



Original Article

The Incidence of Ameloblastoma among Multilocular Radiolucent Lesions in Posterior Region of Mandible

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ABSTRACT

Background: Ameloblastoma is a highly recurrence odontogenic tumor occurring in both jaws. This study aimed at investigating the demographic data, radiographic and histopathological features of ameloblastoma.

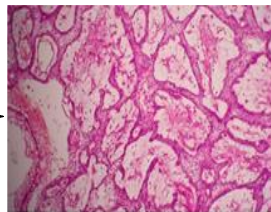
Methods: Patients diagnosed with ameloblastoma between 2018 and 2020 were retrospectively analyzed. Demographic data, clinical signs, and symptoms, radiological and histopathological data records were collected.

Results: 50 patients diagnosed with ameloblastoma, of which 25 patients were male, and 25 were female. The age range obtained was 12 to 76 years, with a mean age of 36 years. Most lesions were observed in the white race (56.3%), followed by the black race (43.7%). 48 cases (94.7%) were detected in the lower jaw and 2 (5.3%) cases in the upper jaw. The ratio of maxilla to mandible was 1:25. Multilocular imaging was presented in 28 cases (59.3%), monolocular in 20 cases (37.5%), and 2 of which were peripheral ameloblastoma (3.2%). The plexiform pathological pattern was the predominant type.

GRAPHICAL ABSTRACT



Multicystic Ameloblastoma



Plexiform Ameloblastoma



Unicystic Ameloblastoma



Peripheral Ameloblastoma

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Introduction

Ameloblastoma is an odontogenic tumor, with aggressive and infiltrative behavior, and has a high recurrence potential [1]. It is a tumor derived from the residual epithelial components of tooth development, such as remnants of the dental lamina (molasses debris), basal cells of the upper epithelium, the epithelium of the enamel organ, epithelium of odontogenic cysts [2]. In general, its manifestation between the third to the seventh decade of life, with no differences between the sexes [3]. It is located mainly in the lower jaw, with a prevalence of 85%, mainly in the molars and ascending head of the lower jaw, and to a lesser extent in the region of the premolars and the lower frontal region. Ameloblastoma occurs in the upper jaw 15%. They are more frequent in the area of the molars, and can affect the maxillary sinuses and the floor of the nostrils [4].

According to the WHO (2005) classification of odontogenic tumors, 4 types of ameloblastomas are recognized as solid/polycystic, monocystic, peripheral/extraosseous, and desmoplastic [5].

Clinically, the lesions are -growing, asymptomatic, and with cortical expansion or cortical perforation and soft tissue infiltration [6]. On radiographs, ameloblastomas appear as radiolucency, monocular or multilocular at the roots, such as marginal resection, mass resection, or partial resection/segmentation [7].

This study aims to conduct a retrospective study of the diagnosed cases of ameloblastoma in the Department of Oral and maxillofacial pathology in the medical city /Iraq for the years 2018-2020.

Materials and Methods

A retrospective study was conducted based on a review of the biopsy archive of the Department of Oral and maxillofacial Pathology at Medical City in Baghdad, and patient's files were viewed from 2018 to 2020 with a definitive diagnosis of ameloblastoma. Information regarding sex, ethnicity, patient age, and radiographic appearance of the tumor and histopathological diagnosis and anatomical location, were analyzed (Table 1). The inclusion and exclusion criteria in the study were as follows:

- Patients with a definitive diagnosis of ameloblastoma.
- Patients with complete medical history.
- Existence of histopathology study and radiographic examination.
- Patients who presented some form of diagnostic doubt were excluded despite the possibility of having ameloblastoma.

Radiographic appearance was in the form of soap bubbles, as they are divided into multiple radiolucent cavities or unicystic radiolucency.

Histologically, they can be classified into follicular cells, plexiform, acanthomatous cells, granular cells, and basal cells, with the plexiform form being the most common, followed by follicular [8].

The treatment of ameloblastoma is surgical, ranging from conservative forms, such as curettage, excision, and cryosurgery, to more radical forms, such as marginal resection, lumpectomy, or partial resection/segmentation [9].

Results and Discussion

50 cases, of which 25 patients were male, and 25 were female, were analyzed in a 1:1 ratio between males and females. The age range obtained was 12 to 76 years, with a mean age of 36 years. The median age of unicystic was 42 years, and polycystic was 38 years. Most lesions were observed in the white race (56.3%), followed by the black race (43.7%). There is no personal medical history in any cases (0%).

Regarding the location, 48 cases were detected in the lower jaw and 2 cases in the upper jaw. The ratio of maxilla to mandible was 1:25. In the mandible, the most inclined site was the body and angle region (47.9%) followed by the angle (38.6%) and less frequently the Antero region (13.6%), the cases presented in the maxillary posterior region were (5.3%).

Radiographs, multilocular imaging was presented in 28 cases (59.3%), monocular in 20 cases (37.5%) and 2 of which were peripheral ameloblastoma (3.2%).

The most common histological pattern, the plexiform, was dominant 21 cases (44.8%) followed by follicular type with 12 cases (23.8%)

acanthomatous with 7 cases (11.9%), granular and basal were with 5 cases each (9.4%).

The signs and symptoms observed were: cortical expansion in 29 cases (61.4%), injury in 11 cases (24%), painful symptoms in 8 cases (18.8%),

facial asymmetry in 7 cases (15.6%), occlusion changes in 3 cases, Difficulty in chewing were two cases (5.3%), tooth displacement in 20 cases (48.6%) and paresthesia in 20 cases (48.6%).

Table 1: Summary of the main epidemiological, radiological, clinical, and histological characteristics and anatomical location of the retrospective study

Factors	Number of patients	Statistics
Patients	50	100%
Sex		
Male	25	50%
Female	25	50%
Age		
Half		37 years
Minimum		13 years
Maximum		77 years
Race		
White	44	87,4%
Black	6	13.6%
Location in the maxilla		
Posterior region	2	5,3%
Location in mandible		
Body and angle	21	47,9%
Angle	19	38,6%
(symphysis)	8	13,5%
Radiographic appearance		
Unilocular	20	37,5%
Multilocular	28	59,3%
Peripheral	2	3,2%
Lesion size		
0-3cm	27	54%
>3cm	22	46%
Histopathological classification		
Plexiform	21	44,8%
Follicular	12	23,8%
Acanthomatous	7	11.9%
Granular	5	9.4%
Basal	5	9.4%
Signs and symptoms		
Cortical expansion	29	61,4%
Infection	11	24,9%
Painful symptoms	8	18,8%
Facial asymmetry	7	15,6%
Occlusal alteration	3	5,3%
Difficulty in chewing	3	5,3%
Tooth displacement	20	48,6%
Paraesthesia	20	48,6%

Ameloblastoma has two clinical presentations, the most common is intraosseous, and the other affecting soft tissues are called peripheral

ameloblastoma. The latter was described by Kuru in 1911, as reported by [10]. It is defined as an odontogenic tumor with the same

histopathological features as intraosseous ameloblastoma, but with the difference that it includes only the soft tissues (gingival/mucosa) covering the jawbone [10].

Several studies on ameloblastoma have been published: Olaitan *et al.* reviewed 315 cases in 1993; Reichart *et al.*, 3,677 hydroblastoma in 1995; Philipsen *et al.*, 193 cases in 1998; Ladeinde *et al.*, 207 cases in 2006; Buchner *et al.* 1,088 cases in 2006; Arotiba *et al.*, 79 cases in 2005 [11]. In this study, 50 cases of ameloblastoma were reviewed from January 2018 to 2020

Hendra *et al.* (2020), in a review of 1088 cases, provided epidemiological data very similar to those here. Found, in terms of signs and symptoms, location, and radiograph. Various studies show a higher incidence of ameloblastoma in black patients. However, there was a higher frequency in this report in whites, which may be due to geographical differences [12].

According to Dhanuthai and colleagues (2012), in their review of 3,677 ameloblastomas, they found the solid or polycystic type to be the most common, in 92% of cases, while monocystic ameloblastoma represented 6%. In their study of 1,088 dental tumours, Buckner and colleagues reported an incidence of 54% of solid ameloblastomas and 46% of unicystic ameloblastomas. In this study sample, the predominance of the polycystic variety (59.3%) over the unicystic (37.5%) and peripheral (3.2%) findings was revealed, which are results in agreement with some studies [13].

The malignant growth often delays diagnosis when the lesion appears large, with an invasion of anatomical structures [14]. In this study, the predominance of smaller lesions (0-3 cm) was observed with 54%. More extensive lesions (>3 cm) accounted for 46%. These data are difficult to compare with other studies because tumor extension is not frequently described.

The definitive diagnosis of ameloblastoma is based on pathological analysis. It is also essential to differentiate between the polycystic type and the monocystic type since the difference in prognosis depends on this [15]. A cross-sectional

biopsy was taken to confirm the initial clinical diagnosis in all cases presented. All specimens were studied once the surgical procedures were completed, and the histopathological variant was determined for each tumor. It was found that plexiform ameloblastoma appeared in 44.8% of cases, follicular in 23.8%, acanthomatous in 11.9%, basal in 5%, and granular in 5%.

The scientific literature is contradictory regarding the prevalence of the histopathological variant. The authors mentioned [16] the predominance of the Plexiform variant in their studies [16].

Several theories have emerged about the best treatment for ameloblastoma, based mainly on the benign histological nature of the tumor, its type, location, size, and the patient's age, which has led many authors to disagree about this the ideal type of treatment. The medical literature shows that monocystic ameloblastoma that has been treated conservatively has presented a significant success rate, although the possibility of recurrence exists [17].

Solid or polycystic ameloblastoma shows a greater tendency to infiltrate the surrounding tissues and, consequently, a higher recurrence rate. In most cases, polycystic ameloblastoma is radically treated with wide excision with safety margins of ± 1.5 cm. In general, radical surgical interventions are associated with serious problems for the patient, such as masticatory dyskinesia, malformations, facial deformities, and abnormal mandibular movements. Radical surgery with microsurgical reconstruction using microvascular bone graft (fibula) has become an ideal method for reconstructing the lower jaw [18].

Conclusions

The retrospective study of 50 cases of the described ameloblastoma allows us to take the following considerations:

The ameloblastomas mentioned here are similar to the other published series. Most of them were asymptomatic. The most common clinical patterns were polycystic, followed by monocysts and peripheral cysts. Within the histological pattern, plexiform was the most common. The radiograph can be monocular or multiocular, up

to large sizes. It may or may not be related to the retained tooth. A higher frequency was found in the white race in our study, which differs from that contradictory in the data reported in the medical literature. This result can be attributed to geographical differences.

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Authors' contributions

All authors contributed toward data analysis, drafting and revising the paper and agreed to responsible for all the aspects of this work.

Conflict of Interest

We have no conflicts of interest to disclose.

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