AFRICAN JOURNAL OF MEDICINE and medical sciences

VOLUME 30, NUMBERS 1 & 2, MARCH AND JUNE 2001

EDITOR:
B. O. OSOTIMEHIN

ASSISTANT EDITOR:
A. O. UWAIFO

ISSN 1116 — 4077

Afr. J. Med. med. Sci (2001) 30, 95-98

Salivary gland neoplasms : a 21year review of cases seen at University College Hospital, Ibadan

B. Kolude, J.O. Lawoyin and E.E.U. Akang
Departments of Oral Pathology, Dental School[1] and Department of Pathology[2], University College Hospital, Ibadan, Nigeria.

Summary
The present study updates the experience of salivary gland tumours in Ibadan. All cases of benign and malignant salivary gland neoplasms histologically diagnosed between 1975 and 1995 in the Oral Pathology Department and Cancer Registry of the University College Hospital, Ibadan were reviewed. Salivary gland neoplasms accounted for 3.5% of head and neck neoplasms, the majority (46.5%) occurring in the parotid, followed by the submandibular (18.1%) and palatal glands (10.7%). The ratio of benign to malignant neoplasms was 1.1 to 1. Mucoepidermoid carcinoma and adenoid cystic carcinoma were the most common malignant neoplasms. There was a predilection of adenoid cystic carcinoma for the submandibular gland.

Keywords: *Salivary glands, neoplasms, pathology*

Résumé
La presente etude mets a joour l'experience sur les tunmerures des glandes salivares a Ibadan. Tous les las bnins et les neoplasmes des glandes salivaires maligues diagrostiques histologiquement entre 1975 -1995 an Departement de pathologie Orale et le burean d'euregistrement due Concer du college (centre) hospitalier Universitaise d'Ibadan out ete revues. Les neoplasmes des glandes salivaires out ete d'um apport de 3,5% de neoplasmes de la tete ete du co, la majorite (46,5%) se rencontrant dans la partide, suior par la sous-mandibute (18,7%et des glandes du palais (10,7%). La proportion des neoplasmes benins et maligues etait de 1,1 a 1. La muco-epidermoide cercinoma et d'adenoide cystique carcinoma etaient les neoplasmes maligues les plus commun. Le yarait une preference de l'adenoide cystique carcinoma ouc glandex sous mandibularies.

Introduction

There are relatively few studies of salivary gland tumours from Nigeria in the literature. As confirmed by two previous studies from this environment, tumours of salivary gland are relatively uncommon, forming only 1.8% of all tumours, and only 3% of head and neck tumours. [1,2].

Although they are uncommon, tumours of the major and minor salivary glands are of particular interest to histopathologists because of their varied histologic and biologic characteristics, and to surgeons because of difficulties in management [3].

An update of our experience of salivary gland tumours in Ibadan is desirable, in order to determine whether there have been any temporal trends in the pattern, which may influence clinical, diagnos is prognostication and treatment. The present study was therefore undertaken inorder to define clinicopathological features of salivary gland neoplams in Ibadan during a period of two decades.

Correspondence: Dr. B. Kolude, Department of Oral Pathology, Dental School, University College Hospital, Ibadan, Nigeria.

Materials and methods

All cases of benign and malignant salivary neoplasms histologically diagnosed during the period 1975 to 1995 were extracted from the files of the Oral Pathology Department and Cancer Registry of the University College Hospital, Ibadan. A total of 310 cases of salivary gland tumours were registered during the period under review.

The haematoxylin and eosin stained sections of these cases were retrieved from the archives of the department of Oral Pathology and Histopathology of this study. Cases were also excluded if the material obtained was inadequate for histological diagnosis. Two hundred and forty-three cases fulfilled the WHO histological criteria for the histodiagnosis and typing of true salivary gland neoplasms. These neoplasms were classified according to the 1972 World Health Organisation (WHO) classification of salivary gland tumours [4].

Results

A total of 243 salivary gland neoplasms were studied. The total number of head and neck neoplasms during period under review was 6943. Thus salivary gland neoplasm accounted for 3.5 percent of all head and neck neoplasms.

Table 1: Five yearly occurrence of salivary gland neoplasms

Year range	Number of cases	%
1975-1979	88	36.2
1980-1984	48	19.6
1985-1989	55	22.6
1990-1995	52	21.6
Total	243	100

When the five yearly occurrence of salivary gland tumours in UCH, Ibadan was studied it became obvious that the first quinquennium (1975-1979) had the highest incidence (36.2%) of salivary gland neoplasms (Table 1). Also there was a sharp drop to about three fifths of the number recorded in the first quinquennium in subsequent fiveyear periods.

Table 2: Site distribution of benign and malignant salivary gland neoplasms

Sites	Benign	Malignant	Total	%
Parotid	61	52	113	46.5
Subman dibular	26	18	44	18.1
Palate	10	16	26	10.7
Antrum	2	4	6	2.5
Others	2	4	6	2.5
Subiingual	0	5	5	2.1
Lip	2	1	3	1.2
Neck	1	1	2	0.8
Unknown	22	16	38	15.6
Total	126	117	243	100

Table 2 shows the sites of occurrence of salivary gland neoplasms. One hundred and thirteen (46.5%) of the neoplasms occurred in the parotid gland, forty-four (18.1%) in the submandibular and twenty-six (10.7%) in the palate. There were slightly more benign (51.4%) as against malignant (48.6%) neoplasms overall, the ratio of benign to malignant neoplasms being 1.1 to 1 (Table 2). Benign neoplasms were more common than malignant neoplasms at all sites, except sublingual gland, maxillary antrum and palate.

The ratio of benign to malignant tumours was 1.2 to 1 in the major glands, while a ratio of 1 to 1.5 was recorded in the minor glands. However, this difference was not statistically significant ($x^2 = 3.11$, degrees of freedom (df) = 1, $p = 0.1$). Among the three most common sites of salivary gland neoplasms, the ratio of benign to malignant tumours was highest at the submandibular gland, being 1.4 to 1, followed by parotid gland with a ratio of 1.2 to 1 (Table 2).

Figure 1 shows the site distribution of specific histopathologic types of salivary gland neoplasms. Pleomorphic adenoma was the most common specific histological type of salivary gland neoplasm, constituting 48.6% of all tumours, or 93.7% of the benign neoplasms in the present study (Table 3).

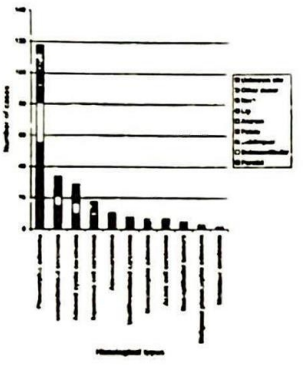

Fig 1: Site distribution of different histological types of salivary gland neoplasms

Three of these cases of pelomorphic adenoma were ectopic salivary gland neoplasms. One was from the lacrima gland, and two occurred in the infraorbital region, presumably arising from the nasolacrima duct. Of the monomorphic adenomas, four (57 percent) were basal cell adenomas and three (43 percent) were oxyphilic adenomas. Adenolymphoma, the least common variant, accounted for 0.4 percent of salivary gland neoplasmns of all sites (Table 2).

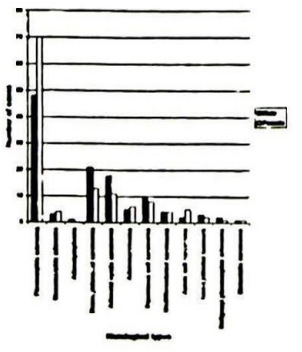

Fig 2: Sex distribution of different histological types of salivary gland neoplasms

Muceoepidermoid carcinoma (14%) and adenoid cystic carcinoma (11.9%) were the two most commonly encountered malignant neoplasms in this study (Table 2). Mucoepidermoid carcinoma was the most common parotid malignancy, whereas adenoid cystic carcinoma was the most common malignancy at extra-parotid sites (Fig. 1). The remaining tumours (3.3%) acinic cell carcinoma and monomorphic adenoma (2.9%) and malignant pleomorphic adenoma (1.2%). There were two metastatic neoplasms, both to the parotid gland. These included metastases from a papillary carcinoma of the thyroid gland and a carcinoma of the breast.

There were 125 females (51.4%) and 118 males (48.6%) among the patients with salivary gland neoplasms, giving a female to male ratio of 1.06 to 1 (Fig. 2). Benign neoplasms were relatively more common in female patients (58.7%) as compared to males (41.3%) with a female to male ratio of 1.42 to 1. Conversely, malignant neoplasms were more common in males (65.4%) as compared to females (43.6%), with a male to female ratio of 1.3:1.

Table 3: Histological types of salivary gland neoplasms

Histological type of tumour	Number	%
Pleomorphic adenoma	118	46.8
Mucoepidermoid carcinoma	34	14.0
Adenoid cystic carcinoma	29	11.9
Squamous cell carcinoma	18	7.4
Adenocarcinoma	11	4.5
Undifferentiated carcinoma	8	3.3
Monomorphic adenoma	7	2.9
Acinic cell carcinoma	7	2.9
Non-epithelial tumours	5	2.1
Malignant pleomorphic adenoma	3	1.2
Metastatic carcinoma	2	0.8
Adenolymphoma	1	0.4
Total	243	100

Figure 3 shows the age and sex distribution pattern of patients with salivary gland neoplasms. The overall peak age incidence for males and females combined was in the sixth decade of life, whereas the peak for females was in the fourth decade and that for males was in the fifth decade.

Discussion

In the present study, salivary gland neoplasms accounted for 3.5% of all head and neck neoplasms. This figure is higher than that of 2.8% reported from this same centre by Abiose

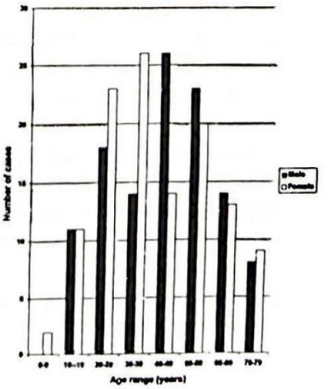

Fig. 3: Age and sex distribution

et al. (1990) in a study spanning between 1966 and 1986 [2]. Arotiba (1991) in a retrospective study spanning 1977-1990 at the Lagos University Teaching Hospital (LUTH) however reported that salivary gland neoplasms constituted 10.9 percent of all head and neck neoplasms.

The parotid gland was the most common site of salivary gland neoplasms in the present study, with a frequency of 46.5% of all neoplasms. In a Malawi study, Thomas et al. (1980) reported as comparable parotid incidence of 43.7% [3]. In other studies reviewed, the parotid is the most common site of malignant salivary gland neoplasms. Reported frequencies of salivary gland neoplasms in the parotid gland range from 32 to 68% [1,2,5,6].

The submandibular gland with a site prevalence of 18.1% is the second most frequent site occurrence of salivary gland tumours in this study. This compares favourably with similar findings of 15.9% incidence by Abiose et al. (1990 [2]. However, Edington and Sheiham (1966), [1] Adekeye and Robertson (1970) [6] and Arotiba (1991) [5] reported that the palate was the second most frequent site of salivary gland tumours with percentages of 13.6%, 26.7% and 24.9%, respectively.

The palate ranked third in the present study with incidence of 10.7%. This low incidence is similar to the incidence of 9.5% reported by Abiose et al. (1990). A higher incidence of 13.6% has however been previously reported in Ibadan by Edington and Sheiham (1966) [1].

As observed in the current study as well as those of Adekeye and Robertson (1979) [6], Arotiba (1991) [2] and Main and Harrison (1976) [7], there is a generally low incidence of sublingual tumours. Indeed, Edington and Sheiham (1966) [1] and Abiose et al. (1990) [2], both in previous studies from Ibadan found no sublingual salivary gland tumours. This is in contrast to a 2.1% incidence of sublingual tumours in this study.

The ratio of benign to malignant neoplasms in the present study was 1.1 to 1. This is agreement with reports from elsewhere in Nigeria [5,8] and in India [9], where an identical ratio of benign to malignant neoplasms was observed. Other studies report a relatively higher proportion of benign to malignant neoplasms [2,3,6].

Benign neoplasms appear to be relatively more common in major than in minor salivary glands, whereas malignant neoplasms are more common in minor salivary glands, although this trend is not statistically significant, probably because of the small number of cases in the present study. Our findings are however in keeping with those of some other workers, who also have observed that benign tumours are relatively commoner in major than in minor salivary glands [2,6,10].

Pleomorphic adenoma is the most common histological variant recorded in the present study and in all series reviewed, the incidence figures reported being 48.5% in Lagos, Nigeria [5], 57% in Kaduna, Nigeria [6], 58.3% in a previous series from Ibadan, Nigeria [2], and 59.5% in Malawi [3]. Pleomorphic adenomas constituted 93.7% of the benign neoplasms in the present study. Similarly high figures have been observed by other workers [1,2,6,9].

Of the monomorphic adenomas, four (57%) were basal cell adenomas and three (43%) were oxyphilic adenomas. There was also a case of adenolymphoma. By contrast, Adekeye and Robertson (1979) [6] did not have any case of monomorphic adenoma or adenolymphoma in their series of 86 salivary gland tumours. In agreement with our findings, Abiose et al. (1990) from this same centre, reported 11 cases (37%) of monomorphic adenoma and 2 cases of adenolymphoma (0.7%) in a series of 295 salivary gland tumours [2]. Arotiba (1991) from Lagos, reported 6 cases of monomorphic adenoma in a series of 237 salivary gland tumours [5].

Mucoepidermoid carcinoma (14%) and adenoid cystic carcinoma (11.9%) were the two most commonly encountered malignant neoplasms in this study. In previous Caucasian series [11,12,13] and in the previous Ibadan study [2] mucoepidermoid carcinoma was reported to be the most common salivary gland malignancy. By contrast, Adekeye and Robertson (1979) [6] reported that the most common malignant salivary gland neoplasm was adenoid cystic carcinoma, whilst Arotiba (1991) [5] found adenocarcinoma to the most common in the Lagos study.

In the present study, 3 cases of pleomorphic adenoma occurring in the lacrimal gland and infraorbital region were ectopic salivary gland neoplasms. Ectopic salivary gland neoplasms are an uncommon finding in this environment and there have been only sporadic case reports [14].

Considering individual salivary glands, the most common neoplasm in the parotid region were pleomorphic adenomas, which accounted for 49.1% of cases in the present study. Among Caucasians and Africans the frequency of pleomorphic adenoma ranges from 48.7% to 75% [2,5,6,7,15] Mucoepidermoid carcinoma represented 28.6% of all malignant neoplasms, while adenoid cystic carcinoma and acinic cell carcinoma followed with 18.4% and 10.2% respectively. Abiose et al. (1900) [2] and Arotiba (1991) [5] found mucoepidermoid carcinoma to be the most common malignancy of the parotid followed by squamous cell carcinoma, in contrast to our findings.

With respect to the submandibular gland, all of the benign neoplasms were pleomorphic adenomas. This agrees with Adekeye and Robertson (1979) [6] who reported that all of their benign submandibular neoplasms were pleoomorphic adenomas. [6] Abiose et al.'s (1990) series however included a case of submandibular monomorphic adenoma, the remaining 28 benign submandibular neoplasms being pleomorphic adenoma [2]. In contradiction to these findings, Arotiba (1991) [5] reported 3 cases of Warthin's tumour (8.3%) and one case of oncocytoma (2.8%) of the submnandibular gland.

The two most common malignant neoplasms of the submandibular gland were adenoid cystic carcinoma (38.9%) and mucoepidermoid carcinoma (33.3%). Adenoid cystic carcinoma was also found to be the most common malignancy of submandibular gland in the studies of Abiose et al. (1990) and Arotiba (1991), accounting for 33.3% and 50%, respecitively, of submandibular neoplasms.

Pleomorphic adenoma was the only benign neoplasm of the palate This trend is in keeping with the observation of Abiose et al. (1990) [2] and Arotiba (1991) [5]. Again, adenoid cystic carcinoma (43.8%) and mucoepidermoid carcinoma (31.3%) were the 2 most frequent malignant palatal neoplasms, Adekeye and Robertson (1979) also observed adenoid cystic carcinoma to be the most common malignant palatal salivary gland neoplasm [6].

The overall near equal sex female to male ratio of 1.06 to 1 for all neoplasms combined in this study is at par with previous findings of Edington and Sheiham (1966) [1] and Abiose et al. (1990) [2] both carried out in Ibadan. It is also in agreement with previous works by Adekeye and

Robertson (1979) [6] from Kaduna, as well as Sowemimo *et al.* (1978) [8] and Arotiba (1991) [5], both from Lagos.

References

1. Edington GM and Sheiham A. Salivary gland tumours and tumours of oral cavity in Western Nigerian. Br. J Cancer 1966; 20: 425-433.
2. Abiose BO, Oyejide O and Ogunniyi J. Salivary gland tumours in Ibadan, Nigeria: a study of 295 cases. Afr. J Med Med Sci 1990; 19: 195-200.
3. Thomas KM, Hutt MSR and Borgstain M. Salivary gland tumours in Malawi. Cancer 1980; 46: 2328-2334.
4. Thackray AC and Sobin LH. Histological typing of salivary gland tumours. International histological classification of tumours, No 7, Geneva, World Health Organization, 1972.
5. Arotiba GT. Salivary gland neoplasms. A review of cases seen in LUTH. Dissertation for the Fellowship of the West African Postgraduate Medical College in Dental Surgery.
6. Adekeye EO and Robertson JM. Salivary gland tumours in Northern Nigeria. Tropical Doctor 1979; 9: 168-174.
7. Main KJH and Harrison MS. The recurrence of salivary gland tumours. J Laryngol Otol 1971; 85: 439-448.
8. Sowemimo GOA, Ademiluyi SC, and Oyeneyin JO Salivary gland tumours.
9. Pordar GG and Paymaster JC. Tumours of the salivary glands. Am J Surg. 1969; 118: 440-447.
10. Carnog JL and Gray SR. Surgical and clinical pathology of salivary gland tumours. Cited by Rankow RM, Polayes JM in Diseases of the salivary glands. Philadelphia, WB Saunders: 1976; 99-142.
11. Accetta PA, Gray GF, Hunter M and Rosenfeld L. Mucoepidermoid carcinoma of salivary glands. Arch Pathol Lab Med 1984; 108: 321-325.
12. Eneroth CM. Salivary gland tumours in the parotid gland, submandibular gland and the palatal region. Cancer 1971; 27: 1411-1415.
13. Attie JN and Sciubba JJ. Tumours of the major and minor salivary glands: clinical and pathological features. In Ravitch MM (Ed.) Current problems in surgery. Chicago, Yearbook Medical Publishers Incorporated, 1981; 68-147.
14. Dogo D, Okeke L, Akang EEU. Ladipo JK, Ajao OG and Aghadiuno PU. Ectopic pleomorphic salivary adenoma of the nasal bridge. A case report and review of the literature. Orient J Med. 1991; 3: 177-178.
15. Foote FW and Frazell El. Tumours of major salivary glands. Cancer 1953; 6: 1065-1133.