ORIGINAL ARTICLE

Patterns of malignant Salivary gland tumours in Jos University Teaching Hospital (JUTH), Jos: a ten-year retrospective study

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Abstract

Background: *Salivary gland tumours are common head and neck tumours and more common in western world than Africans. Most salivary gland tumours are benign but the morbidity and mortality as expected is higher with malignant tumours. This study is aimed at describing the histological pattern, age, sex and site distribution of malignant salivary gland tumours in Jos University Teaching Hospital (JUTH) Jos from January 1998 to December 2007.*

Methods: *This is a descriptive study of all histologically confirmed malignant salivary gland tumours over a period of ten years. Fresh sections of tissue blocks of these lesions were made 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 slides were reported independently by four pathologists. Diagnosis was made and classification done according to the World Health Organisation (WHO) classification of salivary gland tumours [3]. Information such as age, sex and site of distribution of these tumours was gotten from the patient's case files.*

The data was analyzed manually.

Results *Muco-epidermoid Carcinoma accounted for the highest (32 cases) histologic type. Malignant salivary gland tumours occurred more within the age range 40 to 69 years with the age group 50-59years accounting for the highest frequency (36 cases). Most of these malignant salivary gland tumours occurred more in the parotid gland, the minor salivary being the least site of occurrence.*

Conclusion: *Mucoeperdermiod carcinoma is the commonest salivary gland tumour and that malignant salivary gland tumours in this study and it occurred more after the 5th decade of life.*

Key words: malignant, Salivary gland tumours, Mucoeperdermiod carcinoma,

Date Accepted for publication: 11th June 2009
Nig J Med 2009; 282 - 285

Introduction

Salivary gland tumours are said to account for less than 2% of all human tumours[1] but account for 2.8 to 10% of all head and neck tumours in Africa and 8.0 to 10.5% in western literatures [2]. Malignant Salivary Gland tumours are less common than benign ones accounting for ratio between 1:1.2 to 1:3:5 in most studies [2].

Aetiology of Salivary gland tumours is relatively unknown and high risk populations have not been identified except for the rare lymphoepithelioma-like carcinoma [2, 3]. Irradiation, genetic factors and diet are possible attributable factors [2,3].

About 65% to 85% of Salivary Gland tumours arise within the parotid, 10% in the submandibular gland and the remainder in minor salivary glands[3]. The likelihood of a salivary gland tumour being malignant is said to be inversely proportional to the size of the gland of origin [3,4].

African studies are few and mostly seen in Nigeria, Tanzania and Kenya. The prevalence of salivary gland tumour in these countries range between 2.8% to 10%[4] slightly lower than that reported as prevalence for the western world which is 8.0% to 10.5% [4,5].

Malignant salivary gland tumour in all these centers (Nigeria, Africa and Western world) are less common than benign salivary gland tumours and generally occur at a later age range [5]. Minor salivary gland habour more malignant lesions than benign lesion [5,6].

This study is the first comprehensive study on malignant salivary gland tumours in Jos University Teaching Hospital [JUTH] and findings will form the basis for health planning and further research.

Methodology

This was a descriptive study of all histologically confirmed malignant salivary gland tumours over a period of ten years. The study was conducted in the Jos University Teaching Hospital (JUTH) Jos which is located in Jos city of Plateau State in North Central region of Nigeria. It has a 530 bed capacity and serves

as a referral centre for most private, missionary and government hospitals in this region. The histopathology laboratory of the 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 was made. The tissues were mainly excisional and incisional biopsies of salivary gland lesions. 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 H and E stain is the routine stain that help differentiate the nucleus from the cytoplasm of various cells. Periodic Acid Schiff is a special stain mainly used in the study to stain for mucin secreted by epithelial cells especially in cases of poorly differentiated adenocarcinoma and to stain for mucin in mucoepidermoid carcinoma.

The slides were reported independently by four pathologists. Diagnosis was made and classification done according to the World Health Organization (WHO) classification of salivary gland tumours.[3]

Informations such as age, sex, sites were also retrieved from patient's case files. The data was analyzed manually.

Results

Of the 202 salivary gland specimen received during the period of this study only 74 were malignant the remaining were benign salivary gland tumours (fig. 1).

Mucoepidermoid carcinoma occurred mostly (32 cases) and malignant salivary gland tumours occurred mostly in age group 50-59years (table III). Age range for malignant salivary gland tumours is 40-69years (table III). In this study the parotid gland was the commonest site of occurrence, the minor glands accounting for only a few of these lesions (table IV).

Table I: Distribution of malignant salivary tumours by age

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
TOTAL	**32**	**24**	**18**	**74**

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

Chi square (x^2) =39.8

Degree of freedom =4, P=0.00 (statistically significant), Occurrences of malignant salivary gland tumours with age.

ME=Mucoepidermoid Carcinoma, ADC=Adenoid Cystic Carcinoma, AC=Acinic Cell Carcinoma

Table II: distribution of malignant salivary gland tumours by anatomic site

Site	ME(%)	ADC(%)	AC(%)	TOTAL (%)	
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
TOTAL	**32**	**24**		**18**	**74**

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

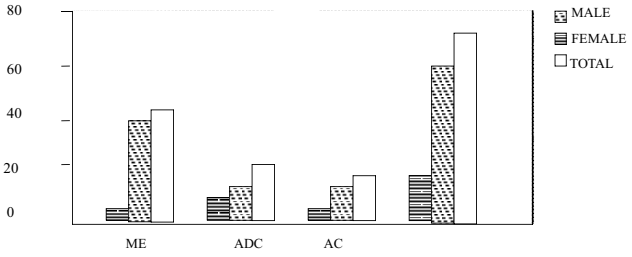

Fig 1: sex distribution of malignant salivary gland tumours

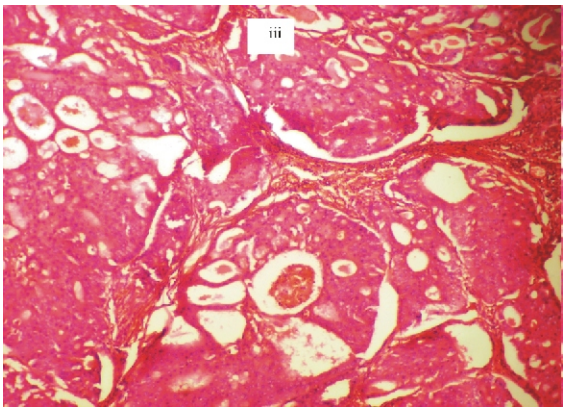

Fig II: mucoepidermoid carcinoma, H&E stain (10x objective)

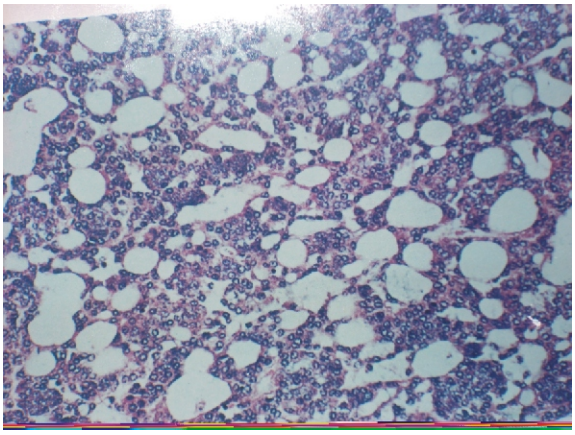

Fig 2: Acinic Cell Tumour, H&E STAIN (10X Objective)

Discussion

Malignant salivary gland tumours were 74 out of the 202 salivary gland tumour samples received over the period of study giving a ratio of malignant: benign as 1:1.7 (fig 1). This finding is consistent with that of similar studies in other parts of the country, Africa and Western World [3,

[4]. Thus malignant salivary gland tumours are less common than their benign counterparts.

In this study mucoepidermoid carcinoma is the commonest histologic type (table II). This is consistent with other studies in Maiduguri (North Eastern Nigerian) by Otoh EE et al and in Southern Nigeria by Kolude B et al [3, 4]. Most African studies also showed Mucoepidermoid Carconoma being the commonest malignant tumour [4, 5].

Some western studies show the same frequency with Adenod cystic carcinoma [6, 7]while in others, Adenoid Cystic carcinoma was the most frequent histologic type [8, 5]. Reason for this variation is however not known.

In this study age range for malignant salivary gland tumour is 40-69 years (table II) which is consistent with most other Nigerian, African and Western studies [10, 11]. Thus malignant salivary gland tumours occur mostly after the 5th decade of life.

The age group 50-59years has highest frequency than 60-69years probably because the older age group is associated with increased mortality as more people die before reaching such age group in this environment. The older age group is also associated with high morbidity thus reducing attendance in hospital.

In this study the parotid gland is the commonest site for occurrence of malignant salivary gland lesions (table II). This is similar to other Nigerian and African studies but differ from some Western studies that reported more malignant lesions in the minor salivary glands.[12, 13] This might be connected with early diagnosis in Western World with the use of other sophisticated machines e.g. CT scan, MRI which detect lesions at relatively hidden sites. In Africa due to ignorance and lack of adequate facilities and manpower we observe reduced hospital attendance. The poor economic situation in Africa saddled with the high cost of clinic attendance has also reduce hospital attendance drastically. Since malignancies occur in older age group, a period associated with increased morbidity and mortality, many are lost to deaths and incapacitation resulting possibly to the reduced frequency of patients presenting with malignancies of minor salivary gland compared to that reported for the Western world.

Conclusion

Mucoeperdermiod carcinoma is the commonest salivary gland tumour and that malignant salivary gland tumours in this study and it occurred more after the 5th decade of life. Parotid gland is the commonest site of occurrence, this is at variance with Western reports which show minor salivary gland constituting the commonest site of occurrence. This variance might be due to sample size error, reduced hospital attendance in this region and reduced early diagnosis due to lack of sophisticated diagnostic machines e.g. MRI, CT scan.

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APPENDIX

NOMENCLATURE AND CLASSIFICATION

Various attempts have been made to classify salivary tumours on a scientific and histogenetic basis, but most classifications used today are based on combined histologic and behavioral features. This study will adopt the nomenclature and classification proposed by the World Health Organization and published recently (Thackray and Sobin) [16]. This classification is into 2 major groups, epithelial tumors and connective tissue and other primary tumors.

Epithelial Tumours
Adenoma
Pleormorphic adenoma
Monomorphic adenoma
Adenolymphoma
Oxyphilic adenoma

Other types of adenoma e.g. basal cell adenoma, benign lymphoepithelioma

Carcinoma
Mucoepidermoid tumour
Acinic cell tumour
Adenoid cystic Carcinoma
Adenocarcinoma
Epidermoid Carcinoma
Undifferentiated Carcinoma
Carcinoma in pleormorphic adenoma

Connective Tissue and other primary Tumours

Fibroma; Fibrosarcoma; Lipoma, Neurilemoma; Haemangioma, Melanoma; Lymphoma.