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MAJOR SALIVARY GLAND TUMOURS IN A RURAL KENYAN HOSPITAL
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# MAJOR SALIVARY GLAND TUMOURS IN A RURAL KENYAN HOSPITAL

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## ABSTRACT

***Background:*** **Salivary gland tumours are not well characterised in Africa. The Kijabe Hospital Pathology Laboratory operates a pathology service utilised by twenty one church/ mission hospitals and thus has accumulated data from many parts of Kenya regarding major salivary gland neoplasms.**

***Objective:*** **To review the specimens in order to help understand the spectrum of the salivary gland neoplasms in Kenya.**

***Design:*** **Data on all major salivary gland tumours examined over the study period were obtained from the Pathology department computer database. Basic information on age, tribe, pathological diagnosis and site of the tumour were available for analysis.**

***Setting:*** **A rural hospital in Kenya with a pathology service serving 21 church/mission hospitals throughout Kenya.**

***Subjects:*** **All major salivary gland neoplasms examined in the pathology laboratory over the period January 1992 to December 1999.**

***Main outcome measures:*** **Age, tribe, pathological diagnosis, site of specimen.**

***Results:*** **Over the period 1992 to 1999, 135 major primary salivary gland neoplasms were examined. Amongst 103 parotid tumours, 46% were pleomorphic adenomas and 19% were monomorphic adenomas. Consistent with other studies from sub-Saharan Africa, the Warthin's tumour was rare. The commonest malignant tumour was the mucoepidermoid carcinoma comprising 14% of specimens. Thirty two submandibular neoplasms are described. The commonest tumour was the pleomorphic adenoma (78%) and the commonest malignant tumour was the mucoepidermoid carcinoma (9%).**

***Conclusions:*** **Compared with other African studies, these figures are similar although in Kenya there is a predominance of monomorphic adenomas. Compared with Western studies there is an increased ratio of malignant to benign tumours and Warthin's tumours are much less common in Africa.**

## INTRODUCTION

Salivary gland tumours are not well characterised in Africa. There have been sporadic reports from Nigeria, Ethiopia, Malawi, Uganda and South Africa(1-5) but there have been no reports from Kenya.

Kijabe Hospital operates a pathology service serving 21 church/mission hospitals in Kenya and has developed a large computerised database. Thus, it was felt that a study of the cases from our database would be of use in understanding the spectrum of salivary gland neoplasia in sub-Saharan Africa.

## MATERIALS AND METHODS

Africa Inland Church Kijabe Hospital provides a pathology service to 21 church/mission hospitals in Kenya. Visiting pathologists, predominantly from North America, staff the pathology service. The pathology reports are stored on computer and are able to be accessed by a simple search process.

All records of specimens from submandibular tumours and parotid tumours on the database were identified and analysed for the period 1992 to 1999. Duplicate records were excluded. Basic data were available including age, site of tumour, pathologic diagnosis and tribe.

Lesions excluded from the analysis were lymphoma, local infiltration from outside the gland and metastatic involvement from a distant primary site.

## RESULTS

A total of 135 tumours were analysed of which 103 were parotid lesions (Table 1) and 32 were submandibular lesions (Table 2).

The majority of the parotid neoplasms (66%) were benign with the commonest lesion being the pleomorphic adenoma. One third of benign lesions were monomorphic tumours, predominantly basal cell adenomas and oncocytic adenomas. Warthin's tumours were rare with only one case recorded in a 12 year-old Kalenjin girl. The slides of monomorphic adenomas were reviewed by an independent pathologist (G.R.A.) to confirm that they were indeed monomorphic adenomas.

**Table 1**

*Parotid neoplasms*

| | Kijabe | Uganda (2) | Nigeria (3) | S. Africa (4) | Malawi (1) | Ethiopia (5) | Britain (7) | Sweden (6) | USA (8) |
|---|---|---|---|---|---|---|---|---|---|
| Number | 103 | 68 | 35 | 60 | 82 | 75 | 1756 | 2158 | 212 |
| Benign % | 66 | 56 | 68 | 72 | 54 | 56 | 85 | 83 | 85 |
| Pleomorphic | 46 | 56 | 68 | 63 | 49 | 48 | 63 | 77 | 53 |
| Warthin's | 1 | 0 | 0 | 2 | 0 | 0 | 14 | 4.7 | 28 |
| Monomorphic | 19 | 0 | 0 | 7 | 5 | 8 | 8 | 1 | 4 |
| Malignant % | 34 | 44 | 32 | 28 | 46 | 44 | 15 | 17 | 15 |
| Mucoepidermoid | 14 | 16 | 6 | 3 | 11 | 15 | 1.5 | 4 | 9 |
| Acinic cell | 5 | 1 | 0 | 0 | 0 | 8 | 2.5 | 3 | 1 |
| Adenoid cystic | 4 | 10 | 6 | 15 | 2 | 5 | 2 | 2 | 0.5 |
| SCC | 2 | 0 | 3 | 3 | + | ++ | 1 | 0.3 | 1 |
| Undiff/other | 4 | 4 | 0 | 7 | 28+ | 5++ | 2 | 4 | 1 |
| Adenocarcinoma | 4 | 13 | 11 | 0 | + | 8 | 3 | 2 | 1.5 |
| Malignant mixed | 1 | 0 | 6 | 0 | 5 | 3 | 3 | 1.5 | 1 |

+ = grouped together as undiff, adenocarcinoma and SCC in the paper
++ = grouped together as undiff and SCC in the paper

**Table 2**

*Submandibular gland neoplasms*

| | Kijabe | Nigeria (3) | Ethiopia (5) | Malawi (1) | Uganda (2) | Britain (7) | Sweden (6) | USA (8) |
|---|---|---|---|---|---|---|---|---|
| Number of cases | 32 | 19 | 41 | 46 | 25 | 257 | 170 | 36 |
| Benign % | 82 | 78 | 56 | 83 | 84 | 63 | 63 | 78 |
| Pleomorphic | 79 | 78 | 51 | 78.3 | 84 | 60 | 60 | 67 |
| Warthin's | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 |
| Monomorphic | 3 | 0 | 5 | 4.3 | 0 | 2 | 1 | 8 |
| Malignant % | 18 | 22 | 44 | 17 | 16 | 37 | 37 | 22 |
| Mucoepidermoid | 9 | 5.5 | 2.4' | 4 | 0 | 1.6 | 4 | 3 |
| Acinic cell | 3 | 0 | 10 | 0 | 0 | 0.4 | 0.5 | 0 |
| Adenoid cystic | 3 | 0 | 12 | 9 | 12 | 16.8 | 15 | 3 |
| SCC | 0 | 5.5 | 7+ | 4++ | 0 | 1.9 | 7 | 0 |
| Undiff/anaplastic | 0 | 0 | + | ++ | 0 | 3.9 | 9 | 3 |
| Adenocarcinoma | 0 | 5.5 | 10 | ++ | 0 | 5 | 0 | 6 |
| Malignant mixed | 3 | 5.5 | 2.4 | 0 | 4 | 7.8 | 2 | 8 |

+ = grouped together as SCC and undiff in the paper
++ = grouped together as undiff, adenocarcinoma and SCC in the paper

The commonest malignant lesion was the mucoepidermoid carcinoma. Interestingly other monomorphic adenomas were not seen in the Kalenjin tribe despite their making up 14% of the patient population.

Most submandibular lesions (81%) were benign and, as with parotid lesions, the majority were pleomorphic adenomas. The commonest malignant tumour was the mucoepidermoid carcinoma.

The parotid specimens were obtained by open biopsy in 17 cases, by superficial or total parotidectomy in 82 cases, by enucleation in three cases and by core needle biopsy in one case. The submandibular specimens were obtained by open biopsy in six cases and by removal of the entire gland in 26 cases. Fine needle aspiration biopsy was not used in any cases.

## DISCUSSION

This study describes the largest group of salivary gland neoplasms in black patients from sub-Saharan Africa. As previously shown in other studies the commonest parotid neoplasm is the pleomorphic adenoma. These account for 46-63% of all parotid lesions in Africa(1-5). Pleomorphic adenomas are more frequently identified (60-77%) in the large studies from Northern Europe and North America(6-8).

Warthin's tumours of the parotid are not uncommon in Western countries (4.7-28%) but are extremely rare in studies from Africa(9). Only one patient in this study had a Warthin's parotid tumour. The reason for this is unknown but may represent a decreased genetic predisposition or an environmental influence. It has been previously suggested that Warthin's tumours are commoner in smokers. Anecdotally smoking is less common in Africa than in other parts of the world where Warthin's tumours are more common(10) and this may explain some of the discrepancy.

An unusual feature of this study was the relatively large proportion of monomorphic adenomas (19%). Most of these were basal cell adenomas (n=17) with a minority of oncocytomas (n=3). It is possible that the higher

incidence of monomorphic adenomas is only apparent. Due to the volume of work at Kijabe and the limitation of resources only a small number of sections of the tumour may be analysed. Thus small malignant lesions may be missed and therefore benign lesions such as monomorphic adenomas may be over diagnosed. However, the differences from other studies were only apparent in the parotid lesions and not in the submandibular neoplasms so this discrepancy is more likely to be real rather than apparent. This is supported by the fact that monomorphic adenomas were not noted in Kalenjin patients despite them making up 14% of the patient population. In addition the monomorphic adenoma slides were reviewed by an experienced independent pathologist and this finding was confirmed except in one case where there had been problems with fixation of the specimen.

The independent pathologist stated that "all the histological growth patterns of monomorphic adenomas as described by Batsallis are represented by the group with the trabecular pattern predominating" (Dr Murray Abell, personal communication).

Mucoepidermoid carcinomas constitute the largest proportion of malignant lesions in the majority of studies. Adenoid cystic and adenocarcinomas appear to be more common in Africa than other areas. This may reflect genetic or environmental differences between population groups.

There is a correspondingly higher ratio of malignant to benign parotid tumours in Africa (mean from Table l=0.68) when compared with that from Europe or North America (mean from Table 1=0.19). It is possible that these results are influenced by individuals in Africa failing to present early with benign disease but such a significant difference would suggest that malignant disease of the parotid is more common in Africa.

Submandibular tumours accounted for 24% of the lesions in this study and appear to be relatively more common in Africa than in Western countries (Mean from Tables 1 and 2: 12%). The highest proportion of submandibular lesions (36%) was in a study from Malawi(1). Although there are no significant differences between types of submandibular tumours in Africa and other areas it is interesting to note that, as with parotid disease, Warthin's tumours are extremely rare and perhaps non-existent in Africans.

In conclusion this study suggests that parotid tumours account for a smaller proportion of all salivary gland tumours in Africa and that in this population subgroup malignant change in the parotid is more common. These and other differences in the pathology of benign parotid disease would justify further genetic studies and study of the role of environmental agents in the pathogenesis of salivary gland neoplasms.

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