

MAXILLARY ANTRAL CARCINOMA. A FIVE YEAR STUDY AT THE LAGOS UNIVERSITY TEACHING HOSPITAL (LUTH) NIGERIA

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ABSTRACT

An analysis of epithelial cancers of the maxillary antrum seen at the Lagos University Teaching Hospital between 1993 and 1997 with a two year follow up was done. A total of thirty eight patients with histological diagnosis of maxillary antral carcinoma were studied. Squamous cell carcinoma was the commonest histological type. There were more males than females with a male to female ratio of 1.5:1. The peak age of occurrence for both males and female was in 6th - 7th decade of life, with males presenting at an earlier age. Facial swelling (60.5%) was the commonest presenting clinical feature which was a late feature. Other common features were nasal obstruction with nasal mass in 42.1%. Buccopalatal swelling was seen in 36.8% of the patients. Proptosis and loosening of teeth 23.6% respectively in some of the patients. Plain radiology revealed opacity with bony wall destruction in 78.9% of the patients. Surgery with post operative radiotherapy was the treatment offered to 78.7% of the patients. However, follow-up was poor, as 84.2% of the patients were lost to follow-up and outcome of treatment could not be determined.

INTRODUCTION

Malignancies of the paranasal sinuses are said to be rare worldwide¹. It accounts for 3% of head and neck cancers in United State of America (USA)². Higher rates have been reported in Japan and parts of Africa^{3,4}. Martinson⁵ reported 2.2% three decades ago in Ibadan, Nigeria. Bahtia⁶ reported it as the second commonest cancer in head and neck in Jos, Nigeria. Other reports from West Africa have shown that sinus cancers are not uncommon^{7,9}.

Majority of the paranasal sinus cancer arises from the maxillary antrum of which squamous cell carcinoma is the commonest histologic variety^{1,2,4}.

The initial symptomatic presentation of maxillary antral carcinoma might mimic inflammatory sinus disease or dental caries which might be treated as such by the unwary surgeon. The late clinical presentation depends on the direction of growth, anterior, medial, superior inferior and lateral spread. The disease can present as nasal, facial, buccal, palatal or orbital swelling. Sometimes it can present with facial paraesthesia. The maxillary sinus is confined within a bone, making it difficult to diagnose malignancies from it early. This therefore presents difficulties in its management which ultimately affect the prognosis.

This study attempts to analyse epithelial cancers of the maxillary antrum seen at the Lagos University Teaching Hospital. The aim is to highlight the management problem of maxillary antral carcinoma as it relates to its diagnosis, treatment and follow-up in our hospital.

PATIENTS AND METHODS

We retrospectively studied all patients who presented to the Maxillofacial and Ear, Nose and Throat Units of the Lagos University Teaching Hospital, between 1993 and 1997. Patients who were included in this study were those in whom a clinical and histological diagnosis of carcinoma of the maxillary antrum was made over the period. Patients in whom the tumour was thought to arise from the nasal cavity or other sinuses were excluded.

Data on clinical presentations, radiologic findings, histologic diagnosis, treatments and follow-up for two years were analysed.

RESULTS

A total of thirty-eight (38) patients were histologically diagnosed as having maxillary antral carcinomas over a 5 year period (1993 - 1997). Of these 30 patients (78.9%) presented at the Maxillofacial Unit (MFU) and 8 patients (21.1%) presented at the Ear, Nose and Throat Unit (ENT).

Of the 38 cases, the right maxillary sinus was involved in 52.6% (20 cases) while the left antrum was involved in 42.1% (16 cases) while in 5.3% (2 cases) the exact locations were not recorded.

Histological Types

(Table 1). The predominant histological type was squamous cell carcinoma accounting for 68.42% (26 cases). This is followed by adenocarcinoma (10 cases) which accounted for 26.31%. There were only 2 cases of mucoepidermoid carcinoma accounting for 5.26%.

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Table 1: Histopathological Types

Histologic Type	No of Patients	(%)
Squamous cell carcinoma		
Well differentiated	6	
Moderately differentiated	5	
Poorly differentiated	6	
Undifferentiated	1	26
Anaplastic	2	68.42
Unspecified	6	
Adenocarcinoma	10	26.31
Mucocpidermoid carcinoma	2	5.26
Total	38	

Table 2: Age & Sex Distribution

Age Range (in years)	No. of Patients/ (%)		
	Male	Female	Total
≤20	1(4.3%)	-	1 (2.6%)
21 – 30	1(4.3%)	-	1 (2.6%)
31 – 40	5(21.7%)	-	5 (13.2%)
41 – 50	4(17.4%)	-	4 (10.5%)
51 – 60	6(26.1%)	5(33.3%)	11 (28.9%)
61 – 70	3(13.0%)	6(40%)	9 (23.7%)
>70-	-	4(26.7%)	4 (10.5%)
Not recorded method	3(13.0%)	-	3(7.7.9%)
Total	23(60.5%)	15(39.5%)	38

Age and Sex Distribution

(Table 2). In this study, occurrence of antral carcinoma was higher in males accounting for 60.5% (23 cases) than in females 39.5% (15 cases) in the ratio of 1.5:1.

In males, antral carcinoma occurred between the ages of 20 and 70 years with a mean age of 47.4 years while in females it was between 58 and 78 years, mean age was 64.53 years. The peak age of occurrence for both males and females was in the 6th - 7th decade of life.

Clinical Findings at Presentation

Table 3 shows the profile of clinical features which the patients presented with. Facial swelling was the commonest presenting feature in our study. 60.5% of our patients presented with this, and was closely followed by nasal mass/obstruction in 42.1% of the patients while buccopalatal swelling was the commonest oral clinical feature in 36.8%. Proptosis was the commonest ophthalmic feature. The presence of a nasal mass and nasal obstruction were seen in 42.1% of the patients while cervical lymphnode enlargement was seen in 21.1% of the patients.

Radiological Findings

(Table 4) Plain radiology of the sinuses (water's view and 30° occipitomental view) were the radiologic investigations

performed on all of the patients. Evidence of maxillar, antral bony wall destruction as well as radio-opacity was seen in 78.9% of the patients, while 18.42% presented with opacity of the antrum alone. Only one patient presented with bilateral maxillary antral opacity.

Table 3: Clinical Findings at Presentation

No. of Patients	n = 38	(%)
Facial		
- Swelling	23	60.52
- Paraesthesia	7	18.42
- Skin involvement	3	7.89
Oral		
- Palatal swelling alone	4	10.52
- Buccopalatal swelling	14	36.8
- Trismus	1	2.63
- Loosening of teeth	10	26.31
- Buccal swelling alone	3	7.89
Nasal		
- Obstruction/mass	16	42.1
- Epistaxis	10	26.31
Ophthalmic		
- Proptosis/other ocular involvement	10	26.31
- Epiphora	6	15.78
Others		
- Lymphadenopathy	8	21.05

Table 4: (Fig) Radiological Features

Radiological finds	No.of Patients	(%)
Unilateral		
Opacity of antrum alone	7	18.42%
Opacity of antrum with bony Wall destruction.		
	30	78.94%
Bilateral maxillary antral opacity	1	2.63%
Total	38	

Treatment

Table 5 shows the type of treatment given to all patients in this study. Hemimaxillectomy combined with post-operative radiotherapy was the treatment in 26 (68.2%) of the patients. 10.53% (4 cases) of the patients had hemimaxillectomy and orbital exenteration. 5 patients (13.16%) had palliative treatment in form of Radiotherapy and Chemotherapy. 3 (7.89%) patients did not

receive any treatment.

Of the 3 patients who did not receive any definitive treatment, 2 of them presented in extremis and died before any therapy could be offered. The third patient absconded after diagnosis was made.

Table 5: Treatment Modalities

Treatment Offered	No. of Patients	(%)
Surgery followed by radiotherapy		
* Hemi maxillectomy+XRT	26	68.2%
* Hemi maxillectomy + Orbital exenteration + XRT	4	0.52%
* Radiotherapy alone	3	7.89%
* Radiotherapy + Chemotherapy	2	5.26%
* No treatment	3	7.89%

Table 6: Treatment Outcome (2 Year Follow-up)

Variable	No. of Patients	(%)
Recurrence	2	5.3
Died	4	10.5
Lost to follow-up	32	84.2

Follow-up

Follow-up was poor in this study. Thirty-two patients were not seen for two-year minimum follow-up period set out in the criteria for this study. Four patients died within the two year follow-up period and two patients had a recurrence.

DISCUSSION

This study is limited to malignant epithelial tumours of the antrum whereas most of the previous studies^{5,8} in this environment were on malignant neoplasms of the antrum. This makes it difficult to compare the proportion of squamous cell carcinoma of 68.42% in this study with other reported series by Singh and Martinson⁵ and Arotiba⁸ few years ago.

The peak incidence in the 6th - 7th decades of life in this study is at variance with findings of Singh and Martinson of 4th - 6th decades documented three decades ago.

The true incidence of maxillary antral carcinoma among Nigeria is not known since there are few studies. A previous report from this institution by Arotiba⁸ showed an annual hospital incidence of 9 cases per year, while the result of this study shows an annual hospital incidence of 7 cases of maxillary antral carcinoma per year. The small numbers create a problem for statistical analysis, but do not alter the fact that the tumour is common. Other reports point to higher incidence among African than among Caucasian^{4,9}.

The disease is commoner in males than females and it is of interest that males presented at an earlier age with the disease than females. This was also the finding of Arotiba⁸ in earlier 15

years retrospective analysis of maxillary antral carcinoma seen in this institution. 73% of the females with the disease were over 60 years of age and the remaining 27% were between 41 and 60 years. The high rate of occurrence of maxillary antral carcinoma among post-menopausal women compared to pre- menopausal women suggest that hormonal factors may play a role in the aetiology. This needs to be further investigated as this may open avenues for hormonal therapy as adjuvants to current treatment policies.

Various industrial agents have been linked to malignant epithelial neoplasms of maxillary antrum. In Nigeria, most industrial and other unskilled workers who handle materials containing these agents do not use protective devices. It would be important to study the role of long term exposure to these agents in aetiology of maxillary antral carcinomas among Nigerians.

Facial swelling was the commonest presenting clinical feature followed by nasal mass with obstruction. This trend was reported by Singh and Martinson⁵, Chow² et al and Osguthorpe¹⁰. It highlights the problem of late presentation and pressure effect of tumor spread or erosion of the anterior bony wall of the antrum. This is supported by the radiological finding of bony wall destruction in 78.9% of the patients in this study. Facial pains are due to the expansile effect of the tumour or involvement of the infraorbital nerve. Nasal obstruction result from tumour invasion of the medial wall of the antrum into the nasal cavity. Buccopalatal swelling as the commonest oral manifestation result from tumour invasion of the anterior-inferior wall of the antrum. This interferes with feeding leading to cachexia and fetor oris in these patients.

Due to late presentation, majority of maxillary antral carcinoma patients present with radiological evidence of bony wall destruction. Lewis and Castro¹¹ reported that plain radiological evidence of bony wall destruction was seen in approximately 69% of cases of maxillary sinus neoplasms. 21.1% of our patients presented with metastatic lymph node. The incidence of neck node though uncommon, ranges from 3% - 20% and it said to be related to tumour extension outside the maxillary sinus and the initial prognostic importance at presentation is still controversial¹².

Hemimaxillectomy with post operative radiation therapy was the treatment offered the majority of the patients in this study (68.2%). Hemimaxillectomy with orbital exenteration and post operative radiation therapy was offered 10.5% of our patients. However some patients could not be offered a definitive treatment until they died. They presented in extremis. The facts still remains that most of our patients still present late to the hospital for reasons attributed to poverty, ignorance, lack of medical facilities and non availability of maxillofacial surgeons and otolaryngologist in many centres.

It has now been established that combination therapy with surgery, radiotherapy with or without chemotherapy offers the best chance of disease control^{13,14}. The treatment options of maxillary antral carcinoma can be tasking due to its late presentation and involvement of surrounding vital structures, the eyes and the brain.

Some authors differ on whether pre-or post operative radiation therapy offers a better control rates with post operative radiotherapy. Cheng and Wang reported a higher rate of failure

to control the disease using post operative radiation than preoperative radiation therapy. In our institution surgery is our first line of treatment with post operative radiotherapy as reflected in 78.7% of our treatment with an intent of disease control or cure.

None of our patients had pre-operative radiation therapy. Radiotherapy alone or with chemotherapy was used as a palliative treatment in 13.1% of our patients. Unfortunately, follow-up was quite poor in our patients as 84% of the patients were not seen for up to 2 years after treatment. Their fate was not known as they defaulted completely from keeping follow-up appointment since many travelled from a far distance to our centre for treatment. It was not possible to determine what the survival rate was with our treatment options.

CONCLUSION

Our study shows that maxillary antral carcinoma still poses the problem of late presentation, it is suggested that the surgeons should have a high index of suspicion. The importance of sinus endoscopy in the early detection of antral carcinoma cannot be overuled.

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