Research Article

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Pattern and Occurrence of Ameloblastoma in Patients Visiting a Dental Teaching Hospital in Dhaka, Bangladesh

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ABSTRACT

Introduction: Ameloblastoma is a benign but locally aggressive odontogenic tumour of the jaw.

Objective: The aim of the study was to assess the occurrence of ameloblastoma and its types based on clinical, histopathological, and radiographic parameters.

Materials and Method: A retrospective chart review was conducted in 596 recorded cases of odontogenic tumours. The pattern and occurrence of ameloblastoma were assessed in the files from 2011 to 2016 of department of oral and maxillofacial surgery, Dhaka Dental College Hospital, Bangladesh. Study was done after approval from ethical committee. Data were collected considering parameters such as age, sex, and site of occurrence as well as clinical, radiographic, and histopathological types. Descriptive data were observed and analysed using SPSS v.20 software.

Result: The occurrence of ameloblastoma was seen in 250 (41.95%) cases out of 596 odontogenic tumours. Ameloblastoma was seen more in male (154, 61.60%). The highest occurrence of ameloblastoma was seen in third (80, 32%) decade of life. Posterior mandible was the most common site of occurrence (196, 78.40%) and anterior maxilla (2, 0.80%) the least common. Solid variant of ameloblastoma (159, 63.60%) was clinically most common. Histologically, follicular (94, 37.60%) was the most common variant. Radiographical analysis revealed, multilocular (222, 88.80%) as more common variant with the multilocular, soap bubble (134, 53.60%) as most common followed by spider web and honey comb appearances.

Conclusion: Ameloblastoma is a common odontogenic tumour in Bangladeshi population. A multicentric study with larger sample size and long-term evaluation may truly elucidate the finding of this study.

Keywords: Ameloblastoma; histopathology; odontogenic tumour; occurrence.

INTRODUCTION

Ameloblastoma is a benign tumour originating from odontogenic epithelium with greatest prevalence in mandible as compared to maxilla. Among the benign odontogenic tumours of the jaws, it is very common and is highly destructive and locally invasive by nature.[1,2] Ameloblastoma, is commonly encountered odontogenic tumours among Bangladeshi population.[3] This tumour is more common in the mandible than maxilla, shows predilection for various parts of the mandible and varies among different racial groups.[4] It is common in the third and fourth decades of life with higher prevalence rate among male.[5]

Citation

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Ameloblastomas are classified based on clinical, histopathological, and radiographic presentation.[6] These categories of ameloblastoma are put into different categories on the basis of age when presented, site, clinical behaviour and radiographic features, and prognosis.[7] Peripheral ameloblastomas are formed outside the bone and are slow growing pedunculated or sessile mass with no involvement of the underlying bone.[7-9]

This retrospective study was undertaken to observe the occurrence and patterns of ameloblastoma in the tertiary care centre in Dhaka. An attempt was made to discuss the findings of this study with similar reports in literature.

MATERIALS AND METHOD

A retrospective chart review was conducted in the Department of Oral and Maxillofacial Surgery of Dhaka Dental College and Hospital, Dhaka, Bangladesh. Five hundred ninety-six cases of odontogenic tumours were retrieved from files of the department from 2011 to 2016. Analysis revealed the occurrence 250 cases of ameloblastoma (41.95%). All 250 ameloblastoma cases were analysed considering parameters such as age, sex, location, duration, radiographic findings, and histopathological appearances. All these findings were compared with other reported studies. Descriptive analysis of the demographic variables along with the prevalence of different types based on histopathology, locations and radiographic findings were done.

Since this was a retrospective chart review, the ethical principles of medical research were followed as per the Declaration of Helsinki (2013). No personal information was disseminated and strict confidentiality was maintained. Approval was taken from the head of department of the Oral and Maxillofacial Surgery and ethical clearance for this study was granted by the ethical committee of Dhaka Dental College. A summarised structured data collection sheet was prepared to collect necessary information of the selected participants. Data were screened and cleaned for any discrepancy. After checking, cleaning and editing, data were entered into template of software IBM SPSS Statistics for Windows, version 20 (IBM Corp., Armonk, N.Y., USA) and descriptive statistics were generated.

RESULT

Out of the 596 cases of odontogenic tumours diagnosed at Oral and Maxillofacial Department of Dhaka Dental College and Hospital, 250 cases (41.95% occurrence rate) were ameloblastoma which were confirmed through the histopathological finding. A total 250 patients of ameloblastoma included 154 (61.60%) male and 96 (38.40%) female cases with an age range of four years to 60 years (27.38±11.74 years). Among total ameloblastoma cases, most (80, 32%) belonged to 21-30 years age group and least (7, 2.80%) in the 0-10 years age group (Table 1). Thus, making the highest occurrence of ameloblastoma in second and third decades of life (Table 1).

Ameloblastoma most commonly occured in posterior mandible (196, 78.40%) followed by anterior mandible, posterior maxilla and least in anterior maxilla (Table 2). There was similar distribution pattern among male and female with the highest in posterior mandible and least in anterior maxilla (Table 2).

Clinically, the most frequent type of ameloblastoma in both male and female were solid (159, 63.60%), follwed by cystic and desmoplastic type (Table 3). None of the female samples had desmoplastic type of ameloblastoma (Table 3).

Table 1: Age and genderwise distribution of ameloblastoma, n (%).

Age group (years)	Male	Female	Total cases in the group
0-10	5 (2%)	2 (0.80)	7 (2.80)
11-20	39 (15.60)	23 (9.20)	62 (24.80)
21-30	47 (18.80)	33 (13.20)	80 (32)
31-40	29 (7.43)	17 (6.80)	46 (18.40)
41-50	21 (8.40)	12 (4.80)	33 (13.20)
51-60	13 (5.20)	9 (3.60)	22 (8.80)
Total	154 (61.60)	96 (38.40)	250 (100)

Table 2: Site distribution of ameloblastoma in male and female, n (%).

Site	Male	Female	Total cases in the site
Posterior mandible	118 (47.20)	78 (31.20)	196 (78.40)
Anterior mandible	19 (7.60)	14 (5.60)	33 (13.20)
Posterior maxilla	15 (6)	4 (1.60)	19 (7.60)
Anterior maxilla	2 (0.80)	-	2 (0.80)
Total	154 (61.60)	96 (38.40)	250 (100)

Table 3: Occurrence of clinical variants of ameloblastoma in male and female, n (%).

Clinical variant	Male	Female	Total cases
Solid	99 (39.60)	60 (24)	159 (63.60)
Cystic	52 (20.80)	36 (14.40)	88 (35.20)
Desmoplastic	3 (1.20)	-	3 (1.20)
Total	154 (61.60)	96 (38.40)	250 (100)

Table 4: Occurrence of histological types of ameloblastoma in male and female, n (%).

Histological type	Male	Female	Total cases
Follicular	57 (22.80)	37 (14.80)	94 (37.60)
Unicystic	46 (18.40)	32 (12.80)	78 (31.20)
Plexiform	43 (17.20)	24 (9.60)	67 (26.80)
Granular	4 (1.60)	1 (0.40)	5 (2)
Acanthomatous	2 (0.80)	1 (0.40)	3 (1.20)
Desmoplastic	2 (0.80)	-	2 (0.80)
Basal	-	1 (0.40)	1 (0.40)
Total	154 (61.60)	96 (38.40)	250 (100)

Table 5: Radiographic variants of ameloblastoma in male and female, n (%).

Radiographic Variants	Male	Female	Total cases
Unilocular	16 (6.40)	12 (4.80)	28 (11.20)
Multilocular- Soap bubble	86 (34.40)	48 (19.20)	134 (53.60)
Multilocular- Spider web	35 (14)	22 (8.80)	57 (22.80)
Multilocular- Honey Comb	17 (6.80)	14 (5.60)	31 (12.40)
Total	154 (61.60)	96 (38.40)	250 (100)

On histopathological reports, follicular type was most common (94, 37.60%), followed by unicystic, and plexiform (Table 4). The basal type was the least common type (Table 4). Similar pattern of distribution was seen in both male and female cases. On evaluation of panoramic radiograph of all 250 cases, 28 (11.20%) had unilocular lesion and others had multilocular lesions. Among the case with multilocular lesions (Table 5). With 134 (53.60%) cases, soap bubble appearence was the most common type followed by spider web appearence and honey comb appearence (Table 5).

DISCUSSION

Out of the 596 cases of odontogenic tumours, 250 cases were histopathologically confirmed cases of ameloblastoma, which accounted for almost 41.95% of total cases of odontogenic tumours. This finding is in accordance with the finding of Rastogi et al. (48.9%)[5] and Ramalingam et al. (45.7%)[10] and in Indian population. However, the finding in current study is inconsistent with the findings of Chung et al.[11] which had prevalence of ameloblastoma as 12.2% in Korean population. Study done in Thai

and Malaysian population reported incidence of ameloblastoma of 27.6%, and 51.3% respectively among odontogenic tumours.[12,13] The occurrence of ameloblastoma was observed higher in male (154, 61.60%) as compared to female (96, 38.40%) with the male and female ratio of 1.6:1. This finding is in agreement with the result of earlier study done in Bangladeshi population where male to female ratio was found to be 1.7:1.[14] However a systematic review on larger population of 3677 cases by Reichart et al. found the male to female ratio of ameloblastoma as 1.2:1.[1]

Occurrence of ameloblastoma was highest in the third decade of life with the age group of 21 years to 30 years (80, 32%), followed by in the age group 11 years to 20 years (62, 24.80%). It was the least prevalent in children below 10 years (7, 2.80%). Similar result was seen is a study done by Rahman et al.[15] in Bangladeshi population and in a 13 years retrospective study done in Thai and Myanmar population.[16] Another study done in Indian population by Chawla et al.[10] has found the greater prevalence of ameloblastoma in third decade and was least in the first decade which totally agrees with the result of present study. However, a retrospective study done in Malaysian population revealed peak incidence in the second decade of life.[13]

Regarding the site distribution of ameloblastoma, it was most commonly seen in posterior mandible (196, 78.40%) followed by anterior mandible (33, 13.20%) and it is least common in posterior maxilla (19, 7.60%) and rare in anterior maxilla (2, 0.80%). This finding agrees with the earlier studies done in Bangladeshi,[3,14-15] Indian,[5,9-10] and Pakistani[17] population. However, a study done on African population shows highest prevalence of ameloblastoma in the mandibular symphysis region.[18]

Clinically, solid variants were the most common (159, 63.60%), cystic (88, 35.20%) and desmoplastic (3, 1.20%) were least in this study. This finding is consistent with the earlier finding of the studies done in Bangladeshi populations.[14,15]

Histologicaly, this study showed that follicular (94, 37.60%), unicystic (78, 31.20%), and plexiform (67, 26.80%) were common variants of ameloblastoma. However, a study done in the Indian population showed the highest prevalence of unicystic (34 %) followed by plexiform (22%), and follicular (19.8%).[10] Same study has reported the prevalence of granular cell ameloblastoma as 9.9%, which is higher as compared to the result of current study where prevalence of granular cell ameloblastoma is only 5%. Almost equal distribution of follicular and plexiform types was reported in a Brazillian study.[19] Several other studies done in different population agrees to the findings of this study in respect to the prevalence of histological variants of ameloblastoma.[13,16-18,20] As in other studies, other cellular variants of ameloblastoma, namely granular cell, basal cell, and acanthomatous forms, were rare in this study too.[21,22]

Out of 250 cases, only 28 (11.20%) were radiologically diagnosed as unilocular lesion and rest 222 (88.80%) were multilocular in panoramic radiographs. Among the multilocular lesions, the soap bubble appearance was highest (134, 53.60 %), followed by spider web appearance (57, 22.80%) and honey comb appearance (31, 12.40%). A study done in Indian population by More et al.[9] has the soap-bubble (50%), spider-web (21.43%), and honeycomb (14.28%) appearances in the multilocular variety of ameloblastoma, which confirms the similar finding with present study. Other studies also showed higher rate of multilocular lesions as compared to unilocular lesions.[23] In contradictory to present result and several other studies, a study done among Indian children and adolescent shows the predominance of unilocular lesions (59%).[24]

CONCLUSION

This study provides the overall preview of prevalence of ameloblastoma with its gender predilections, age of occurrence, site distribution along with the clinical, histological radiographic variants. It shows higher prevalence of ameloblastoma in Bangladeshi population. However, this study may not represent the overall population of the Bangladesh as the study was conducted in a tertiary care center of capital city of Bangladesh. A multicentric study with greater sample size and long-term evaluation may truly elucidate the finding of this study.

Conflict of Interest: None.

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