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TWO HUNDRED AND FORTY SIX TUMOURS AND TUMOUR-LIKE CONDITIONS OF THE JAW SEEN IN ZARIA, NIGERIA

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ABSTRACT

Background: Tumours of the jaw may arise from the odontogenic tissues or from the non-odontogenic tissues. Many of the odontogenic tumours are considered as developmental rather than neoplastic.
Method: The present study is a retrospective analysis of 246 tumours of the jaw seen in the Pathology Department of the Ahmadu Bello University Teaching Hospital (ABUTH), Zaria from 1987 – 1996. The tumours were classified according to World Health Organization international histological classification for odontogenic tumours.
The cases were analyzed according to histological type, age and sex.
Result: Jaw tumours formed 3.9% of all tumours seen in the department during the study period. Out of these 141 were benign and 105 were malignant. They had an almost equal sex ratio. The benign tumours were made up of the following histological types: - 48 (34.0%) ameloblastomas; 33 (23.4%) fibrous dysplasia; 31 (22.0%) cemento-osseous dysplasia; 9 (6.4%) myxomas; 8 (5.7%) ameloblastic fibroma; and 3 (2.1%) adenomatoid odontogenic tumours; and 9 (6.4%) unclassified tumours. The benign tumours had an overall M: F ratio of 1:1.3. About 94% of the ameloblastomas occurred in the mandible. The malignant jaw tumours were made up of the following histological types: - 79 (75.2%) malignant lymphoma; 10 (9.5%) osteogenic sarcomas; 2 (1.9%) chondrosarcoma; 1 (1.0%) malignant ameloblastoma and 6 (5.7%) secondary tumours, 7 (6.7%) were unclassified. The malignant jaw tumours had an overall M: F ratio of 1.5:1. The peak age for the malignant jaw tumours was the first decade. Malignant lymphoma shared a similar peak. Osteogenic sarcoma peaked in the fourth decade while the only case of malignant ameloblastoma was in the fifth decade. Eighty one percent of the jaw lymphomas were of Burkitt's type, 53.1% of which were within the age group 5 - 9 years. The other non-Burkitt's lymphomas were distributed between 5 to 60 years.
Conclusions: Ameloblastoma is the commonest benign tumour of the jaw in Zaria, while Burkitt's lymphoma is the commonest malignant jaw tumour. The later occurs mainly in the first decade of life.

Key words: Jaw tumours

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INTRODUCTION

Tumours and tumour-like conditions of the jaw can be of odontogenic, bone or lymphoreticular origin. Odontogenic tumours arise from any of the tissues involved in teeth development and may occur while the individual is dentulous and edentulous. Jaw tumours could be developmental malformations (harmatomas), benign or malignant. Tumour-like jaw conditions are fibrous dysplasia, and cemento-osseous dysplasia. Benign odontogenic tumours include ameloblastoma, ameloblastic fibroma, calcifying odontogenic tumour, myxoma and compound odontome.[1] The malignant odontogenic tumours are rare and include malignant ameloblastoma, and ameloblastic sarcoma.[1] Bone related jaw tumours can be benign like osteoma, or the malignant - osteogenic sarcoma and chondrosarcoma.[1] The lymphoreticular tumours of the jaw are Burkitt's lymphoma, which is common in tropical areas, and other non-Hodgkin's non-Burkitt's lymphoma.[2] The involvement of both ectodermal and mesodermal soft and hard tissues is probably responsible for the bewildering variety of forms in which the odontogenic tumours may appear.[3]

Although ameloblastoma is the commonest benign jaw tumour, [5-11] malignant ameloblastoma or ameloblastic carcinoma is rare as is shown in various studies.[12-14] Many clinical studies on jaw tumours are available from the northern part of Nigeria,[6, 7, 15-17]

MATERIALS AND METHODS

All jaw tumours sent to the Pathology Department, Ahmadu Bello University Teaching Hospital (ABUTH), Zaria during the study period (1987 – 1996) form the material of the study. Most of these cases originated from ABUTH hospitals situated in Kaduna and Zaria, and other surrounding public and private hospitals.

The clinical details, age, sex and site were extracted from the patients' request cards. The routinely stained histology slides (with haematoxylin and eosin - HE) were retrieved and studied by authors. Where necessary, fresh sections were cut and stained with HE from the tissue blocks. Special histochemical stains like Grocott-Gomori Methamine Silver (GMS) for reticulin fibers, Verhoef-van Gieson (VVG) for elastic fibers, Masson Trichrome (MT) for collagen and Periodic acid -Schiff (PAS) to demonstrate mucin were applied to fresh sections were necessary.

The tumours were classified according to World Health Organization International Histological Classification for Odontogenic tumours.[1] The age, sex,. histological types, site and some histological features of interest were analyzed.

RESULTS

Over the study period of ten years (January 1987 to December 1996), 25,303 surgical biopsies were received in the histopathology department of ABUTH, Zaria.

The 246 jaw tumours and tumour-like conditions studied formed 3.9% of all neoplasms seen in the department during the study period. One hundred and forty one (57.3%) were benign and 105 (42.7%) were malignant. The benign tumours were made up of the following histological types: - 48 (34.0%) ameloblastomas; 33 (23.4%) fibrous dysplasia; 31 (22.0%) cemento-osseous dysplasia; 9 (6.4%) myxomas; 8 (5.7%) ameloblastic fibroma; and 3 (2.1%) adenomatoid odontogenic tumours; and

9 (6.4%) unclassified tumours. The benign tumours had an overall M: F ratio of 1:1.3 (Table 1).

About 57% of the benign jaw tumours were in the second and third decades. Cases of ameloblastoma peaked in the second to fourth decades, while fibrous dysplasia and cemento - osseous dysplasia peaked in the second and third decades respectively (Table 2).

Table 3 showed that 93.7% of the ameloblastomas occurred in the mandible.

The malignant jaw tumours were made up of the following histological types: - 79 (75.2%) malignant lymphoma; 10 (9.5%) osteogenic sarcomas; 2 (1.9%) chondrosarcoma; 1 (1.0%) malignant ameloblastoma and 6 (5.7%) secondary tumours. Seven (6.7%) were unclassified.

Table 1: Histological types and sex distribution of benign jaw tumours

Histological type	Male	%	Female	%	Total	%
Ameloblastoma	29	20.6	19	13.5	48	34.0
Fibrous dysplasia	8	5.7	25	17.7	33	23.4
Cemento – osseous dysplasia	12	8.5	19	13.5	31	22.0
Myxoma	4	2.8	5	3.5	9	6.4
Ameloblastic fibroma	1	0.7	7	5.0	8	5.7
Adenomatoid odontogenic tumour	1	0.7	2	1.4	3	2.1
Unclassified	6	4.3	3	2.1	9	6.4
Total	**61**	**43.3**	**80**	**56.7**	**141**	**100**

Table 2: Age distribution of benign jaw tumours

Histological type	Age (Yrs)							Total
	0 -9	10 -19	20 -29	30 -39	40 –49	50 -59	60 -69	
Ameloblastoma	2	12	13		6	1	1	48
Fibrous dysplasia	2	14	7	5	4	1	0	33
Cemento – osseous dysplasia	2	9	10	3	5	2	0	31
Myxoma	0	3	2	0	3	1	0	9
Ameloblastic fibroma	0	1	4	2	0	1	0	8
Adenomatoid odontogenic tumour	0	0	1	1	1	0	0	3
Unclassified	2	2	2	1	1	1	0	9
Total	8	41	39	25	20	7	1	141

Table 3 : Anatomical sites of 48 ameloblastomas

Anatomical site	No.	%
Mandible	45	93.7
Maxilla	2	4.2
Not Indicated	1	2.1
Total	48	100

The malignant jaw tumours had an overall M: F ratio of 1.5:1 (able 4).

The peak age for the malignant jaw tumours was the first decade. Malignant lymphoma shared a similar peak. Osteogenic sarcoma peaked in the fourth decade while the only malignant ameloblastoma was in the fifth decade (Table 5).

Eighty one percent of the jaw lymphomas were of Burkitt's type, 53.1% of which were within the age group 5 - 9 years. The other non-Burkitt's lymphomas were distributed between 5 to 60 years (Table 6).

Table 4: Histological types and sex distribution of malignant jaw tumours

Histological type	Male	%	Female	%	Total	%
Malignant lymphoma	51	48.6	28	26.7	79	75.2
Osteogenic sarcoma	3	2.9	7	6.7	10	9.5
Chondrosarcoma	0	0	2	1.9	2	1.9
Malignant ameloblastoma	1	1	0	0	1	1.0
Secondary tumours	3	2.9	3	2.9	6	5.7
Unclassified	5	4.8	2	1.9	7	6.7
Total	63	60	42	40	105	100

*Table 5: **Age distributions** of malignant jaw tumours*

Histological type	Age (yrs)								Total
	0 -9	10 -19	20 -29	30 -39	40 -49	50 -59	60 -69	70+	
Malignant lymphoma	40	25	8	1	3	1	1	0	79
Osteogenic sarcoma	0	1	2	3	2	0	1	1	10
Chondrosarcoma	0	0	1	1	0	0	0	0	2
Malignant ameloblastoma	0	0	0	0	1	0	0	0	1
Secondary tumours	0	1	2	1	1	1	0	0	6
Unclassified	2	1	1	0	2	1	0	0	7
Total	42	28	14	6	9	3	2	1	105

Table 6:Age distribution of Burkitt's lymphoma of the jaw compared to other lymphomas of the jaw

Histologic type	Age (yrs)											
	<5	5-9	10-14	15-19	20-24	25–29	30-34	35-39	40-44	45+	No.	(%)
Burkitt's lymphoma	3	34	13	12	2	0	0	0	0	0	64	81
Other lymphomas	0	3	3	1	3	2	1	0	2	4	15	19
Total	3	37	16	13	5	2	1	0	2	4	79	100

DISCUSSION

Tumours of the jaw are a histologically varied group. In our study the 246 jaw tumours reviewed formed 3.9% of all neoplastic lesions seen during the review period in the department. This higher than the 0.8% obtained by Dodge et al. in a Ugandan study which excluded Burkitt's lymphoma.[18] Ameloblastoma, the most frequent benign jaw tumour we noted, accounted for 0.8% of all jaw tumours was similar to observations on ameloblastoma in Ibadan by Lagundoye et al.[19], and Adekeye et al., who had 1.3% and 0.9% respectively.[6]

The mean age of our cases of ameloblastoma is 28.3 years was similar to the 30 and 31.2 years recorded by Adekeye et al., [6] and Olaitan et al., [7] respectively. These ages are lower than the 38 years recorded by Waldron et al in a European series.[4] Akinosi opined that the relative young age of presentation of African cases of ameloblastoma may be related to the unicystic radiological pattern rather than the polycystic type in the Western patients.[9] Gross features of our samples showed mainly the unicystic pattern, supporting the above observations. Adekeye[9] reported on 22 cases of recurrent ameloblastoma among 109 cases from Kaduna. We observed a case of malignant ameloblastoma in 44-year old man, who had an initial diagnosis of ameloblastoma of the mandible and later presented with metastatic disease in cervical lymph node similar to the primary disease. Malignant ameloblastoma is a rare and controversial lesion, as its diagnosis is confirmed only when metastasis occurs. Small and Waldron reported on 30 cases collected from the literature.[20] Onatolu reported one case while other Nigerian studies consulted did not report any.[5-9, 11]

Burkitt's lymphoma accounted for 81% of the jaw tumours we studied, in consonance with the over 70% reported by Edington et al.[21] In our series Burkitt's lymphoma had a mean age of ten years. This was higher than the five years observed by Burkitt's in Uganda, and lower than the 15 years recorded by Saribau in an American series.[2, 22]

The ten cases of jaw osteosarcoma studied had a mean age of incidence of 39.5 years higher than the 25 years recorded by Daramola et al., [23] and 31.2 years by Adekeye et al.[17] All recorded a higher age than a mean age of 18 years reported for osteogenic sarcoma of the long bone.[24]

In conclusion, ameloblastomas are

the commonest tumours of the jaw in Zaria, while Burkitt's lymphoma is the commonest malignant jaw tumour. The later occurs mainly in the first decade of life.

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