maxillofacial surgeons to determine the most common Histopathological type of Ameloblastoma and their treatment accordingly. It will help the surgeons to adopt aggressive or conservative approach depending upon the nature of lesion, it will further help the Oral and Maxillofacial surgeons and pathologists to arrange review strategies for patients reporting with Ameloblastoma, as the granular cell type is reported to be more aggressive. There are more chances of recurrence in this histopathological type[11].

MATERIALS AND METHODS

After the ethical approval from the hospital research and ethical committee, vide letter no#94/AD/PG/KCD this cross-sectional study was conducted in the Department of Oral and Maxillofacial Surgery, Khyber College of Dentistry Peshawar from 3rd march 2019 to 30th September 2020. All the patients with diagnosed cases of Ameloblastoma, irrespective of the gender having age 18 years to 70 years presenting within the study time were included in the study. Informed written consent was taken from each patient. A total of sample of 97 histopathologically diagnosed cases of Ameloblastoma were taken and analyzed descriptively (Using WHO sample size calculator by taking 10.58% frequency of Granular cell Ameloblastoma7, with 95% confidence interval and 6% margin of error). Both genders and age groups (18-70years) of the patient along with the histopathological types and site were recorded. The data was entered in SPSS version 20 and analyzed using descriptive statistics used to analyze the data. Frequencies and percentages calculated for categorical variables like gender, lesion involving, site of the lesion and histopathological variants of Ameloblastoma. Mean & Standard deviation were calculated for numerical variables like age. Histopathological variants of Ameloblastoma stratified among age groups, genders and site of the lesions to see effect modifiers. This post stratification analysis was done through Chi square test. P-value less than and equal to 0.05 considered as significant.

RESULT

Out of total 97 patients were included, 60(61.9%) were male and 37 (38.1%) were female with an overall age range of 18-70 years in Tab.1. Regarding the Age 3rd Decade (21-30 years) with a Std. Deviation of Mean±SD (32.26±11.02years) (age range of 18-70 years), was most commonly affected (40%). The age distribution was, Age 18-20 years 12(12.4%) cases , 21-30 years 40(41.2%) cases, 31-40 years 21 (21.6%) cases, 41-50 years 18 (18.6%) cases, 51-60 years 5 (5.2%) cases, 61-70 years 1 (1%) cases (Tab.1). Regarding the location of the lesions; 81 (83.5%) cases were found in the mandible, 16(16.5%) in the maxilla (Tab.2). The posterior portion of the jaws was the most commonly affected site. i.e., 87 cases (89.7%), while the anterior portion of the jaws was affected in 10 cases (10.3%) (Tab.2). the order of frequency of histopathological variants were as; Follicular type 63cases (64.9%), Plexiform type 20 cases (20.9%), Acanthomatous type 6 cases (6.2%), Granular cell type 2 cases (2.1%), Basaloid /Basal cell type 2 cases (2.1%), Desmoplastic type 4 cases (4.1%), (Tab.2). the follicaular and plexiform variant of ameloblastoma were most frequently observed (23.7% and 13.4%) in the 21 to 30 years of age group. Moreover, Follicular Ameloblastoma 57 cases (58.76%), were reported in Posterior portion of the jaw while in Anterior portion of the jaws 6 cases (6.185%) were reported, 18 cases (18.55%) of Plexiform type were reported in Posterior portion of the jaw while in anterior portion of the jaws 2 cases (2.06%) were reported. Acanthomatous type 6 cases (6.18%) reported in Posterior portion of the jaw. Two (2) cases of Granular cell type were reported in Posterior portion of the jaw while none in Anterior portion of the jaw, also 02 (2.06%) cases of Basaloid /Basal cell type in Posterior portion of the jaw were reported. Two (2.06%) cases of desmoplastic ameloblastoma were found out in posterior as well as anterior portion of the jaw (Tab.3).

DISCUSSION

The results of this study are comparable to the study conducted by Carla Dinelli Dias et al[7] , on 85 cases. Thirty-one cases (36.47%) were classified as follicular Ameloblastoma, 34 (40%) were classified as plexiform Ameloblastoma, two (2.35%) cases

were classified as acanthomatous Ameloblastoma, nine (10.58%) were granular cell Ameloblastoma[7].

A study conducted by Nadaf et al[8] showed that the most common variant of ameloblastoma was of follicular variety. The most common site of occurrence of follicular ameloblastoma was posterior mandible. When compared to the aforementioned findings, our analysis reveals some clear similarities. Another study conducted by Bwambale[12] follicular pattern was common (39%) followed by the plexiform pattern (12.2%). In astudy conducted in dental college hospital at Dhaka, the ameloblastoma was found as the most frequent benign odontogenic pathology involving the mandible in 3rd am4th decades of life[13]. A study on the histology of amelobastoma by Sb Rahman5 showed that 26 (56%) of them were follicular, 16 (32%) were of the plexiform kind, and 2 (4% in each of the desmoplastic, acanthotic, and granular subtypes. Our study when compare, the Follicular and Plexiform type results are similar

Table 1: Age and gender Distribution of Ameloblastoma

Variables	Categories	N
1.Age {years}	18-20years	12 (12.4%)
	21-30 years	40 (41.2%)
	31-40 years	21 (21.6%)
	41-50 years	18 (18.6%)
	51-60 years	5 (5.2%)
	61-70 years	1 (1%)
	Total	97 (%)
2.Gender	Male	60 (61.9%)
	Female	37 (38.1%)
	Total	97 (%)

Table 2: Descriptive statistics of different variables

Variables	Categories	N
1.histopathological variants of Ameloblastoma	Follicular type	63 (64.9%)
	Plexiform type	20 (20.6%)
	Acanthomatous	6 (6.2%)
	Granular cell type	2 (2.1%)
	Basaloid /Basal cell type	2 (2.1%)
	Desmoplastic	4 (4.1%)
	Total	97 (%)
2. lesion involving jaws	Maxilla	16 (16.5%)
	Mandible	81 (83.5%)
	Total	97 (%)
3. Site involved	Anterior	10 (10.3%)
	Posterior	87 (89.7%)
	Total	97(%)

Table 3: Lesion involving Jaws by Ameloblastoma variants

Histopathological variants of Ameloblastoma		Site involved		Total	P-value
		Maxilla	Mandible		
Follicular type	Yes	9(9.27%)	54(55.6%)	63 (64.9%)	0.425
	No	7(7.2%)	27(27.8%)	34(35.0%)	
	Total	16(16.49%)	81(83.5%)	97 (100%)	
Plexiform type	Yes	4(4.12%)	16(16.49%)	20(20.6%)	0.635
	No	12(12.3%)	65(67.01%)	77(79.38%)	
	Total	16(16.49%)	81(83.5%)	97(100%)	
Acanthomatous type	Yes	1(1.03%)	5(5.15%)	6(6.18%)	0.991
	No	15(15.4%)	76(78.3%)	91(95.87%)	
	Total	16(16.49%)	81(83.5%)	97(100%)	
Granular type	Yes	0(0%)	2(2.06%)	2(2.06%)	0.525
	No	16(16.49%)	79(81.44%)	95(97.93%)	
	Total	16(16.49%)	81(83.5%)	97 (100%)	
Basaloid type	Yes	0(0%)	2(2.06%)	2(2.06%)	0.525
	No	16(16.49%)	79(81.44%)	95(97.93%)	
	Total	16(16.49%)	81(83.5%)	97(100%)	
Desmoplastic type	Yes	2(2.06%)	2(2.06%)	4(4.12%)	0.065
	No	14(14.4%)	79(81.44%)	93(95.87%)	
	Total	16(16.49%)	81(83.5%)	97(100%)	

while the other variants of ameloblastoma indicate disparity. Same outcomes are shown when other factors like the jaw involved by Ameloblastoma are considered. Rehman A[14] conducted a study on 28 Ameloblastoma analysis revealed that the majority of the amelobastoma, 7 (25%), were follicular, followed by 5 (17.9%) cases of Acanthomatous amelobastoma, and 4 (14.3%) cases each of plexiform and granular cell ameloblastomas. These patients typically had lesions on their mandibles i-e 23 (82.1%), in which 5 patients (17.9%) involved the anterior mandible, while 18 patients (64.3%) had involvement with the posterior jaw. Only 5 (17.9%) patients had maxillary lesions[14]. in another study conducted by Khan M at Peshawar Pakistan the follicular variant was the most frequent (52.9%) followed by plexiform pattern (29.4%)[15]. One of the study showed the plexiform patteren as the most frequent type (33.78%) followed by the follicular type (27.02%), which is contrary to our study[16]. Understanding the histopathologica variation and the clincopathological behavior of the ameloblastoma is of the prime importance in devising the management strategy[17,18]. Our study's findings indicate that Ameloblastoma is common odontogenic benign tumor, frequently involving posterior mandible in 2nd and 3rd decade of life. The follicular variant is the most common. These findings are mostly in agreement with the most of local and global studies[13,15,19].

CONCLUSION

Ameloblastoma frequently involve the mandible in 2nd and 3rd decade of life. Follicular type is the most frequent histopathological type of Ameloblastoma in this study, followed by the plexiform type, Acanthomatous type, desmoplastic type, The Granular and Basaloid types were the least frequently found.

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