Salivary Gland Tumours - A three years experience at King Edward Medical College, Lahore

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Objective: Salivary gland tumours make an important part of oral & maxillofacial pathology. Only few studies have been done in Pakistani population. The aim of this study was to describe morphological types of salivary gland tumours diagnosed at King Edward Medical College/ Mayo Hospital, Lahore during the years 1999-2001 and to compare their demographic data with those previously published. **Material & Methods:** This descriptive cross-sectional study was carried out at King Edward Medical College/ Mayo Hospital, Lahore. It reports 117 cases of salivary gland tumours diagnosed at Pathology Department during 1999-2001. **Results:** Of the 128 specimens of salivary glands, 117(91.4%) were confirmed as salivary neoplasms. Out of them, 62.7% were benign and 37.6% malignant and a slight female predominance (58.1%) was found. The most common location was the parotid gland (65.8%) followed by minor salivary glands (19.6%). Majority of the tumours was diagnosed during 3rd to 5th decades of life. Median age for benign tumours was 33 years (range 1-78) and a female predominance (58.9%) was seen again. Median age for malignant neoplasms was 45 years (range 9-70) with a female predilection (56.8%). However, 4 out of 5 patients with Warthin's tumour were men. Pleomorphic adenoma was the most frequent tumour (51.3%), followed by mucoepidermoid carcinoma (25.6%), adenoid cystic carcinoma (7.7%), Warthin's tumour (4.3%) and monomorphic adenoma (2.6%). Two cases each of oncytoma & adenocarcinoma were recorded. Rare categories (single case each) of salivary tumours included lipoma, acinic cell carcinoma, basal cell adenoma, capillary haemangioma, metastatic carcinoma and non Hodgkin's lymphoma. **Conclusion:** The principal site of salivary tumours was the parotid gland and females were most affected. Pleomorphic adenoma was the most frequent finding. The results of this study are comparable with other studies.
Key words: Salivary glands, tumour, parotid gland, pleomorphic adenoma

Salivary gland tumours are relatively uncommon and account for fewer than 3% of all tumours and only 6% of head and neck neoplasms.[1] Salivary glands give rise to diverse group of tumours, benign and malignant which exhibit differences not only in biologic behavior but also in prognosis. Parotid tumours constitute about 80% of salivary gland tumours[2-3]. Of the benign tumours, pleomorphic adenoma is the most common (55-80%), followed by Warthin's tumour (9-30%)[2,4,5]. Mucoepidermoid and the adenoid cystic carcinoma are among the common malignant tumours[6-8]. Apart from primary neoplasms, metastasis from melanomas of head and neck region and squamous cell carcinoma of skin may involve the salivary glands[9-10].

Salivary glands are important part of oral and maxillofacial pathology. In Pakistan, the hereditary and other risk factors are different from those of Western countries which may lead to different tumour frequency, age and sex distribution in our population. Unfortunately, most of the work has been done in the West and few studies have been conducted in the local population so far. Hence salivary gland tumours are not well characterized in Pakistan. In this study, we reviewed 117 salivary gland tumours which were diagnosed during 1999-2001 at Pathology Department of King Edward Medical College/Mayo Hospital, Lahore. The aim of the study was to compare demographic data of salivary gland tumours in our set-up with those previously published in literature.

Material and methods

This descriptive cross-sectional study was carried out at King Edward Medical College/Mayo Hospital, Lahore. All salivary gland neoplasms diagnosed and reported from July 1999 to July 2001 in the PathologyDepartment were reviewed and analyzed. Inflammatory lesions involving salivary glands such as sialadenitis and sialolithiasis were excluded from the study.

Data was collected from the record of histopathology division of Department of Pathology. The record included biopsy reports, slides and relevant tissue blocks. The histological evaluation of the lesion was performed on Haematoxylin and eosin staid sections of formalin-fixed paraffin embedded issue. The diagnosis of individual tumour was based on 1991 World health Organization.the diagnosis of mucoepidermoid and adenocystic carcinoma was aided by the use of periodic acid Schiff's stain. Patients with multiple specimens from the same lesion were counted once. Results were compiled using Statistical Package for Social Sciences 10. The data was presented in the form of percentages and means.

Results

During the three-year period 1999-2001, a total of 128 surgical specimens of salivary glands were submitted to the Department of Pathology, King Edward Medical College/ Mayo Hospital, Lahore for histopathology. Of these 117 cases of salivary tumours were selected for this

study. Eleven cases of non-neoplastic lesions were excluded. Forty-nine patients (41.9%) were men and sixty-eight (58.1%) women, giving a male to female ratio 1:1.4. Women were affected more by benign (58.9%) as well as by malignant tumours (56.8%).

The relative frequency of various histological subtypes of salivary tumours is presented in Table 1. Of these, 62.3% were benign and 37.6% malignant. Pleomorphic adenoma was the most frequent benign tumour (82.1%), followed by Warthin's tumour (6.8%). Mucoepidermoid carcinoma was the most common malignant tumour and account for 25.6% of all lesions and 68.2% of malignant tumours. Many other subtypes were relatively small in number.

Table 1. Distribution of histological subtypes in 117 salivary gland tumours

Histological Category	n-	%age
Benign	73	62.4
Pleomorphic adenoma	60	82.1
Warthin's tumour	05	6.8
Monomorphic adenoma	03	4.1
Oncocytoma	02	2.8
Basal cell adenoma	01	1.4
Capillary aemangioma	01	1.4
Lipoma	01	1.4
Malignant	44	37.6
Mucoepidermoid carcinoma	30	68.2
Adenoid cystic carcinoma	09	20.4
Polymorphous Adenocarcinoma	01	2.3
Adenocarcinoma NOS	01	2.3
Metastatic carcinoma	01	2.3
Non Hodgkin's lymphoma	1	3

Table 2 summarizes the distribution of salivary neoplasms in various age groups. Majority of the cases (65.9%) were recorded during 3rd to 5th decades of life. The median age was 34 years with a range of 1-78 years (33 for benign, 45 for malignant growths). The youngest patient was a seven month old girl who suffered from capillary haemangioma while the oldest one was a 78 year old man with pleomorphic adenoma. The patients with malignant tumour were on an average 12 years older than those with benign disease.

Table 2. Distribution of salivary tumours by age (percentage appears in parentheses).

Age(years)	Benign	Malignant	Total
0-9	1(1.4)	1(2.3)	2(1.7)
10-19	9(12.3)	4(9.1)	13(11.1)
20-29	22(30.1)	6(13.6)	28(23.9)
30-39	17(23.3)	8(18.2)	25(21.4)
40-49	13(17.8)	11(25)	24(20.5)
50-59	07(9.6)	9(20.5)	16(13.7)
60-69	03(4.1)	3(6.8)	06(5.1)
70+	01(1.4)	2(4.5)	03(1.6)
Total	73(62.4)	44(37.6)	117(100)

Anatomic distribution of salivary neoplasms has been shown in Table 3. Parotid gland was found to be most frequently affected by benign as well as malignant process. Seventy-seven (65.8%) cases originated in parotid gland; of these 73.3% were benign and 26.7% malignant. Fifteen cases (12.8%) were reported in submandibular gland, two malignant tumours (1.7%) in sublingual and twenty-three (19.6%) in minor salivary glands.

Table 3. Anatomic distribution of salivary gland tumours (percentage appears in parentheses).

Name of gland	Benign	Malignant	Total
Parotid Gland	55(75.3)	22(50)	77(65.8)
Submandibular	11(15.1)	04(9.1)	15(12.8)
Sublingual	0(0)	02(4.5)	02(1.7)
Minor Salivary	07(9.6)	16(36.4)	23(19.6)
Total	73(62.4)	44(37.6)	117(100)

The four most common neoplasms were analyzed on the basis of age, sex, and anatomic location. There were more women affected by pleomorphic adenoma and adenoid cystic carcinoma. However a male predominance was observed in cases of Warthin's tumour (4:1), while distribution of mucoepidermoid carcinoma was independent of sex. In each morphological subtype, the parotid gland was most frequent site. The median age varied greatly, and the youngest (15 years) and the oldest (78 years) patient both had pleomorphic adenomas.

Discussion

Salivary gland tumours though uncommon, continue to attract significant medical attention due to their multifaceted clinical presentation, diverse spectrum of morphology and relatively unpredictable course[4,11]. They show considerable variation in relation to age and sex. Geographical distribution of tumours is related to race and environmental factors[12]. Aetiology of these tumours is not known, however, it is possible that an adenoma gene may be involved in the development of pleomorphic adenoma[1].

In this study, salivary gland neoplasms (benign as well as malignant) were more common in women than men. This finding is in accordance with the overall female predominance reported in the Western studies[4,7,13]. However, some studies have described male predominance instead.[14-16] We observed that benign lesions presented more than a decade earlier than the malignant ones. Similar observations have been recorded by other workers[7,17-18]. Majority of the tumours involved the parotid gland and over 95% of them were of epithelial origin, similar to published data[17-20].

Among the benign growths, pleomorphic adenoma was the most common histological category presenting in the 3rd and 4th decade of life with a slight female predominance. It comprised more than 80% of all benign lesions comparing well with other studies[4,6,8]. Warthin's tumour was the second most common entity with a high male to female ratio[1,17].

Mucoepidermoid carcinoma was the most frequent malignant lesion with no sex predilection. Most of the

tumours were seen during 4th to 6th decades of life. Our observation is in agreement with local[7,17] as well as international studies[4,8,21-22]. Adenoid cystic carcinoma was the second most common malignancy recorded by us.. This observation has been confirmed by others[6,17]. It showed a strong predominance in women. Some studies have found this tumour as the most frequent cancer[2,20]. We recorded 19.6% of salivary neoplasms originating in the minor salivary glands making them the second most common site of salivary gland tumours. Other researchers have made similar observation[1,7,23]. In contrast, Gill and associates reported few tumours affecting minor salivary glands[17].

We detected one case each of lipoma and capillary haemangioma (in a 7 month old girl). Lipomas are rare tumours of parotid, however occasional cases have been reported in the submandibular gland[17,24]. Capillary haemangioma is the most common neoplasm in infants and children[25-26]. We also reported a single case of metastatic carcinoma. Some studies have reported much higher frequency of secondary tumours[27,28]. No case of basal cell carcinoma or epithelial-myoepithelial neoplasms was recorded in this study. These are rare entities and due to small size of the sample, their absence could be expected.

In this study, the relative frequency of malignant neoplasms was higher than that reported from the West[2,4,7,8] and Japan[29]. However some other studies have described comparable frequency.[3,6]. The principal site of salivary tumours was the parotid gland and pleomorphic adenoma was the most common lesion. The results of our study are comparable to most of the Pakistani and international studies. However as the salivary tumours are rare and this study was carried out on a small scale, it may not be representative of the uncommon histological subtypes.

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