

# CLINICO-PATHOLOGICAL ANALYSIS OF MALIGNANT SALIVARY GLAND TUMOURS IN JUTH JOS, NORTH CENTRAL NIGERIA.

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## ABSTRACT

### BACKGROUND

Salivary gland tumours are common head and neck tumours. Malignant salivary gland tumours generally occur less frequently than benign ones and account for greater morbidity and mortality.

Patients in our environment are seen to present at late stages and Mucoepidermoid carcinoma is the commonest histologic type.

### OBJECTIVE

To analyse the clinicopathologic features of malignant salivary gland tumours in our environment.

### METHODS

This is a descriptive study of all histologically confirmed malignant salivary gland tumour with the clinical stage determined during surgery over a period of ten years (January 1997 to December 2007). Fresh sections (3 mm) of tissue block of salivary gland lesions were obtained. They were made into slides and stained with hematoxylin and eosin (H and E) and periodic acid Schiff (PAS) stains. The slides were reported independently by four pathologists. Diagnosis was made according to the world health organisation (WHO) classification of salivary gland tumours. Case files of these patients were retrieved and informations such as age, stage during surgery and site of occurrence were gotten from the files. Data was analyzed using simple statistical formulas to determine mean and frequency. Deductions and observed were then discussed.

### RESULTS

A total of 74 malignant salivary gland

tumours were observed of which

Mucoepidermoid carcinoma was the commonest histologic type. Age range was 40-69 years, mean age 58 years, P value 0.0, peak age group 50-59 years, they were predominantly, males (70.2%). The parotid gland was the commonest site of occurrence and most present at late stage III.

### CONCLUSION

Mucoepidermoid carcinoma is the commonest histologic variant and most of the patients present in late stages. Efforts should be made to educate the populace on early presentation to hospital.

Key words: Malignant, Salivary Gland

### INTRODUCTION

Salivary gland tumours are said to account for less than 2% of all human tumours but account for 2.8% to 10% of all head and neck tumours in Africa and 8.0% to 10.5% in western studies<sup>1</sup>. Malignant salivary gland tumour are less common than benign ones accounting for ratio between 1:1.2 to 1:3.5 in most studies<sup>2</sup>. Late stages (III and IV) at presentation is common in African studies<sup>2</sup> whereas in the developed countries of Europe and America patients present mostly at early stages (I and II)<sup>3</sup>.

Aetiology of salivary gland tumour is relatively unknown and high risk populations have not been identified except for the rare lymphoepithelioma like carcinomas<sup>4</sup>, irradiation, genetic factors and diet are possible attributable factors<sup>4</sup>.

About 65% to 85% of salivary gland

tumours arise within the parotid gland, 10% in submandibular gland and the remainder in minor salivary glands<sup>4</sup>. The likelihood of a salivary gland tumour being malignant is said to be directly proportional to the size of the gland of origin<sup>4,5</sup>.

Adenoid cystic carcinoma is peculiar in that it presents early with pain due to early nerve involvement, thus it mainly present at earlier stages than the other malignant salivary gland tumours<sup>5,6</sup>. Features and symptoms of malignancy includes: Unremarkable mass at site of origin, Mild intermittent pain, Dysphagia, Skin ulceration, Severe pain from perineural invasion, Sudden rapid growth in previously slowly growing tumour.

Diagnosis of malignant salivary gland tumour is made after certain investigations e.g: Fine needle aspiration cytology, Trucut biopsy, Incisional or excisional biopsy with frozen section, CAT scan, MRI, Sialography, Gallium scan.

In Africa fine needle aspiration, rucut biopsy, incisional and excisional biopsies are mainly obtainable. Only recently in few centers in Nigeria is MRI and CT scan available.

In Nigeria patients present at the late stages (III and IV)<sup>6,7</sup> possibly because of the painless nature of the swelling, ignorance, absence of adequate facilities and specialist, emergence and general acceptance of traditional medicine, poverty. This has contributed to increased morbidity and mortality<sup>7</sup>. Other African studies also show late stage presentation<sup>8,9</sup>. Late stage presentations is said to be associated with dismal prognosis<sup>9,10</sup>. In the western developed nations however, patients present at early stages with better prognosis<sup>11,12</sup>

## METHODOLOGY

This is a clinicopathologic study of all histologically confirmed malignant salivary gland tumours over a period of ten years. The study was conducted in' Jos University Teaching Hospital (JUTH) Jos which is located in Jos city of plateau state in the north central region of Nigeria. The hospital has a 530 bed capacity and serves as a referral center for most

private, missionary and government hospital in this region.

The histopathology laboratory of this hospital receives about 30-40 salivary gland specimens annually.

Fresh sections of tissue blocks of all histologically confirmed malignant salivary gland tumours over the period of study were made. The tissues were mainly excisional biopsies. The sections were cut using the microtome(3 microns). They were made into slides and stained with hematoxylin and eosin (H and E) and periodic acid Schiff (PAS) stains. The Hand E stain is the routine stain that helps differentiate the nucleus from the cytoplasm of various cells, while periodic acid Schiff is used in this study to stain for mucin secreted by epithelial cells especially in cases of poorly differentiated adenocarcinomas and to stain for mucin in Mucoepidermoid carcinomas.

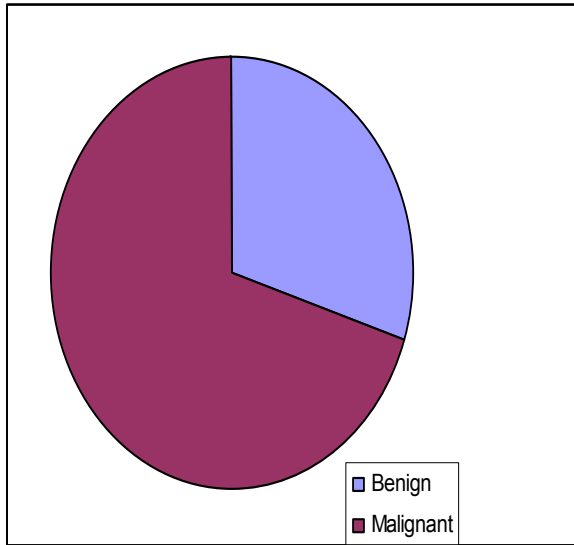
The slides were reported independently by four pathologists. Diagnosis was made and classification done according to the World Health Organisation (WHO) classification of salivary gland tumour [2].

Informations such as site of occurrence and clinical stage was retrieved from patient case files. Deductions observed were then discussed.

## RESULTS

Of the 202 salivary gland specimens received during the period of study only 74 were malignant the remaining were benign salivary gland tumours[fig. 1]. Of these 74 malignant tumours, Mucoepidermoid carcinomas was commonest (32) and acinic cell tumour the least common (18) [table 1]. Parotid gland was the commonest site of occurrence (43) while the minor glands accounted for the least site of occurrence of these malignant tumours (6)[table 1]. Most patients presented in the later stages (III and IV) while few occurred in early stages (I and II) table 2]. More patients presented at early stage II for adenoid cystic carcinoma than for other types [table 2]. The predominant sex is male and age range 40-69 years was observed [table 3]

Figure 1: Distribution of Salivary Gland Tumours



**TABLE 1: Distribution of Malignant Salivary Gland Tumours by Anatomic Site**

<b>Site</b>	<b>ME (%)</b>	<b>ADC (%)</b>	<b>AC(%)</b>	<b>TOTAL</b>
Parotid	25(78.1)	6(25.0)	12(66.7)	43
Submandibular	4(12.5)	8(33.3)	5(27.8)	17
Sublingual	2(6.3)	5(20.8)	1(5.6)	8
Minor	1(3.1)	5(20.8)	0(0.0)	6
<b>TOTAL</b>	<b>32</b>	<b>24</b>	<b>18</b>	<b>74</b>

Minor = gland of palate  
 Tongue, cheeks, lips  
 ME=Mucoepidermoid Carcinoma  
 ADC= Adenoid Cystic Carcinoma  
 AC= Acinic Cell Carcinoma

**TABLE 2: Surgical Stage by Histologic Tumour Type**

Stage	ME(O/o)	ADC(O/o )	AC(O/o)	TOTAL
I	2(6.3)	1(4.2)	5(27.8)	8
II	7(21.9)	7(29.2)	3(16.7)	17
III	18(56.3)	6(25.0)	7(38.9)	31
IV	5(15.6)	10(41.6)	3(16.7)	18
<b>TOTAL</b>	<b>32</b>	<b>24</b>	<b>18</b>	<b>74</b>

**Key**

ME = Mucoepidermoid Carcinoma

ADC = Adenoid Cystic Carcinoma

AC = Acinic Cell Tumour

**TABLE 3: Age Distribution of Malignant Salivary Gland Tumours**

Age	ME(%)	ADC(%)	AC( % )	TOTAL
40 - 49	5(15.6)	3(12.5)	4(22.2)	12
50 - 59	12(37.5)	18(75.0)	6(33.3)	36
60 - 69	15(46.9)	3(12.5)	8(44.4)	26
<b>TOTAL</b>	<b>32</b>	<b>24</b>	<b>18</b>	<b>74</b>

Mean age = 58      Peak age group = 50 - 59 years

Chi square (X<sup>2</sup>) = 39.8

Degree of freedom = 4

P = 0.00(Statistically significant)

Occurrence of Malignant gland tumour increases with age

**Key**

ME = Mucoepidermoid Carcinoma

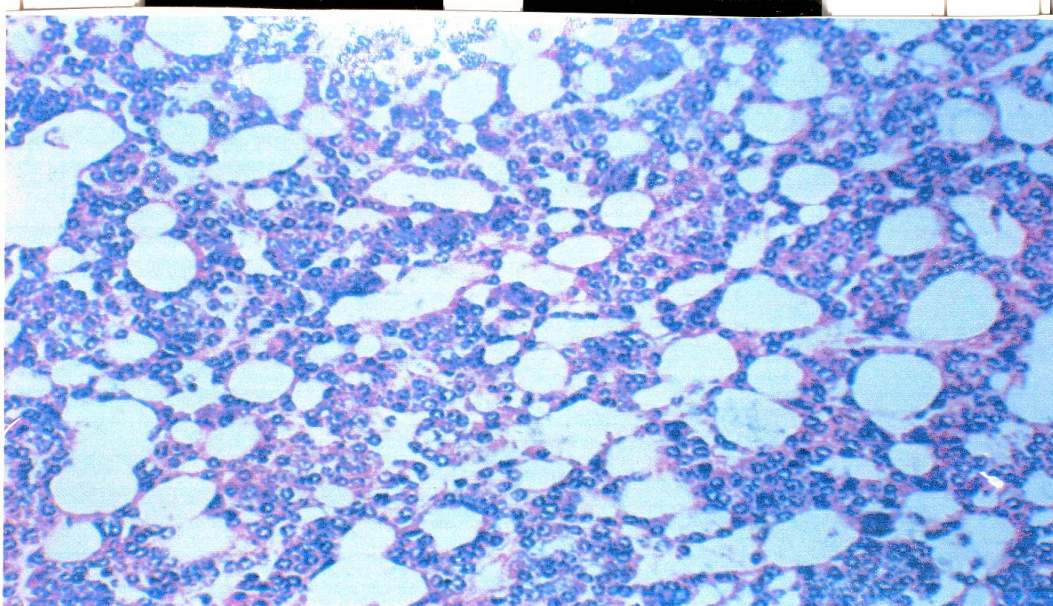
ADC = Adenoid Cystic Carcinoma

AC = Acinic Cell Tumour

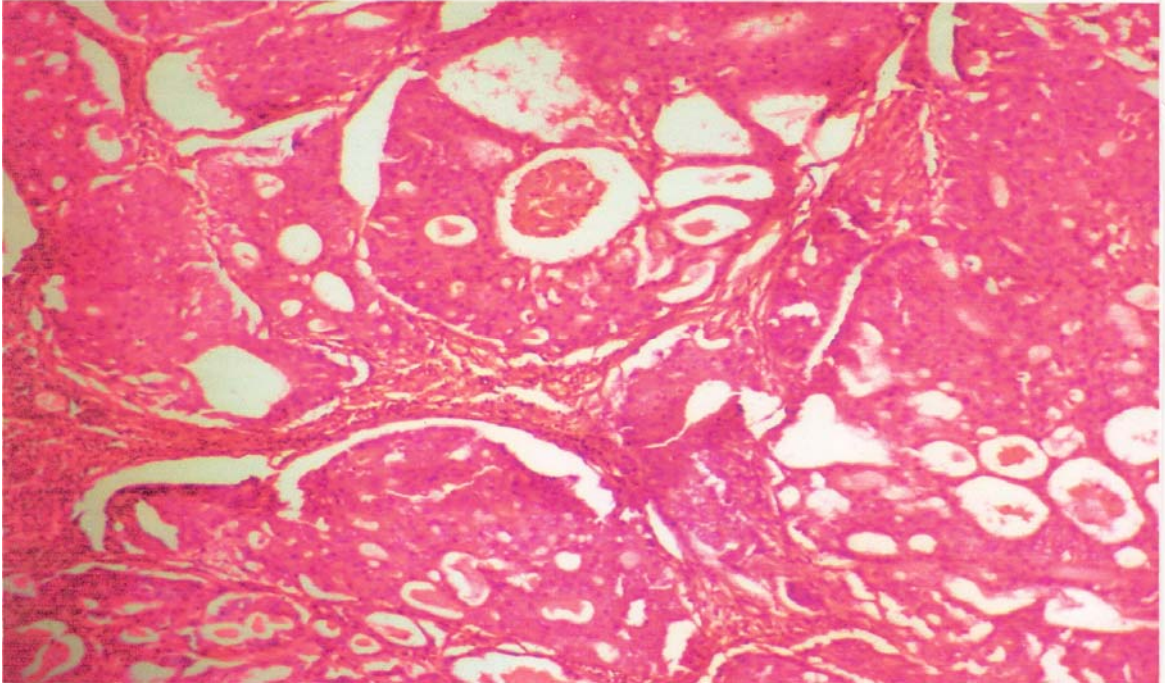
**TABLE 4: Sex Distribution of Malignant Salivary Gland Tumours**

Sex	Toal No of Patients (%)
M	52 (70.2%)
F	22 (29.7%)

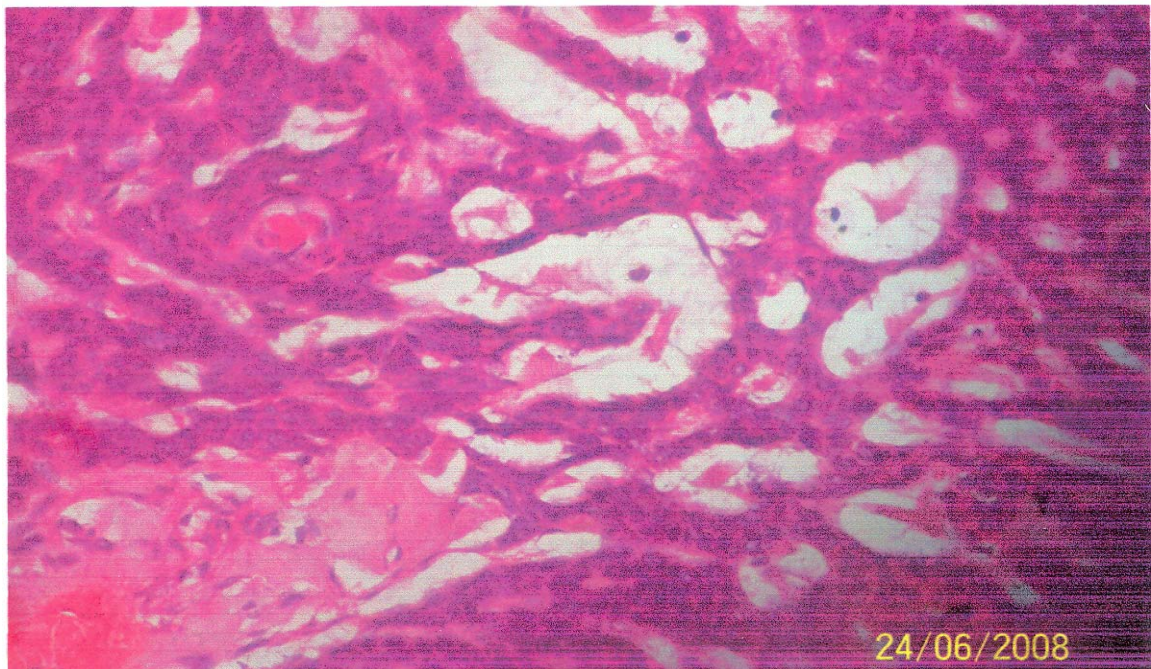
**PICTURE 1: ACINIC CELL TUMOUR**



**PICTURE 2: MUCOEPIDERMOID CARCINOMA**



**PICTURE 3: ADENOID CYCSTIC CARCINOMA**



## DISCUSSION

Malignant salivary gland tumours remain relatively uncommon than benign ones with the ratio of malignant to benign being 1: 1.7 (fig 1). This finding is similar to findings in other parts of Africa and Europe<sup>1,2</sup> [table 3]. In this study Mucoepidermoid carcinoma is the commonest malignant salivary gland tumour a finding consistent with reports in other Nigerian African and European studies although some European studies report adenoid cystic carcinoma as the commonest malignant tumour<sup>1,2,3</sup>.

Parotid gland was found to be the commonest site of occurrence, this is consistent with most Nigerian and other African studies but in variance with reports from developed nations who report minor glands as commonest site of occurrence for malignant salivary gland tumours<sup>3,4,5</sup>. This might be due to the general unavailability of sophisticated equipments e.g. CT scan, MRI in Africa that can detect minute lesions in hidden sites such as minor salivary glands. Also since parotid gland is closer to skin, patients with lesions in this site tend to present to hospital more than those with lesions in the minor glands which are relatively hidden sites.

All the patients presenting with these lesions presented with a mass (intra-oral, jaw). This is presented with a mass (intra-oral, jaw). This is consistent with most other African and European studies<sup>5,6</sup>. Skin is however not common as only a few cases are seen. Most present to the hospital before this stage. This is also consistent with report at Ibadan Nigeria and some European studies<sup>5,6</sup>.

Pain, a common symptom necessitating hospital visit by patients is common with lesions in the parotid gland due to perineural invasion. Adenoid cystic carcinoma is known to present early with pain due to perineural invasion.

In this study it is obvious that most of our patients present at late stages (III and IV) which is associated with increased attendant morbidity and mortality (table 2). This finding is similar to those observed in other Nigerian and African studies<sup>5,6</sup>, whereas in the developed nations of Europe and America patients are reported to present more at early stages (I and II) which is associated with decrease morbidity and mortality<sup>7,8</sup>. This

variance in presentation might be due to the general unavailability of sophisticated diagnostic equipments that detect minute lesions at very early stages. Lack of adequate medical experts involving diagnosis (pathologist, radiologist) and treatment (oncologists, surgeons) is also a contributory factor in our environment. Hospitals rendering such services are few, costly and usually inaccessible to the general community who reside mainly in remote areas having bad road networks. There is also high level of ignorance amongst the populace thus they present very late to hospitals. The emergence of well accepted, affordable, ubiquitous and accessible alternative (traditional) medicine has also contributed to late hospital presentation in our environment. Initial diagnosis of these lesion using fine needle cytology after which definitive surgery for treatment and staging will be done is usually saddled with delay as patients don't come back or come very late due to high cost of surgery, ignorance and general low socio-economic status of the populace. During this delay, early stage presentation progress to late stage accounting for late presentation at surgery seen amongst our patients.

Improving the level of education of the citizenry, providing adequate medical facilities with experts that are accessible and affordable will go a long way to change this negative trend. More research should be conducted to determine risk factors that can easily be screened before these lesions develop.

This will be very useful and effective in reducing incidence of malignant salivary gland tumours in poor continents e.g. Africa, South America

## CONCLUSIONS

This study has shown that patients in our center present mainly in the late stages. Parotid gland is the commonest site of occurrence and

Mucoepidermoid carcinoma the commonest histologic type. Improving education and provision of accessible and affordable medical facilities will tilt presentation to very early stages with its attendant good prognosis.

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