

Ameloblastoma of the mandible in Anbar province. A prospective study

Dr. Mohammed Hilal Hussien Dr.Taha Yaseen Hamad

Anbar University
Dentistry College

Al-Mustansirya University
Dentistry College

Dr. Ihsan Abdullah Kumail

Al-Mustansirya University - Dentistry College

Abstract:

Objectives: *The purpose of this study was to find out the incidence of histologic types of mandibular ameloblastoma in Anbar Province and its radiographic appearance in respect to age and site.*

Study design: *Aprospective study was conducted in Anbar Province on 38 patients whose ages ranged from 18- 54 years (28 males and 10 females) with radiologically and histologically confirmed ameloblastoma of mandible from November 2008- August 2011. Patients were treated in Maxillofacial Surgery Department/ College of Dentistry/ Anbar University and Maxillofacial Unit of Ramadi Teaching Hospital. According to investigations, each type and location of the tumor was matched radiologically and histologically with age and site.*

All cases were surgically treated by resection of the mandible and enucleation of the tumor with or without bone graft.

Results: *Radiologically, 55% of cases presented as unilocular and 45% as multilocular. Histologically, cases appeared as follicular (37%) and plexiform (42%) in younger age groups, while in older patients they were acanthomatous (21%).*

Conclusion: *Follicular and plexiform ameloblastomas occur in younger patients and more frequently in the posterior part of the jaws. In contrast, the acanthomatous ameloblastoma is found in older patients and frequently more anterior than other types.*

Keywords: *Ameloblastoma, mandible, odontogenic tumor, bone resection.*

Introduction

Ameloblastoma usually manifests as an intraosseous or central lesion or rarely as a peripheral epulis-like lesion [1]. The lesion may arise most commonly from cell rests of enamel organ, epithelium of odontogenic cysts, disturbances of the developing enamel organ, and basal cells of oral epithelium. Clinico-radiographically, ameloblastoma can be divided into 3 distinct patterns: the conventional solid/multicystic, the unicystic and the peripheral (extraosseous) [2].

Various histologic forms have been described which mainly include follicular, plexiform, and acanthomatous [2]. Follicular and plexiform ameloblastoma presents as a painless swelling or slow expansion of the jaws, and it is described mainly as multilocular expansile radiolucency that occurs most frequently in mandibular molar/ramus area of young patients [3]. Acanthomatous variant may be uni or multilocular which occurs more frequently in the anterior mandibular region of old subjects [4] and presents a mixed radiopaque and radiolucent appearance. Unicystic ameloblastoma is usually seen in younger age and most commonly associated with pericoronal radiolucency with unerupted 3rd molar [5] Appropriate treatment for an Ameloblastoma has been developed. But, there are few established criteria for treatment based on retrospective studies of a large number of cases and through analytical and not descriptive statistics [6].

Regezi & Sciubba [7] reported that ameloblastoma accounts for 11% of all odontogenic tumours in the jaw. The clinicopathological features are benign with a slow-growing pattern, but locally invasive [8]. Ameloblastomas of the jaws are relatively rare Odontogenic tumours; In 1868 Broca first described this tumour [9]. Churchill [10] in 1934 coined the term ameloblastoma. Survey studies were conducted about ameloblastoma and stated that it was the most common odontogenic jaw tumor, accounts for 1% of all cysts and tumors of the jaw and 11% of all odontogenic tumors, and described it as aggressive benign tumor of epithelial origin, which may arise from enamel organ, the dental follicle, the periodontal ligaments and the

lining of odontogenic cyst [11]. It has a tendency for aggressive invasion of the mandible and a high rate of recurrence [12].

Authors have expressed different opinions on the site, sex, and age distributions [13]. But a universal agreement about relation between radiographic appearance, site, age and histologic pattern of ameloblastoma had not reported till now that may help in better management of this lesion [14]. This study was conducted to compare the histologic and radiographic features of mandibular ameloblastoma in relation to site and age of the patient.

Materials and Methods

In this study 38 patients (28 males and 10 females, ages ranged from 18-54 years) suffering from uni or bilateral large persistant swelling of mandible which did not respond to different types of medications. Radiographic examinations (OPG, PA and some times lateral views) were taken for all patients to determine the size and site of tumor. Preoperative biopsies were taken which were histologically diagnosed as mandibular ameloblastoma and patients were surgically treated at Maxillofacial Surgery Department / College of Dentistry / Anbar University and Maxillofacial Unit / Ramadi Teaching Hospital from November 2008 to August 2011. Surgical treatment was done either conservatively (ie, with enucleation and curettage, or both) or radically (ie, with jaw resection) when radiolucency was well circumscribed. Bone chips (Genius, BAUMER S A- Biomaterial / Brazil) were used on need. Cases were reviewed and classified according to histologic patterns. All informations with respect to age, sex, tumour location, surgical procedure including preoperative biopsy and whether the tumor occurred for the first time or recurrent had been verified. Follow up ranged from 3 months to 1 year.

Results

All tumors treated in this study occurred for the first time. Radiographic views showed ill defined or well circumscribed radiolucencies in the body or angle of the mandible, the latter was mostly associated with impacted lower third molar. As shown in table (1), 18 patients (47%) of the cases occurred in the fourth decade of life, 11 of them at the body and 7 at the angle of mandible, 10 of them were unilocular and the rest were multilocular, histologically, 8 of them were follicular and 10 plexiform in nature (table 1). Acanthomatous pattern of the lesion was found in the fifth and sixth decades in 8 patients, 6 of them were unicystic while the other 2 were multilocular lesions, 5 at the body and 3 at the angle of mandible. 12 tumors (32%) were associated with lower third molar, and 26 tumors (68%) at the body of mandible, there was no difference in sex distribution. Radiographically, 21 tumors (55%) of cases were unilocular and 17 tumors (45%) were multilocular (figures 1, 2).

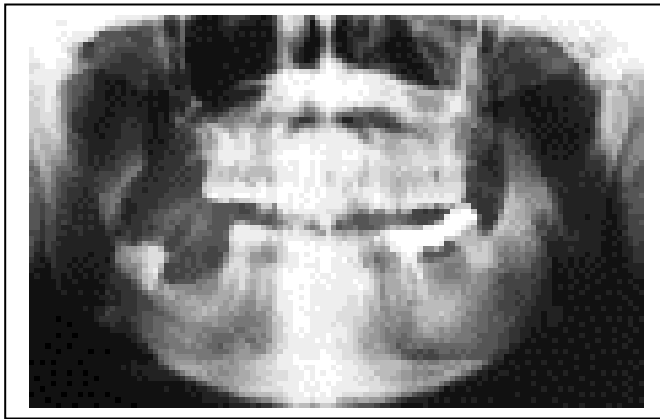


Figure (1) Unilocular radiolucency well-demarcated



Figure (2) Multilocular radiolucency well-demarcated

Histologic findings showed that 14 patients showed follicular type which characterized by islands demonstrating peripheral columnar cells (figure 3), their ages ranged from 15- 41 years and 16 patients showed plexiform type which characterized by odontogenic epithelium arranged in the form of interlacing trabeculae and evidence of stromal degeneration (figures 4), their ages ranged from 22- 46 years, while acanthomatous type of the tumor was the histologic criteria in 8 patients who were in the 5th and 6th decade of life which characterized by follicles showing extensive squamous metaplasia and keratin formation (figure 5).

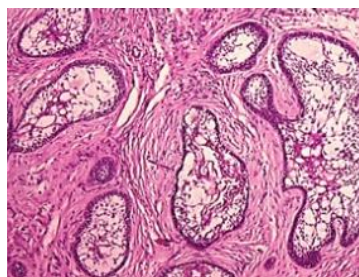


Figure (3) typical follicular ameloblastoma with islands demonstrating peripheral columnar cells

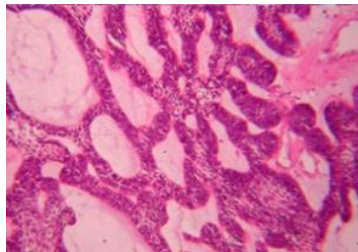


Figure (4) Plexiform ameloblastoma with odontogenic epithelium arranged in the form of interlacing trabeculae and evidence of stromal degeneration

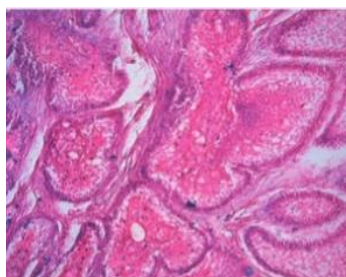


Figure (5) acanthomatous variant of ameloblastoma with follicles showing extensive squamous metaplasia and keratin formation

Table (1) shows distribution of histologic and radiographic types of mandibular ameloblastoma in respect to site, age and gender of patients

Age	Sex		Site		X ray		Histologic Type		
	M	F	Body	Angle	U	M	Fo	P	A
15-20	1		1		1		1		
21-25	2		2			2	1	1	
26-30	4		2	2	2	2	3	1	
31-35	8		3	5	4	4	3	5	
36-40	6	4	8	2	6	4	5	5	
41-45	4	3	5	2	4	3	1	3	3
46-50	2	2	3	1	3	1		1	3
51-55	1	1	2		1	1			2
Total	28	10	26	12	21	17	14	16	8
%	74	26	68	32	55	45	37	42	21

*M= male, F= female, U= unilocular, M= multilocular,
Fo= follicular, P= plexiform, A= acanthomatous

According to table (1), 28 (74%) of cases were in male patients and 10 (26%) in females, there was a correlation between the histologic pattern of the tumor is more influenced by age rather than gender of patients, so acanthomatous type was the main feature in older ages while follicular and plexiform types met younger patients, but there was not a noticeable relation neither about radiographic appearance

nor site of the tumor in respect to age of patients. Patients below 40 years showed follicular (37%) and plexiform (42%) types while older patients showed acanthomatous type which constituted 21% of all patients.

Discussion

It has been reported that unilocular ameloblastomas tend to be more frequent than multilocular [15], our results confirmed this tendency. The unilocular pattern (55%) predominated over the other pattern. Moreover, in this study, 13 of the 21 cases of unilocular lesions occurred before the fifth decade of life and this agree with other studies which stated that unilocular ameloblastoma is more associated with younger patients [15]. Larsson and Almere [16] reported the incidence of ameloblastoma in Sweden as 0.3 cases per million people per year with an average age of 39 years. In this study, we documented the occurrence of ameloblastomas in a younger age. The mean age of our patients at diagnosis was 29 years. This variation may reflect ethnic differences or may be due to the difference in health care and nutrition between industrial and developing countries. Waldron and El-Mofty [4] reported that in 116 ameloblastoma tumors, the male-to-female ratio was 2.5:1, which is in agreement with our results.

Waldron and El-Mofty [4] reported that the follicular pattern was the most prevalent (45%). However, we found that the plexiform pattern was the most prevalent, it was seen in 16 patients (42%) of the 38 cases. Patients with plexiform and follicular types were treated conservatively by enucleation and curettage, or both to avoid the potential morbidity associated with larger resections [17] and because histologic examination did not show malignant metaplasia or granular cells which are indicative of tumor aggression [18], but when squamous metaplasia was noticed histologically especially in acanthomatous type, a radical bone resection (supra periosteal) was done to eliminate possibility of recurrence of the tumor [19]. Patients were not advised to chemotherapy or radiation because they are contraindicated [20].

Conclusion

The little number of cases managed (who were hardly found during the period of study) dose not give us the right to say that the study could be dependable to assess the incidence of ameloblastoma in Anbar Province, but it was a trial that may give a hint about this incidence, and according to this moderate trial, it was shown that follicular and plexiform ameloblastomas occur in younger patients and more frequently in the posterior part of the jaws. In contrast, the acanthomatous ameloblastoma was found in older patients and frequently more anterior than other types. Postoperative follow up of patients for coming years is highly recommended to find out any recurrence since the period of present follow up was not enough. Also we recommend Ministry of Health and Directorates of Health in all Iraqi provinces to take their responsibilities in increasing the health education of Iraqi citizens and explaining the importance of attending specialized medical centers for earlier detection of such lesions.

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الأورام الآرومية للفك الأسفل في محافظة الأنبار- دراسة علاجية

الدكتور محمد هلال حسين
جامعة الأنبار - كلية طب الأسنان

الدكتور طه ياسين حمد
الجامعة المستنصرية - كلية طب الأسنان

الدكتور احسان عبد الله كميل
الجامعة المستنصرية - كلية طب الأسنان

المستخلص

هدف الدراسة: لإيجاد مدى العلاقة بين الصنف النسيجي و المظهر الشعاعي لهذه الأورام و بين عمر المريض و منطقة الإصابة في الفك الأسفل.

طريقة الدراسة: أجريت هذه الدراسة العلاجية في محافظة الأنبار على ٣٨ مريض تتراوح اعمارهم بين ١٨ الى ٥٤ سنة (٢٨ ذكور و ١٠ اناث) ثبتت اصابتهم بهذا النوع من الأورام في الفك الأسفل عن طريق الفحص النسيجي و الشعاعي و كانت مدة الدراسة من تشرين الثاني ٢٠٠٨ حتى آب ٢٠١١ . تم اجراء العمليات في قسم جراحة الفم و الوجه و الفكين في كلية طب الأسنان بجامعة الأنبار و في وحدة جراحة الوجه و الفكين في مستشفى الأنبار التعليمي. طبقا لنتائج الفحوص فقد تم مقارنة كل صنف من هذه الأورام بالنسبة الى المظهر الشعاعي و الفحص النسيجي من جهة و بين عمر المريض و منطقة الإصابة من جهة اخرى. تم علاج جميع الحالات بطريقة ازالة الورم جراحيا و ترقيع العظم عند الضرورة.

النتائج: أظهر الفحص الشعاعي ان ٥٥% من الحالات كانت احادية الموقع و ٤٥% كانت متعددة المواقع. أظهر الفحص النسيجي ان الأورام التي اصابته المرضي في عمر الشباب كانت من الصنف البرعمي (٣٧%) و الشبكي (٤٢%) في حين ان كبار السن كانوا مصابين بصنف مشتبك الخلايا (٢١%).

الإستنتاج: الأورام الأرومية من صنف البرعمية و الشبكية تصيب الشباب في الجزء الخلفي من الفك الأسفل بينما صنف مشتبك الخلايا فانه يصيب كبار السن و في الجزء الأمامي من الفك الأسفل.

الكلمات المفتاحية: الأورام الأرومية، الفك الأسفل، الأورام التي تنشأ من خلايا الأسنان، اقتطاع من العظم