

HISTOPATHOLOGICAL VARIANTS OF AMELOBLASTOMA—A STUDY

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ABSTRACT

Ameloblastoma is a locally invasive odontogenic tumour arising from the remnants of dental organ and dental lamina and is a highly destructive benign tumour of odontogenic origin. 9% of odontogenic tumours are ameloblastomas. The histological variants of Ameloblastomas are manifold, follicular, and plexiform and acanthomatous are the most common ones among them. Ameloblastomas are classified radiologically into Unilocular, Multilocular and Peripheral types. The present study is a descriptive retrospective study conducted to evaluate the histopathological variants of ameloblastoma. The histopathological reports of the patients were reviewed for a period of 4 years. 51 patients were included in the study. Age range of the patients of ameloblastoma was from 11-60 years with the mean age of 31.33 SD±13.2. The most common age range was in the 3rd decade of life with more male predilection. The most common site of occurrence of follicular ameloblastoma was in the angle and ramus of the mandible. The most common variant of ameloblastoma was of follicular variety.

Key Words: *Khyber College of dentistry, Ameloblastoma, follicular, odontogenic tumour.*

INTRODUCTION

Ameloblastoma a locally invasive odontogenic tumour arising from the remnants of the dental lamina and dental organ or odontogenic epithelium. It is a highly destructive benign tumour of odontogenic origin and represents 9% of all odontogenic epithelium.¹ It has a strong tendency of recurrence in patients who undergo conservative surgical removal. Ameloblastoma has a rather contradictory histological and clinical behaviour.²

There has been a lot of work done using different immunohistochemical and biochemical methods to find out the proliferative activity and to find out the expression of metalloproteinase and growth factor receptors.³ The histopathological grading of ameloblastoma can be done on the different variants of histological types of ameloblastomas among which the follicular and the plexiform type of ameloblastoma are more common frequently encountered types.⁴

Ameloblastomas are classified radiologically as unicystic, multicystic and peripheral types. While they are classified according to the histopathological variants as follicular, plexiform, acanthomatous and granular cell types, followed by basal cell ameloblastoma, desmoplastic and clear cell variants, which are the uncommon

forms of ameloblastoma according to its histological picture.⁵ These categories of ameloblastoma are put into different categories on the basis of age when presented site, clinical behaviour and radiographic features and prognosis.⁶ Peripheral ameloblastoma are formed outside the bone and are slow growing pedunculated or sessile mass with no involvement of the underlying bone and appears on the gingiva and alveolar mucosa and intraosseous ameloblastoma arise in the jaw bone.⁷

The present study is aimed at the various histopathological variants of ameloblastoma presenting to oral and maxillofacial surgery unit of Khyber College of Dentistry. The study is first of its kind in the region and will help the clinicians to determine the most common histopathological variant of this very aggressive locally invasive odontogenic tumour.

METHODOLOGY

This Retrospective study was conducted in department of oral and maxillofacial surgery after the approval from the hospital review board. The study duration was of 4 years i.e., from October 2013 to September 2016. The charts of the patients were reviewed from the department of oral and maxillofacial surgery record room for the period mentioned. The objective of the study was to determine the histopathological variants of ameloblastoma. The different genders and age groups of the patient along with the histopathological variants and site were recorded from the department admission charts/records. The data was entered in SPSS version 20 and analysed using descriptive statistics and later presented in the form of Tables and Fig.

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RESULTS

In this study a total of 51 patients were included, in the study after detailed reviewing of the patient's charts/records, the age, gender, site distribution and histopathological variants of ameloblastoma were recorded. The histopathological reports of ameloblastoma were categorized as follicular, plexiform, acanthomatous, basal cell, desmoplastic and granular cell types. Males were predominantly affected 1.2:1 (16 males,13 females) as shown in (Fig 2), most common age group was between 31-40 years, Followed by the second decade i.e., 27.4% and 23.5% respectively. The age range of ameloblastoma was between 11-60 years with mean age of 31.3 SD ±13.2. The most common histological variant was follicular ameloblastoma 52.9%. None of the patient reported with the most aggressive form of ameloblastoma i.e., granular cell type. Two of the patients reported with ameloblastic carcinoma, which is the malignant variant of this odontogenic tumour.

DISCUSSION

Ameloblastomas are of ectodermal origin. They arise from epithelium enriched with the potentiality of oncogenesis. There are many variants of ameloblastomas, but the cell type tends to mimic the ameloblast.

There is variation in size and shape of cell from a tall columnar to a low cuboidal form, occasionally a squamous metaplasia, and is pigmented. The tumour always arise as a solid tumour, which becomes cystic with age and development, except the melanoameloblastomas.⁸

Different researchers have carried out different methods to assess the grading of the different types of ameloblastomas of which one of the methods which assess the proliferative activity of ameloblastoma are argyrophilic nucleolar organizer region (AgNOR) which stains the proteins with silver stain which is associated with active nucleolar organizer regions (NOR |), these are DNA loops that transcribe to ribosomal RNA directs protein synthesis and ribosomal formation.⁹ AgNOR numbers rise with the proliferative activity of the cell, AgNOR are used to diagnose histopathological aspects of various benign and malignant lesions.¹⁰

The current concept of ameloblastoma is to define ameloblastoma into solid or multicystic types, unicystic subtypes, peripheral, and classical intraosseous types. The unicystic ameloblastoma has a less aggressive behaviour as compared to solid multicystic types which are locally aggressive and recur if the excision is not complete.¹¹ The recurrence rate affects the histopathological grading of ameloblastoma.¹² The recurrence rate

TABLE 1: HISTOPATHOLOGICAL DISTRIBUTION OF AMELOBLASTOMA ACCORDING TO AGE

Histopathological types	Age group of patients in years					Total
	11-20	21-30	31-40	41-50	51-60	
Follicular 27(52.9%)		6	5	9	4	3
Plexiform 15(29.4%)		5	4	3	2	1
Acanthomatous 4(7.8%)		1	1	1	0	1
Basal cell	0	0	1	0	0	1(1.9%)
Desmoplastic	0	0	0	2	0	2(3.9%)
Granular	0	0	0	0	0	0(0%)
Ameloblastic CA 2(3.9%)		0	2	0	0	0
Total 51(100%)		12	12	14	8	5

TABLE 2: HISTOPATHOLOGICAL VARIANTS OF AMELOBLASTOMA ACCORDING TO THE LOCATION AND GENDER

Histopathological types	Mandible		Maxilla		Soft tissue		
	M	F	M	F	M	F	
Follicular	14	12	2	1	0	0	
Plexiform	6	3	1	0	0	0	
Acanthomatous	3	2	1	0	0	0	
Basal cell	2	0	0	0	0	0	
Desmoplastic	1	0	0	0	0	0	
Granular	1	0	0	0	0	0	
Ameloblastic ca	2	0	0	0	0	0	
Total 50(100%)			46(90%)		5(9%)		0(0%)

of desmoplastic, plexiform, unicystic ameloblastomas are relatively high.¹³ socioeconomic conditions have an influence on the clinical and demographic outcomes, there are genetic factors which affects the pathogenesis of the different types of ameloblastomas and their outcome.¹⁴ the follicular and plexiform patterns of ameloblastoma have similar growth patterns, metastasis and locally invasive but their recurrent rates are different. The AgNOR analysis have been performed to differentiate between the histopathological grading by their cell proliferation.¹⁵

In a study conducted by Chapple and manogue the histopathology of follicular ameloblastoma consists of discrete follicles which resemble stellate reticulum of enamel organ .the epithelial lining of follicular variant are cuboidal and columnar ,the nuclei are present on the opposite pole of the basal membrane.¹⁶

The age of incidence is in the 3rd decade of life which was similar to the studies of Ladeinde et al.¹⁷ In the present study the male predilection was more as compared to females. Out of the 51 patients, the most common age group of patients was in the 3rd decade of life and the most common variant was in the males which was follicular variant of the histopathological type of ameloblastoma.

CONCLUSION AND RECOMMENDATIONS

Follicular ameloblastoma was the most common histopathological variant amongst the patient reported to oral and maxillofacial surgery department of Khyber College of Dentistry. This histological variant is not that aggressive but the problem is the delayed presentation both on the patient and attending doctor’s part. Due to diagnostic delays most of the time these patients report late to tertiary care hospitals leading to surgical morbidity. Malignant transformation has been reported on two of the cases that has led to significant damage to the anatomical structures in face and neck, because the principles of the surgical management of these aggressive transformations become similar to that of oral squamous cell carcinoma requiring removal of the jaw bones and radical neck dissections.

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- 3 Sahar Shakeel:** Literature review search and tabulation