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A Clinicopathological study of salivary gland neoplasms in a tertiary care hospital: A three year study

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Abstract

Background: The tumors of the salivary glands are uncommon head and neck neoplasms. The aim of this study was to observe the clinical occurrence of salivary gland neoplasms and to study the various histo-morphological features of salivary gland tumours, their frequency, age and sex distribution. **Materials and Methods:** The cases which have arrived to the Dental OP at Drs Sudha and Nageswara Rao Sidhartha Institute of Dental Sciences with swellings in the head and neck region were identified and sent to pathology department from June 2013 to May 2016 and cases which were diagnosed as salivary gland neoplasms (96 cases) were taken into consideration and Histopathological examination was done.

Results: Out of 96 cases, 51 (53.1 %) were benign and 45(46.9 %) were malignant with M:F ratio of 1.74:1. Age range of patients was from 10 to 80 years. Pleomorphic adenoma was found to be the commonest benign tumor (74.5 %), followed by Warthin's tumor (19.6%), monomorphic adenoma (3.9 %) and basal cell adenoma (3.9 %). The mucoepidermoid carcinoma was the most common malignant tumor (48.8%) followed by adenoid cystic carcinoma (33.3%), acinic cell carcinoma (13.3%), adenocarcinoma NOS (2.2%) polymorphous adenocarcinoma (2.2%)

Conclusion: Males were more affected than females and pleomorphic adenoma was the most frequent lesion followed by warthin's tumor among benign neoplasms. Mucoepidermoid carcinoma is the most common malignant neoplasm followed by adenoid cystic carcinoma.

Keywords: monomorphic adenoma, pleomorphic adenoma, adenocarcinoma

Introduction

Salivary glands are exocrine organs that secrete saliva widely distributed throughout the mouth and oropharynx. There are three pairs of salivary glands-parotid, submandibular and sublingual glands^[1]. Salivary gland tumours are rare, comprising approximately 3% to 10% of the neoplasm of the head and neck region^[2, 3]. The global incidence of these tumours is 0.4–13.5 per 100,000 persons. Approximately 80% of the salivary gland tumours are found in the parotid gland and 10 to 15% in the submandibular gland^[4]. Around 80% parotid tumours and 50% of submandibular tumours are benign. Salivary gland tumours were observed in all ages but the highest incidence is observed in 3th and 4th decades for benign tumours and 4th and 5th decades for malignant tumours. The aim of this study was to observe the clinical occurrence of salivary gland neoplasms and to study the various histo-morphological features of salivary gland tumours, their frequency, age and sex distribution.

Materials and Methods: The cases which have arrived to the Dental OP with swellings in the head and neck region were identified and sent to pathology department from June 2013 to May 2016 and cases which were diagnosed as salivary gland neoplasms were taken into consideration. Information regarding age, gender, frequencies of different benign and malignant salivary tumors in both major and minor glands were identified. All the biopsy specimens were fixed in 10% formalin, then processed into paraffin embedded sections and stained with haematoxylin and eosin (H&E).

Results

Table 1: Age wise distribution of salivary gland neoplasms

Age distribution	Benign tumors	Malignant tumors	Total Number of patients
10-20	2	2	4
21-30	10	4	14
31-40	20	6	26
41-50	8	17	25
51-60	5	8	13
61-70	4	6	10
70-80	2	2	4

Table 2: Distribution of benign and malignant tumors according to sex

Sex	Total	Benign	Malignant
Male	61(63.5%)	30 (49.1%)	31 (50.9%)
Female	35(36.5%)	21 (60%)	14 (40%)

Table 3: Distribution of various benign and malignant salivary gland tumors

S. No	Benign	Number of cases	Malignant	Number of cases
1	Pleomorphic Adenoma	38	Mucoepidermoid carcinoma	22
2	Warthin’s tumor	10	Adenoid cystic carcinoma	15
3	Basal cell Adenoma	2	Acinic cell carcinoma	6
4	Monomorphic Adenoma	1	Adenocarcinoma NOS	1
5			Polymorphous low grade adenocarcinoma	1

Out of 148 biopsies taken from head and neck swellings in Drs Sudha and Nageswara Rao Siddhartha Institute of Dental Sciences Hospital during the study period, 96 cases were related to salivary gland tumors and they were included in our study of the 96 cases, 51(53.1%) were benign and 45(46.9%) were malignant (Table 3), representing a ratio of 1.1:1 respectively. Male were more affected by both benign and malignant tumors. Male to Female ratio for salivary gland neoplasms is 1.74:1 (Table 2). The highest incidence for benign tumors was in the 2nd and 3rd decade, whereas for malignant tumor it was the 4th and 5th decade of life (Table 1). Distribution of benign salivary gland tumors are shown in Table 3. Among the benign salivary gland tumors, pleomorphic adenoma (fig.1) was the most common histologic type followed by warthin’s tumor (fig.2). Distribution of malignant tumors in salivary glands is shown in Table 3. Mucoepidermoid carcinoma (48.8%) was most common among the malignant salivary gland tumors followed by Adenoid cystic carcinoma (33.3%) (Table 3)

Discussion

In the present study of 96 cases of salivary gland tumors, 51 (53.1%) were benign and 45 (46.9%) were malignant (Table 3). This was in concordance with other studies where there is predominance of benign tumors over the malignant ones [5, 6]. Benign salivary gland tumors were more common in age group of 31 to 40 years and the peak age incidence observed for malignant salivary gland tumors was 41 to 50 years. Chatterjee *et al.* observed large number of benign cases in third decade followed by fourth decade [7]. Malignancy reported in his study was predominant in the 5th decade. In the present study a male preponderance was noted with a male: female ratio of 1.7:1. This is in agreement with series reported by Potdar GG *et al.* 8 Spiro *et al.* [9]. However; this was in contrast to the series reported by Dandapat *et al.* [10] and Rewsuwan *et al.* [11] who reported a female predominance in their study. Pleomorphic adenoma was the most common benign salivary gland tumor encountered in parotid, submandibular and minor salivary glands. Similar findings were observed in the present

study where pleomorphic adenoma was the most common benign salivary gland tumor at all locations. Out of total 38(74.5%) pleomorphic adenomas in our study, majority occurred in the parotid gland.

Histopathological Pattern of Salivary Gland Tumors

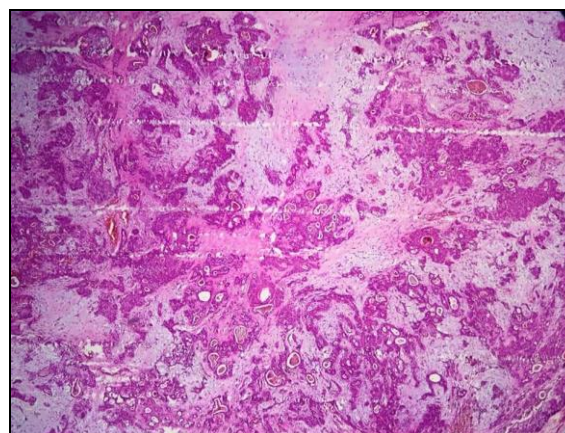


Fig 1: Pleomorphic Adenoma showing both epithelial and mesenchymal components (H&E stain X 200).

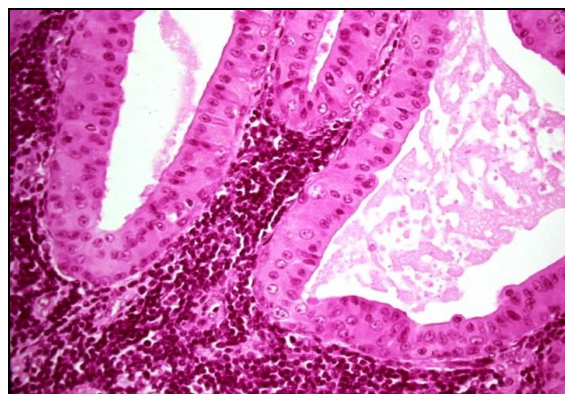


Fig 2: Warthin’s tumour. The papillary projection showing oncocytic lining cells and an underlying lymphoid stroma (H&E stain, X 200).

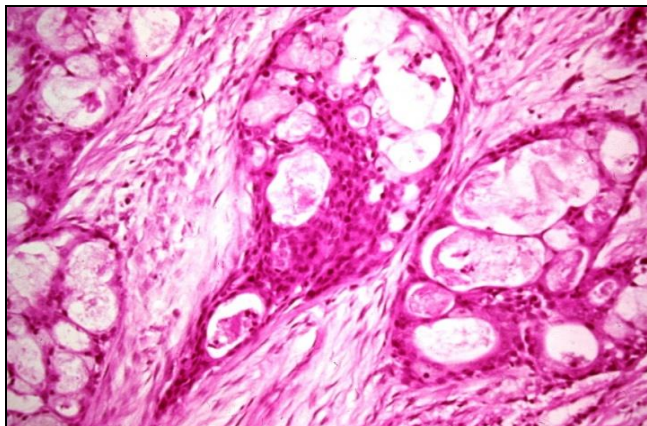


Fig 3: Low-grade mucoepidermoid carcinoma showing glandular spaces with mucous secreting cells and intermediate cells (HE stain, X200).

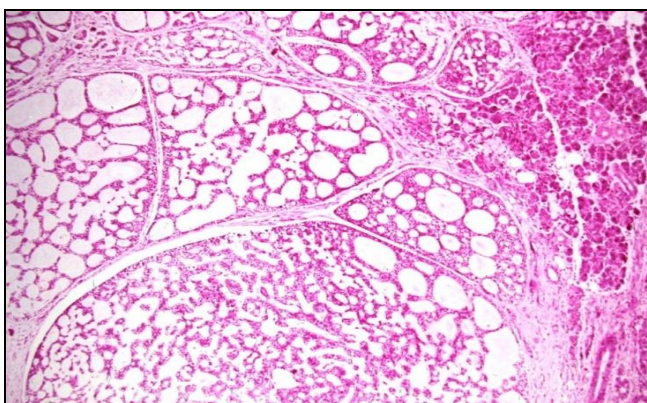


Fig 4: Typical adenoid cystic carcinoma showing cribriform pattern (HE stain, X 200).

Out of 38(74.5%) reported cases of pleomorphic adenoma, 25 were males and ^[13] were females with a male to female ratio of 1.9:1. Warthin's tumor (19.6%) was the 2nd commonest benign tumors as quoted by Chung *et al.* ^[15]. Basal cell Adenoma constitute 2 cases (3.9%) and Monomorphic Adenoma constitute 2 cases (3.9%).

Mucoepidermoid carcinoma was the most common malignant salivary gland tumor of parotid constituting 22 (48.8 %) of all malignant salivary gland tumors in the present series. Mucoepidermoid carcinoma was reported to be the most common malignant salivary gland tumor of parotid by Richardson *et al.* ^[12] and Spiro *et al.* ^[9]. This was similar to our study.

The next most common malignant salivary gland tumor observed was adenoid cystic carcinoma accounting for (33.3 %) of all malignant salivary gland tumors. Similarly, Potdar *et al.* ^[8], Richardson *et al.* ^[12], and Rewsuwan *et al.* ^[11] also found adenoid cystic carcinoma to be the 2nd most common malignant tumor of salivary glands. Vergas *et al.* ^[13], reported five cases of adenoid cystic carcinoma in their series accounting for 4% of all cases or 20% of malignant tumors. This was similar to our study. In contrast to the present study, Rewsuwan *et al.* ^[11] reported adenoid cystic carcinoma to be the most common malignant salivary gland tumor in their series.

Acinic cell carcinoma constitute 6 cases, 13.3% of total malignant salivary gland tumors. This is similar to the study of Nabil *et al.* ^[16] which has similar incidence in the study of malignant salivary gland tumors.

Polymorphous low-grade adenocarcinoma (PLA) occurs almost exclusively in minor salivary glands. In our study one

case was diagnosed as Polymorphous low-grade adenocarcinoma. One case (2.2%) was diagnosed Adenocarcinoma NOS. Batsakis *et al.* indicated that the true incidence to be 0.3% to 1.5%.

Conclusion

Salivary gland tumors are rare. Males were the most affected than females and pleomorphic adenoma was the most frequent lesion followed by warthins tumor among benign neoplasms. Mucoepidermoid carcinoma is the most common malignant neoplasm followed by adenoid cystic carcinoma.

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