(e) ISSN Online: 2321-9599
(p) ISSN Print: 2348-6805

ORIGINAL ARTICLE

CLINICOPATHOLOGICAL ANALYSIS OF HISTOPATHOLOGICAL VARIANTS OF AMELOBLASTOMA IN CHATTISGARH POPULATION

Ajit Kadam[1], Vinod K.S.[2], Mimansha Patel[3], Rahul Singh Thakur[4], Priyanka Mahseth[4], Ram Chand Bandla[4], Pradeep Yadav[4], Deepak Patel[4], Subhasini Singh[4]

[1]Professor & Head, [2]Professor, [3]Senior Lecturer, [4]Post graduate student, Department of Oral Pathology and Microbiology, Triveni Institute of Dental Sciences, Hospital and Research Centre, Bilaspur, Chhatisgarh

ABSTRACT:
Background: Ameloblastoma is a rare, benign, slow-growing but locally invasive neoplasm of odontogenic origin involving the mandible (80 %) and maxilla. The study was aimed to establish the relative incidence and provide clinico-pathologic information on the various histological types of ameloblastoma in population of Chhatissgarh. **Materials & Methods:** Biopsy records of all histologically diagnosed cases of ameloblastoma during the period from 2010 to 1015 were retrieved and analyzed for different varieties of ameloblastomas. **Results:** Maximum number of cases was seen in mandible followed by maxilla. Male predominance was seen. Solid/ multicystic was maximum followed by unicystic variety. **Conclusion:** This study provides a baseline data on variants of ameloblastoma as obtained in a Chattisgarh population. Since variants of ameloblastoma differ in biologic behaviour, the data collected in this study provides clinicopathologic information which is of significance to the pathologist and clinician.
Key Words: Ameloblastoma, Muticystic, Solid, Unicystic

Corresponding Author: Dr. Ajit Kadam, Professor and Head, Department of Oral Pathology and Microbiology, Triveni Institute of Dental Sciences, Hospital and Research Centre, Bilaspur, Chhatisgarh

This article may be cited as: Kadam A, KS Vinod, Patel M, Thakur RS, Mahseth P, Bandla RC, Yadav P, Patel D, Singh S Clinicopathological analysis of histopathological variants of ameloblastoma in Chattisgarh population. J Adv Med Dent Scie Res 2016;4(4):101-104.

Access this article online	
Quick Response Code	Website: www.jamdsr.com
	DOI: 10.21276/jamdsr.2016.4.4.22

INTRODUCTION

Ameloblastoma is a neoplasm of odontogenic epithelium, especially of enamel organ-type tissue that has not undergone differentiation to the point of hard tissue formation.[1] Ameloblastoma is a rare, benign, slow-growing but locally invasive neoplasm of odontogenic origin involving the mandible (80 %) and maxilla. The neoplasm was first described by Cusack in 1827.[1] Etymologically, the name derives from the old French word ‘‘amel,’’ which means enamel, and the Greek word ‘‘blastos,’’ meaning germ or bud. Over time, this tumor has been referred to by many different names including ‘‘cystosarcoma,’’ ‘‘adamantine epithelioma,’’ ‘‘adamantinoma,’’ and finally ameloblastoma.[2,3] Robinson defined ameloblastoma as “unicystic, nonfunctional, intermittent in growth, anatomically benign and clinically persistent tumor.”

[4] In the World Health Organisation (WHO) histological typing of odontogenic tumours[5], ameloblastoma was classified as belonging to the group of lesions in which there is odontogenic epithelium without morphorlically identifiable odontogenic ectomesenchyme. WHO (2005)[6] classified ameloblastoma into (a) solid/multicystic, (b) unicystic, (c) extraosseous/peripheral and (d) desmoplastic. There are two basic histopathologic patterns in solid/multicystic ameloblastoma: (1) follicular and (2) plexiform. Other microscopic patterns of ameloblastoma include acanthomatous, basal cell‐like and granular cell. Ameloblastoma shows variable geographic prevalence, being the most common benign odontogenic tumor in China and Africa, while it is the second most common in the United States and Canada (odontoma being most common)[7,8]. African Americans have an overall fivefold increased risk of disease as compared to Caucasians. Global incidence has been estimated at 0.5 cases per million person years, and most cases are diagnosed in patients 30–60 years of age.[9]
The study was aimed to establish the relative incidence and provide clinico-pathologic information on the various histological types of ameloblastoma in population of Chhatissgarh.

MATERIAL & METHODS

This study was conducted in Triveni Institute of Dental Sciences, Hospital and Research Centre, Bilaspur, Chatisgarh. Biopsy records of all histologically diagnosed cases of ameloblastoma during the period from 2010 to 1015 were retrieved. Haematoxylin and eosin stained sections of the ameloblastomas were retrieved and reviewed in order to reconfirm the diagnosis and where necessary, revise the diagnosis in light of available clinical and histological details and the WHO histological typing of odontogenic tumours.
After review, 160 of the162 cases were confirmed as ameloblastomas and were categorised into different histological types based on the presenting histological features. Data on incidence, age, sex and site of lesions were analysed descriptively for the various variants of ameloblastoma.

RESULTS:

Table I: Age and Sex Distribution of Patients

AGE GROUP	MALE	FEMALE
10-20	19	11
21-30	22	16
31-40	18	14
41-50	16	12
51-60	15	8
60-70	6	4
TOTAL	96 (60%)	64 (40%)

Table I shows age and sex distribution of patients. Out of 160 patients, 96 were male and 64 were females. Maximum cases (38) were seen in age group 21-30years.
Table II shows anatomical distribution of cases. Out of 160 cases, 24 were seen in maxilla and 136 were seen in mandible. Maximum cases were seen in molar region followed by premolar and incisor region in both jaws.

Table II: Anatomical Distribution

Maxilla			Mandible		
Incisor Region	Premolar Region	Molar Region	Incisor Region	Premolar Region	Molar Region
5	7	12	12	28	96
TOTAL	24 (15%)		TOTAL	136 (85%)	

Table III: Histopathological Subtypes of Ameloblastomas

Age Group	Solid/multicystic				Unicystic	Desmoplastic	Peripheral	Mixed
	Follicular	Plexiform	Acanthmatous	Granular cell				
10 20	4	12	2	0	10	0	0	2
21-30	6	8	4	1	9	0	0	2
31-40	7	9	3	0	8	1	1	5
41-50	9	8	3	0	9	1	1	0
51-60	8	9	4	2	1	0	0	0
60-70	4	4	2	0	0	0	0	1
TOTAL	38	50	18	3	37	2	2	10

Table III shows histopathological subtypes of ameloblastoma. Maximum cases were of plexiform type, followed by follicular, unicystic, acanthamatous, mixed, granular. Both desmoplastic and peripheral had 2 cases each.

DISCUSSION

Numerous histological patterns have been described in ameloblastomas. Some may exhibit a single histological subtype; others may display several histological patterns within the same lesion. Common to nearly all subtypes is the polarization of cells around the proliferating nests in a pattern similar to ameloblasts of the enamel organ.[10]

In the present study, 60% of patients were male and 40% of patients were females. This data was comparable to Reichart et al. study[11] in which 53% were males and 47% were females. These findings in the present study were similar to previous studies of Krishnapillai and Angadi, Sriram and Shetty in Indian population.[12]

Age group 21-30 showed maximum involvement (36) followed by 31-40 (32), 10-20(30), 41-50 (28), 51-60 (23), 61-70 (10). It is similar to the reports of Kavey T et al[13] but differs from the peak incidence of 5th decade reported by Chai Y et al.[14]

The maximum cases were seen in mandible (136) cases (85%) and the maxilla in 24 cases (15%), with ratio of 6:1. Mandibular molar were mostly involved followed by premolar and incisor region.

In various types of ameloblastoma, solid/multicystic ameloblastoma was the most frequently encountered histopathological type (68.12%) followed by unicystic (23.12%) which is in contrast to study conducted in Latin American population where unicystic ameloblastoma was the most common (63.20%) type.[15]

The present study reported 38 cases of follicular variety. According to Philip et al[16], follicular ameloblastoma consists of discrete follicles with a similarity to the stellate reticulum of the enamel organ and with a varying quantity of conjunctive tissue stroma. The covering epithelium is columnar or cuboidal with nuclei positioned opposite the basal membrane. Squamous metaplasia such as that seen in acanthomatous ameloblastoma may be attributed to chronic irritation. Calculus and oral sepsis (which could be a source of chronic irritation) have been suggested to play a role in aetiology of ameloblastoma. In this study, 10 cases of mixed ameloblastomas were seen. Similar studies on ameloblastoma mentioned cases of mixed variety of ameloblastoma varying between 3.3% and 20%.[17]

There is now more detailed reference to the unicystic variety because it compares favourably with the solid or multicystic counterpart in terms of clinical behaviour and response to treatment. It is a also well known fact that the granular cell variant and ameloblastoma exhibiting clear cell differentiation which were not seen in our series, are more biologically aggressive than other ameloblastomas, hence the significance of our collected data to the pathologist and clinician.[18]

CONCLUSION

This study provides a baseline data on variants of ameloblastoma as obtained in a Chattisgarh population. Since variants of ameloblastoma differ in biologic behaviour, the data collected in this study provides clinicopathologic information which is of significance to the pathologist and clinician.

REFERENCES

1. Cusack JW (1827) Report of the amputations of the lower jaw. Dubliln Hop Rec 4:1–38
2. Avery RH, Churchill HR (1930) The need of a standardized surgical and pathological classification of tumors and anomalies of dental origin. Am Assoc Dent Sch Trans 7:240–245
3. Brazis PW, Miller NR, Lee AG, Holliday MJ (1995) Neuroophthalmologic aspects of ameloblastoma. Skull Base Surg 5(4):233–244.
4. Gümgüm S, Hosgören B. Clinical and radiologic behaviour of ameloblastoma in 4 cases. J Can Dent Assoc 2005;71:481‐4.
5. Adebiyi KE, Ugboko VI, Omoniyi‐Esan GO, Ndukwe KC, Oginni FO. Clinicopathological analysis of histological variants of ameloblastoma in a suburban Nigerian population. Head Face Med 2006;2:42.
6. Larsson A, Almerén H. Ameloblastoma of the jaws. An analysis of a consecutive series of all cases reported to the Swedish Cancer Registry during 1958‐1971. Acta Pathol Microbiol Scand A 1978;86A: 337‐49.
7. Daley TD, Wysocki GP, Pringle GA (1994) Relative incidence of odontogenic tumors and oral and jaw cysts in a Canadian population. Oral Surg Oral Med Oral Pathol 77(3):276–280
8. Regezi JA, Kerr DA, Courtney RM (1978) Odontogenic tumors: analysis of 706 cases. J Oral Surg 36(10):771–778

9. Naik V, Kale AD (2007) Ameloblastic carcinoma: a case report. Quintessence Int 38(10):873–879 118. Datta R, Winston JS, Diaz-Reyes
10. Becelli R, Carboni A, Cerulli G, Perugini M, Iannetti G (2002) Mandibular ameloblastoma: analysis of surgical treatment carried out in 60 patients between 1977 and 1998. J Craniofac Surg 13(3):395–400.
11. Reichart PA, Philipsen HP, Sonner S (1995) Ameloblastoma: biological profile of 3677 cases. Eur J Cancer B Oral Oncol 31B(2):86–99
12. Krishnapillai and Angadi, Sriram and Shetty (2003) Ameloblastic carcinoma of the maxilla. Oral Oncol 39(7):736–741.
13. Kawai T, Kishino M, Hiranuma H, Sasai T, Ishida T (1999) A unique case of desmoplastic ameloblastoma of the mandible: report of a case and brief review of the English language literature. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 87(2):258–263.
14. Chai Y, Jiang X, Ito Y, Bringas P Jr, Han J, Rowitch DH, Soriano P, McMahon AP, Sucov HM (2000) Fate of the mammalian cranial neural crest during tooth and mandibular morphogenesis. Development 127(8):1671–1679.
15. Sehdev MK, Huvos AG, Strong EW, Gerold FP, Willis GW (1974) Proceedings: Ameloblastoma of maxilla and mandible. Cancer 33(2):324–333.
16. Philip M, Morris C, Werning J, Mendenhall W (2005) Radiotherapy in the treatment of ameloblastoma and ameloblastic carcinoma. Hong Kong J Radiol 8(3):157.
17. Wu PC, Chan KW. A survey of tumours of the jawbones in Hong Kong Chinese: 1963‐1982. Br J Oral Maxillofac Surg 1985;23:92‐102.
18. Henderson JM, Sonnet JR, Schlesinger C, Ord RA (1999) Pulmonary metastasis of ameloblastoma: case report and review of the literature. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 88(2):170–176.

Source of support: Nil **Conflict of interest:** None declared