

Descriptive analysis of salivary gland tumours in Ilorin, Nigeria.

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ABSTRACT

Background: Salivary gland tumors are relatively uncommon lesions accounting for about 3-6% of head and neck tumors with 60 - 80% affecting the parotid glands.

Objective: The aim is to analyse descriptively the pattern of salivary gland tumor seen in Ilorin, North-Central Nigeria.

Methods: A retrospective analysis of histological slides reviewed by the pathologist of patients with primary epithelial salivary gland neoplasms operated between 2001 and 2010, in Otorhinolaryngology and General Surgery. Information regarding age, gender, and anatomical location of the tumors was retrieved from the patients' hospital records. All information was entered into a SPSS computer software and result presented in tables and figures.

Results: A total of 56 case notes and slides were reviewed with 24 males and 32 females (M:F-1.0:1.3), with the peak age of 21-30 years in males and 31-40 among the females. The mean age is 38.62 yrs (SD = 18.4 ± 2.5). There were 31 (55.4%), 17 (30.4%), 8 (14.2%), parotid, submandibular and minor salivary glands tumors respectively. Histologically pleomorphic adenoma constituted the largest with 62.5% in both the submandibular and the parotid gland specimen analysis then, mucoepidermoid tumour in 26.7%, adenoid cystic carcinoma in 5.4% and 1.8% each of acinic cell tumour (malignant), poorly differentiated carcinoma and squamous cell carcinoma.

Conclusion: Salivary tumours were slightly commoner among females with pleomorphic adenoma in the third to fifth decades of life being the commonest benign tumour and mucoepidermoid the commonest malignant variants in the 5th to 6th decades of life.

Keywords: Salivary gland; Parotid; Pleomorphic adenoma; mucoepidermoid, females

INTRODUCTION

Salivary gland tissues are diffusely located in the upper aerodigestive tract with the major salivary glands being the parotid, submandibular, and sublingual glands while the minor salivary glands are found at various sites, such as the lips, gingiva, cheek, palate, tongue, oropharynx, nose, paranasal sinuses, and parapharyngeal space^{1,2}. Salivary gland tumors are relatively uncommon lesions^{3,4} accounting for 3-6% of all head and neck neoplasms⁵.

The global incidence of these tumors is 0.4-13.5 per 100,000 person's annually^{5,6}. These neoplasms composed heterogeneous groups of tumors with variable histological

pictures^{7,8}. The site, patient age, and sex distributions of different types of salivary gland neoplasms vary with race and geographic location^{5,6,9}. Salivary gland tumors account for about 2% of tumors of all the body tumors in human,¹⁰ malignant tumors of the major salivary glands account for 10% of the cancers of intraoral and adjacent structures.¹¹ Tumors of the minor salivary glands are rarer than the major glands, accounting for about 15% to 20% of all salivary gland tumors¹². Majority of the salivary gland tumor (65% to 85% of salivary gland tumors) arise within the parotid gland, 10%, from the submandibular gland, and the remaining in the minor salivary glands. Also 15% to 30% of tumors in the parotid are said to be malignant, while it is 40% in the submandibular gland, 70% in the sublingual gland and 50% in the minor salivary glands¹³. The likelihood that a salivary gland tumor may be malignant is inversely proportional to the size of the gland¹³. In Africa, only few studies on salivary gland tumors have been reported, mainly in Kenya, Tanzania and Nigeria with the prevalence of salivary gland tumors in these countries ranging from 2.8% to 10% of all head and neck tumors^{14, 15}. The parotid gland is the commonest site in 46.5% to 60% of the cases¹⁵, and the commonest benign tumor is the pleomorphic adenoma^{20,21}, whilst the commonest malignant tumor is the adenoid cystic carcinoma¹⁶⁻¹⁹.

Studies from different parts of Nigeria showed benign tumors were more prevalent, compared to the malignant ones^{10, 20, 21}. Also pleomorphic adenoma and mucoepidermoid carcinoma were the commonest histological types reported.

The first classification of salivary glands tumors, developed by the World Health Organization (WHO) in 1972²², was posthumously revised under the supervision of Prof. Seifert in 1991²¹. The second edition of the histological classification of salivary gland tumors included new entities and suppressed the concept of "monomorphic adenoma", in view of the diversity of the tumors that were grouped under this designation - giving rise to 11 independent histopathological entities^{23,24}.

Due to the great morphological diversity of these tumors and the need to establish a precise diagnosis, a consensus meeting was held in Lyon (France), giving rise to a new classification of salivary gland tumors, published in the year 2005²⁵.

The apparent variable distribution of salivary gland tumors in Africa makes it imperative to evaluate the pattern in our locality, North central Nigeria. This zone is served by the University of Ilorin Teaching Hospital; a 600 bedded tertiary institution and one of the largest referral centre in the North Central Nigeria. Furthermore, the paucity of data on this group of neoplasms in north central Nigeria makes

this retrospective review even more relevant. This paper therefore endeavors to document the pattern of salivary neoplasms in Ilorin to retrospectively analyze the clinico-pathological pattern of salivary gland tumors in Ilorin, north central Nigeria over a ten year period.

MATERIALS AND METHODS

This is a retrospective study of patients with primary epithelial salivary gland neoplasms between 2001 and 2010, who underwent operations in the Departments of Otorhinolaryngology and General Surgery of University of Ilorin Teaching Hospital, Ilorin, north central Nigeria. Hematoxylin-eosin (H&E) stained slides of all specimens were reviewed by the pathologists based on the 2005 World Health Organization classification of head and neck tumors criteria²⁹. Non neoplastic salivary tumours were excluded from the study. Immunohistochemistry was not employed as this diagnostic technique was not available in our laboratory during the period of the study. Information regarding age, gender, and anatomical location of the tumors was retrieved from the patients' hospital records. Ethical approval was obtained from the hospital ethics and research committee. The data were entered into SPSS statistical software and result were analyzed descriptively and presented in tables and figures.

RESULTS

A total of 60 salivary gland tumors with histological diagnosis were seen over the study period, however 56 patients had complete data for analysis which constituted 0.3% of all cancers seen in our centre. The age range is 3.5yrs to 77years with a mean age of 38.62yrs (SD = 18.4±2.5) and a peak incidence in the age range 31-40years (Figure 1.0).

The overall sex differentiation for all the salivary gland tumours showed 24 males to 32 females with a male to female ratio of 1.0:1.3 (Figure 2.0). The sex ratio among benign tumours is 1.1 to 1.0 male to female (18males to 17females) and among the malignant tumours, it is 1.0 to 2.5 male to female (6males to 15 females). However by sex differentiation, the commonest presentation was among 21-30year in male and 31-40year among the females (Figure 3). The duration of symptom varies from 6week to 20yrs with a mean duration of 7.6yrs for the benign tumor and 2.8yrs for the malignant tumors. There were 31 (55.4%), 17 (30.4%), 8 (14.2%), parotid, submandibular and minor salivary glands tumours respectively. Histologically, pleomorphic adenoma constituted the largest in 62.5% in both the submandibular and the parotid gland specimen analysis, followed by mucoepidermoid tumour in 26.7%, adenoid cystic carcinoma in 5.4% and 1.8% each of malignant type of acinic cell tumour, poorly

differentiated carcinoma and squamous cell carcinoma (Table 1.0).

From the correlation of tumor site with age the parotid was found to have bimodal age of between 31-40years and 51-60years, while submandibular was found to be common among 11-20year age group (Table 2.0). Painless swelling was the commonest presentation and was present in 99% of cases.

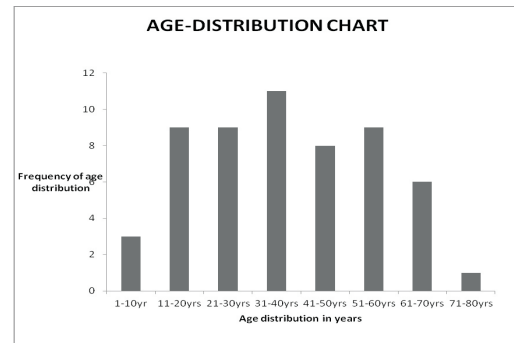


Figure 1.0 Age-Distribution of Salivary gland tumours (n=56)

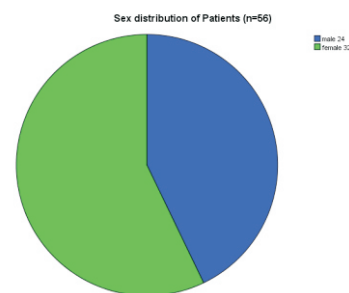


Figure 2 Pie chart on sex distribution

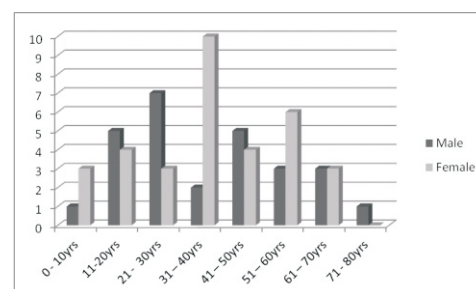


Figure 3.0 Frequency of Distribution by Age and Sex of Salivary Tumour Cases (n=56)

Table 1: Site distribution vs pathological types of Salivary gland tumours in Ilorin, Nigeria.

Site distribution Pathological types	(n=56)			
	Parotid	Submandibular	Minor Salivary gland	Total (%)
Benign				
Pleomorphic Ade	20 (35.7)	12 (21.4)	03 (5.4)	35 (62.5)
Malignant				
Mucoepidermoid	08 (14.3)	04 (7.1)	03 (5.4)	15 (26.8)
Adenocystic	01 (1.8)	01 (1.8)	01 (1.8)	3 (5.4)
Acinic cell ca	-	-	01 (1.8)	01 (1.8)
Squamous cell ca	01 (1.8)	-	-	01 (1.8)
Poorly differentiated ca	01 (1.8)	-	-	01 (1.8)
Total	31 (55.3)	17 (30.4)	08 (14.3)	56 (100)

Table 2 Cross tabulation of the Age(yrs) to the site of Tumour

Tumor site	Frequency (%)	
	Parotid	Submandibular
Age (yrs)		
1-10yrs	02(3.6)	01(1.8)
11-20yrs	03(5.4)	06(10.7)
21-30yrs	04(7.1)	05(8.9)
31-40yrs	08(14.3)	03(5.4)
41-50yrs	06(10.7)	02(3.6)
51-60yrs	08(14.3)	01(1.8)
61-70yrs	05(8.9)	01(1.8)
71-80yrs	-	01(1.8)
Total	36(64.3)	20(35.7)

DISCUSSION

The outcome from this study is similar to earlier reports that there are a number of clinicopathological variations between the salivary gland tumors in black populations and those from the Caucasians^{26, 27}. Based on studies outside Africa, the distribution of salivary neoplasms between sites has followed a rule of 100:10:10:1 ratio for parotid, submandibular, minor salivary glands and sublingual tumors, respectively.²⁸⁻³⁰ but appears to be inappropriate for African population studies. In this study there was nearly a 1.8:1.0:0.3 ratio of tumors from the parotid (55.4%), submandibular (30.3%), and minor salivary glands (14.3 %), in that order. There was no sublingual gland involvement in this series. This is in agreement with previous work from Congo (Zaire)³¹ and Nigeria⁶ that has reported a parotid gland involvement of 36.6% and 32.1%, respectively.

Our study showed salivary gland tumors were observed in all ages with the highest incidence in 3rd and 4th decade of life for benign tumors and 5th and 6th decades for malignant tumors which is at variance with reports of Narinder Singh *et al*³². The age range reported from our study was 3.5-77years which is at variance with the report by Chan *et al*¹⁴ who found it in the age group 25-83yrs. The mean age of occurrence of this tumor was found in our study to be 38.6yrs with the peak presentation in the age range of 3rd to 4th decade of life.

The sex differentiation showed an overall female preponderance with a male to female ratio of 1.0: 1.3 which is similar to other studies around the world³³⁻³⁵. However, among benign tumours the sex ratio of male to female is 1.1 to 1.0 whereas among the malignant tumours the male to female ratio is 1.0 to 2.5. The Western reports showed equal sex distribution of malignant tumors, although the incidence for all salivary gland tumors shows a male to female ratio of 1.3:1³⁶. This is contrary to our observation of overall female predominance which is more marked in malignant tumours. Female predominance has been consistently reported from a number of African series^{26, 27}.

The incidence for benign salivary gland tumors (62.5%) is higher than the malignant tumors (37.5 %), this is similar to most findings from elsewhere^{34, 35}.

The duration of symptoms ranged from 6weeks to 20 years with an average duration of 7.6yrs for the benign and 2.8yrs for the malignant which is higher than finding in other

literature this may be associated with late presentation. The commonest symptom was a painless swelling which was present in 99% cases similar to findings from studies done in Kashmir by shafkat and lateef³⁶.

Out of the 56 specimens examined about 55.4% were parotid, submandibular involvement in 30.3% while minor salivary glands in 14.3%. Histology revealed pleomorphic adenoma to be the commonest tumor seen among the benign tumors and also when all salivary gland are considered, this is similar to findings from the literature. Among the malignant ones mucoepidermoid tumor was found to be the commonest which is similar to the literature findings¹⁵. Whartin's tumors were not seen in our series, the rarity of this tumor in Africa has been noted previously^{15, 26}. In European and American series this tumor accounts for 5–20% of all salivary gland tumors³⁰. This has been attributed to the younger ages of Africans suffering from salivary gland tumors²⁰.

CONCLUSION

Most of the tumours were benign with pleomorphic adenoma being the commonest and mucoepidermoid the commonest malignant tumours with an overall female preponderance. The data presented here corroborate a number of previous studies and few were at variance with the literature findings and are therefore relevant to understanding the diverse characteristics exhibited by the salivary gland tumors.

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