A 16 year retrospective analysis of intraoral minor salivary gland pleomorphic adenoma in an African population

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ABSTRACT

Objectives: The aim of the study was to determine the relative frequency and demographic characteristics of intraoral minor salivary gland pleomorphic adenomata (IMPA) affecting a group of patients who attended the Medunsa Oral Health Centre of the University of Limpopo, South Africa.

Materials and methods: The records of all the IMPA diagnosed in this rural and periurban Southern African population sample between 1995 and 2011 inclusive were retrieved from the archives of the Department of Oral Pathology. The cases were reviewed and analysed for age, gender and site of occurrence. The findings were compared with other studies reported in the literature.

Results: One hundred and fifty two cases of pleomorphic adenomata (PA) were diagnosed between 1995 and 2011 of which 115 cases were encountered in intraoral minor salivary glands. The age of the patients ranged from 7 to 91 years with a mean of 38.5 years. The peak of incidence was in the third decade; however the tumour was relatively common in the sample through the second to the sixth decades of life. There was a female predilection (67.5%) demonstrated with the ratio of male to female of 1:2.3. Most males were diagnosed in their third decade of life whereas affected females were predominantly in their fifth decade. The most common site of occurrence was palate (78.6%) followed by buccal mucosa (12.0%) and upper lip (2.6%) and the distribution was the same for both females and males.

Conclusion: IMPA diagnosed in this South African population shows demographic characteristics similar to those reported in most published studies in the world. In comparison with other studies, however, females were significantly more frequently affected than the males.

Keywords: Salivary gland pathology; pleomorphic adenoma in African population; frequency and demographic characteristics.

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ACRONYMS

IMPA: intraoral minor salivary gland pleomorphic adenoma
PA: Pleomorphic adenoma

INTRODUCTION

Pleomorphic adenoma (PA) is a benign, painless, slow growing tumour that is considered to be the most common salivary gland neoplasm. The tumour accounts for about 60% of all salivary gland tumours with 80% arising in the parotid gland, 10% in the submandibular gland and less than 10% in the minor salivary glands of the oral cavity. The tissue shows a mixed population of epithelial and mesenchymal cells (myxoid, hyaline, chondroid, osseous) which are not arranged in any acinar configuration. They may arise from salivary gland cells. The palate is the most common site of involvement for intraoral minor salivary gland tumours with a female predilection and a peak incidence in the third to the sixth decades of life.[1] The commonest complication after surgical removal of the tumour is its tendency to recur and undergo malignant change.[3] The aim of this study was to determine the relative frequency and demographic characteristics of IMPA affecting a group of patients who attended Medunsa Oral Health Centre of the University of Limpopo, a facility serving mainly Black people from Limpopo, North West and part of Northern Gauteng.

MATERIALS AND METHODS

All the files of PA's diagnosed at Medunsa Oral Health Centre of the University of Limpopo between 1995 and 2011 inclusive were retrieved from the archives of the Department of Oral Pathology. The microscopic slides of all IMPA were reviewed to confirm the diagnoses and the data was analysed for age, gender and site of occurrence. The findings were compared with the data of other studies reported in the literature.

RESULTS

One hundred and fifty two cases of PA had been diagnosed in this time period, of which 115 cases were encountered in intraoral minor salivary glands. (Our laboratory serves mainly the Oral Health Centre and therefore we only occasionally

Table 1: Distribution by Age and Gender

Decade	Total (%)	Female	Male	Unknown
0-10	2 (1.7)	2	0	0
11-20	18 (15.7)	13	4	1
21-30	25 (21.7)	12	13	0
31-40	16 (13.9)	10	6	0
41-50	18 (15.7)	15	3	0
51-60	15 (13.0)	12	3	0
61-70	5 (4.3)	3	2	0
>70	6 (5.2)	6	0	0
U	10 (8.7)	5	3	2
Total (%)	115 (100)	78 (67.8)	34 (29.6)	3 (2.6)

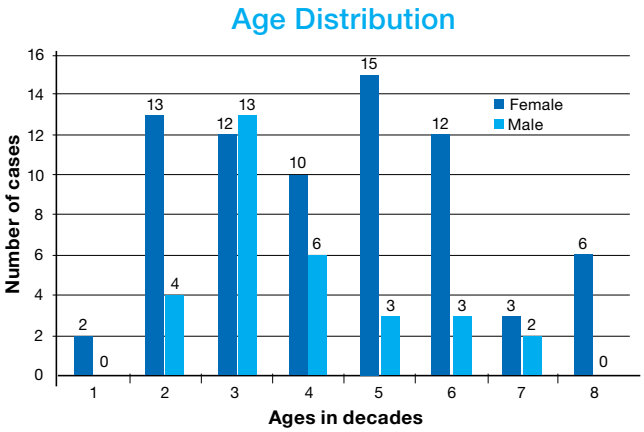


Figure 1: Age Distribution

Table 2: Distribution by Site and Gender

Site	Total (%)	Female	Male	Unknown
Palate	94 (81.7)	68	26	3
Buccal mucosa	14 (12.2)	8	6	0
Upper lip	3 (2.6)	1	2	0
Lower lip	1 (0.9)	0	1	0
Retromolar pad	1 (0.9)	1	0	0
Floor of mouth	1 (0.9)	1	0	0
Total (%)	115 (100)	78 (67.8)	34 (29.6)	3(2.6)

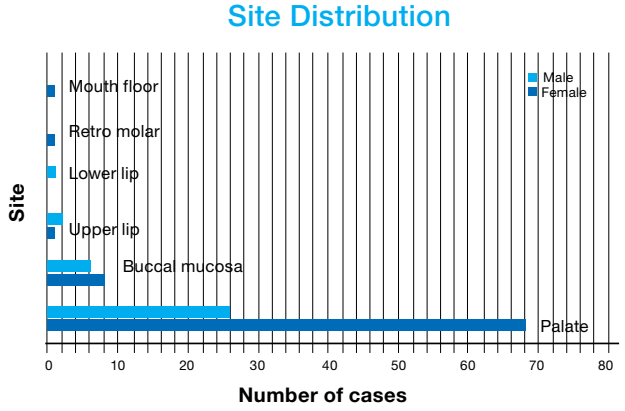


Figure 2: Site Distribution

receive biopsies of the major salivary glands.) The age of the patients ranged from 7 to 91 years with a mean of 38.5 years. The peak of incidence was in the third decade; although the tumour was seen to be relatively common through the second to the sixth decades of life. There was a marked female predilection (67.8%) with the ratio of female to male of 2.3: 1. Most males were affected in the third decade of life when the male to female ratio was 1:1. In females, most cases were diagnosed in the fifth decade of life at which stage the female to male ratio reached 5:1 (Table 1 and Figure 1). The most common site of occurrence was the palate (81.7%) followed by the buccal mucosa (12.2%) and the upper lip (2.6%). This distribution was the same for both females and males (Table 2 and Figure 2). There were no recurrences noted after surgical resections.

DISCUSSION

Salivary gland tumours are uncommon tumours of the head and neck with PA occurring most frequently.[1] The present study comprised 115 cases of IMPA diagnosed over a period of 16 years and this can be considered as one of the most comprehensive samples reported from the African continent. Rather larger samples have been diagnosed in China by Tian *et al* and Wang D *et al* who respectively found 656 cases in eastern China over a 23 year period and 278 cases in western China in a 14 year investigation. In Libya a paltry 23 cases of the tumour were recorded over 23 years whilst Thailand scored 130 cases in 38 years.[10,14] The difference in the prevalence could possibly be attributed to the varying population sizes that the institutions were serving and the lack of that information limits comparisons of frequencies.

Our study demonstrated a peak incidence in the third decade with all tumours diagnosed between the second and sixth decades of life. The study supports that of Dhanuthai *et al* where a similar peak incidence was found. In most other studies[2,5,4,7,9,13] the peak incidences were a decade later. Most studies revealed female predilection,[2,4,5,6,8,9,10,14,13] as did the present study with an overall female to male ratio of 2.3:1, the highest reported in the literature, to the best of our knowledge. According to Statistics South Africa, the population male to female ratio in 2010 was estimated to be 1:1.1 for Limpopo and 1:1 for Gauteng and Northwest provinces.[15]

The study confirmed an increasing incidence amongst females with age. Males and females were equally affected in the third decade of life whereas in the fifth and sixth decades the gender ratio rose to 1:5 and 1:4 respectively. It may be surmised that the high female incidence could be related to postmenopausal hormonal changes, although that cannot explain the male to female ratio of 1:3 found amongst this sample in the second decade of life. On the contrary, another study in Africa, undertaken by Masanja *et al* in Tanzania, demonstrated a male predilection of 61.0% although details of the sample population are not known. Further investigations may help to explain these findings.

The present study confirmed the palate (81.7%) as the most frequently involved intraoral site, followed by the buccal mucosa (12.2%) and then the upper lip (2.6%). Whilst these findings are comparable with most reported studies in the literature,[1,2,4,5,9,10,13] Buchner *et al* and Tian *et al* found the incidence in the upper lip to be greater than in the buccal mucosa. It was not possible to contrast the observation of the current study that the site distribution for females and males was the same, as other identified studies had not investigated this relationship.

There were no recurrences reported in our sample. If there were any, the specimens had not been submitted to our laboratory. Hence post treatment recurrence cannot be excluded.

In conclusion, IMPA diagnosed in this population sample showed mostly similar demographic characteristics as those in other reported studies in the world. Notably, the current sample found females to be significantly more frequently affected than the males. This epidemiological investigation may contribute towards a greater understanding of the factors influencing the occurrence of these tumours, important as there is a proven tendency for malignant transformation after surgical intervention.[3]

Recommendation: The prevalence of this most common salivary gland tumour should be investigated in other institutions in the country and the continent at large in order to draw conclusions on geographical differences on the distribution and to gather data on management and possibly etiology.

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