PREVALENCE OF AMELOBLASTOMA AND ITS CLINICAL AND HISTOPATHOLOGICAL FEATURES: A RETROSPECTIVE STUDY

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ABSTRACT
Introduction: Prevalence of ameloblastoma has been established worldwide but collective data of ameloblastoma in Southeast Asian countries has not been well analyzed. Aim: To report prevalence and clinical features of ameloblastoma and its histopathological variants in Tumkur city, Karnataka. Materials and Methods: A retrospective study on ameloblastoma was performed based on the oral biopsy specimens available in the Department of Oral Pathology, Sri Siddhartha Dental College and Hospital Tumkur city, Bangalore. The data collected from March 2004 to May 2014 was subjected to statistical analyses with the SPSS version 17.0 using Pearson’s chi square ($\chi^2$) test and t-test. The critical level of significance was set at $p<0.05$. Results: Total of 400 cases were reviewed, 23 cases (17.3%) were diagnosed with ameloblastoma. The mean age of the patients was 25.3±13.6 years. The predominance was observed in the mandible (92.7%). Posterior body-ramus-angle region was the most common site. Almost all cases were asymptomatic and most common clinical manifestation was swelling of affected region. Multilocular radiolucency was observed in 60% of cases, whereas 40% were unilocular. Three subtypes of ameloblastomas were diagnosed: unicystic ameloblastoma (23%), conventional solid/multicystic ameloblastoma (68%), and desmoplastic ameloblastoma (9%). The most common histologic pattern was the plexiform type followed by follicular type. Conclusion: Prevalence of ameloblastoma in tumkur populations correspond with data from geographic areas of other Asian countries.

KEYWORDS: Mandible, Multilocular, Plexiform, Southeast Asia.

INTRODUCTION
Ameloblastoma is the most common benign odontogenic tumour of the jaws that constitutes about 1% of all cysts and tumours of the jaws.\textsuperscript{[1,2]} It is generally a painless, slow growing, locally aggressive tumour causing expansion of the cortical bone, perforation of the lingual or the buccal cortical plate and infiltration of the soft tissues. It has peak incidence in third and fourth decade of life but can be found in any age group with equal gender predilection (1:1).\textsuperscript{[1,3]} In the mandible majority of ameloblastomas are found in the molar ramus region.\textsuperscript{[4,5]}

Ameloblastoma may arise from developing enamel organ, epithelial cell rest of dental lamina, epithelial lining of odontogenic cysts and basal cells of oral epithelium.\textsuperscript{[2]} According to the 2005 classification of tumours of the World Health Organization, there are four different categories of ameloblastoma: the conventional solid/multicystic ameloblastoma, the peripheral ameloblastoma, the desmoplastic ameloblastoma, and the unicystic ameloblastoma.\textsuperscript{[6]}

Several histopathological subtypes of ameloblastoma are follicular, plexiform, acanthomatous, desmoplastic, granular cell, and basal cell pattern. Surgical removal is still the best option for patient with ameloblastoma and range from conservative surgical therapy to radical surgery.\textsuperscript{[1,7,8]} Prevalence of ameloblastoma is high in Asian and African populations, but it is a minority in North America and European countries.\textsuperscript{[10]} Even though the prevalence of ameloblastomas has been established worldwide, demographic profile and histopathological data of ameloblastoma in different populations is not adequate.\textsuperscript{[3]} Thus, this study was conducted to report the prevalence and clinical features of ameloblastoma and its histopathological variants in Tumkur city, Bangalore.

MATERIALS AND METHODS
A retrospective study on ameloblastoma was performed based on the availability of oral biopsy specimens retrieved from Oral Pathology Archive between March 2004 and May 2014. Total 400 cases were obtained from the entire archive, and 23 cases were diagnosed as ameloblastoma.
The ameloblastoma specimens were evaluated for age, gender, nationality, anatomical location and clinical appearances. Histopathology slides stained with hematoxylin and eosin were reviewed and classified by an experienced oral pathologist based on World Health Organization classification. Data with regard to age, clinical manifestation, radiographic appearances, anatomical distribution and histological subtypes were analyzed. Site distribution in both jaws was divided into anterior (from midline to distal surface of canine) and posterior (from mesial surface of first premolar to ramus in the mandible and to tuberosity in the maxilla) parts. Lesions that involved entire left or right side of mandible and maxilla or entire mandible or maxilla as well as coronoid or condylar process were classified in separate category of anatomical distribution. The collected data was subjected to descriptive statistical analyses with the SPSS version 17.0 statistical software package (SPSS Inc., Chicago, USA). Pearson’s χ² test and t-test were employed. The critical level of significance was set at p<0.05.

RESULTS
Total of 400 reported cases from over 10 years archive were reviewed, 23 cases (17.3%) were diagnosed as ameloblastoma. The remaining patient group comprised 14 females and 16 males. The mean age (± standard deviation) of the patients was 25.3±13.6 years. Ameloblastoma was found most commonly in the age range of 10-49 years. The peak prevalence was in the 10 to 19 year age group (23.3%) and it gradually fell off with increasing age. The predominant anatomical distribution of ameloblastoma was in the mandible (86.7%), while the maxilla was affected in 13.3% of the cases. In both jaws, posterior region was the most affected site (χ² test, p= 0.04). Most frequently involved anatomical site among the four quadrants was right posterior body-ramus-angle region followed by the same anatomical location on the left side of mandible. However, complete involvement of one side (left or right) of maxilla or mandible was observed in three cases (10%). Whole jaw involvement was also seen in total of three cases and all of the cases occurred in mandible. Involvement of condylar head and/or coronoid process was found in six cases. Almost all cases were pain-free and most common clinical manifestation was swelling of the affected region. Less frequent clinical appearances included root displacement, root resorption and bone perforation in 10 cases. Pain and paresthesia was reported in two cases. Radiographically, multilocular appearance was observed in 72.0% of cases, whereas 28.0% were unilocular. Embedded tooth associated with the tumour was observed in five cases. Three subtypes of ameloblastomas were diagnosed: unicystic ameloblastoma, conventional solid/multicystic ameloblastoma, and desmoplastic ameloblastoma. In unicystic ameloblastoma, most cases were histologically classified as mural followed by the luminal type of cases. The most common histologic pattern observed in the conventional solid/multicystic ameloblastoma was the plexiform type followed by follicular type and acanthomatous type. The least common pattern was granular cell type There was no statistical differences in histopathologic subtypes between nationalities (χ² test, p=0.064) [Table/Fig-4].
DISCUSSION
Ameloblastoma is a benign epithelial odontogenic tumour often aggressive and destructive with the capacity to erode bone and invade adjacent structures. Ameloblastoma of the lower jaw can progress to variable sizes (1–16 cm) and cause facial asymmetry, displacement of teeth, malocclusion and pathological fractures. There is generally no gender preference for ameloblastoma, however in our study it showed slightly male predilection (M:F; 1.4:1). Ameloblastomas involved mandible more frequently, where the posterior body-ramus-angle region of right and left mandible were the two most commonly affected sites respectively. Statistically significant difference was observed (χ2 test, p=0.04) in terms of posterior or anterior anatomic sites distribution which is well recognized in the literature. However, entire involvement of one side or whole jaw involvement is not infrequent.

Asymptomatic slow growth of affected area is a consensus in the literature for the manifestation of ameloblastoma which is consistent with the results of the present study. Besides, less frequent symptoms such as pain, paresthesia, root displacement, root resorption and bone perforation were also present. Embedded tooth associated with the lesion was also present in this study.

In the present study, conventional solid/multicystic ameloblastoma were predominant histological subtypes. Plexiform ameloblastoma was the most common histological pattern in this present study. Surgical removal is the main stay cost-effective treatment for ameloblastoma. To avoid recurrence, radical surgery with safe margin is the best primary method for treating solid/multicystic ameloblastomas. However, to prevent extensive deformity of orofacial structure for patient with first decade diagnosis, conservative method may be considered in case of non-soft tissue involvement unicystic ameloblastoma located at anterior mandible only.

CONCLUSION
Prevalence of ameloblastoma in India corresponds with data from geographic areas of other Asian countries. Histological features of biopsy specimens showing various types of ameloblastoma

REFERENCES