Study of histomorphological patterns of salivary gland tumors

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Abstract

Introduction: Salivary gland neoplasms though relatively rare, have a varied histological spectrum both in the benign and malignant tumors and hence, are of interest to pathologists.
Aim of the study: To study the histomorphological patterns of salivary gland tumors.
Materials and Methods: This was a two year four month prospective study from January 2015 to April 2017. The salivary gland specimens received in histopathology section of Department of Pathology, Government Medical College, Nizamabad, Telangana were studied for light microscopy.
Results: Present study included 80 cases, with patient age ranging from 11 to 78 years and the male to female ratio was 3:1. In the present study 62.5% cases were benign and 37.5 % were malignant. Pleomorphic adenoma was the commonest benign tumor followed by Warthin's tumor, monomorphic adenoma and basal cell adenoma. Mucoepidermoid carcinoma was the most common malignant tumor followed by adenoid cystic carcinoma, acinic cell carcinoma and carcinoma ex pleomorphic adenoma.
Conclusion: Of all salivary glands, Parotid glands are most commonly affected by tumors. Pleomorphic adenoma is the most common benign tumor and Mucoepidermoid carcinoma is the most common malignant tumor in salivary glands.

Keywords: Mucoepidermoid Carcinoma, Pleomorphic adenoma, Salivary gland tumors.

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Introduction

Salivary gland neoplasms are relatively rare and account for around one percent of all neoplasms. They contribute to 3% to 10% of tumors in the head and neck region.[1,2] There is a variety of neoplasms in the salivary glands and each tumor more or less has its own clinicopathological features. Due to these distinct morphological and biologic behavioural features, salivary gland neoplasms arouse the interest of pathologists.[3]

The parotid glands are most the most common site for neoplasms followed by submandibular and sublingual glands. Females are more frequently affected than males in all age groups, but there is some gender variation according to the tumor type.[4] Occupational risks include exposure to asbestos, nickel compounds, or silica dust and employment in the wood-working and rubber industries.[4] Exposure to radiation is known to increase the risk of tumor development, and risk is also dose related.[5,6] The present study was undertaken to document the spectrum of salivary gland tumors in Nizamabad area.

Aim of the study

To study the histomorphological patterns of salivary gland tumors in Government Medical College, Nizamabad

Materials and Methods

The present study was a prospective study carried out in the department of Pathology at Government Medical College, Nizamabad, Telangana, over a period of two years and four months from January 2015 to April 2017. All the salivary gland specimens were received in the histopathology section of the department of Pathology. Clinical details were noted from the requisition forms. All the tissue specimens were fixed in 10% formalin, representative bits were taken and subjected to routine histopathological tissue processing. Then the processed tissue was embedded in paraffin wax. The sections were cut at five micron thickness, stained with hematoxylin and eosin (H and E) stain and examined under light microscope.

Inclusion criteria

1. All neoplastic salivary gland specimens received in the department of pathology were included.
2. Referral paraffin blocks of neoplastic salivary gland lesions for review were included.

Exclusion criteria

1. Non-neoplastic conditions of salivary glands diagnosed on histopathology were excluded.
2. Tumours that had recurred in the study period were excluded.
3. Patients with metastatic salivary gland tumors in whom only lymph nodes were excised or biopsied were excluded.

Observations and Results

Table 1: Age distribution

Age in years	No. of cases	Percentage (%)
10-20	04	5%
21-30	15	18.7%
31-40	30	37.5 %
41-50	21	26.2%
51-60	7	8.7%
70-80	03	3.7%
Total	80	100%

Present study included 80 cases and the patient age ranged from 11 years to 78 years. Most of the cases (37.5%) were in the fourth decade.

Gender distribution: There were 60 males accounting for 75% cases and 20 females, accounting for 25% cases. The male to female ratio was 3:1.

Table 2: Site of involvement

Site	No. of cases	%
Parotid	55	68.7%
Submandibular	20	25%
Minor salivary gland	05	6.2%
Total	80	99.9%

Present study showed parotid gland involvement more 55 (68.7%) followed by submandibular gland 20 (25%) and minor salivary gland showed only 5 (6.2 %) involvement.

Distribution of benign and malignant salivary gland tumors: In the present study 50 (62.5%) were benign and 30 (37.5 %) were malignant tumors.

Table 3: Distribution of benign salivary gland tumors

	No. of cases	%
Pleomorphic adenoma	35	70%
Warthin's tumor	05	10%
Monomorphic adenoma	05	10%
Basal cell adenoma	03	6%
Myoepithelioma	02	4%
Total	50	100%

Pleomorphic adenoma was the most common benign tumor (70%).

Table 4: Distribution of malignant tumors

Malignant salivary gland tumors	No. of cases	%
Mucoepidermoid carcinoma	15	50%
Adenoid cystic carcinoma	09	30%
Acinic cell carcinoma	02	6.6%
Carcinoma ex pleomorphic adenoma	02	6.6%
Poorly differentiated carcinoma	02	6.6%
Total	30	99.8%

Mucoepidermoid carcinoma was the most common malignant tumor (50%) followed by adenoid cystic carcinoma (30%).

Discussion

Age distribution: Present study (Table 1) included 80 cases, with patient age ranging from 11 to 78 years. Majority (37.5%) of the patients were in the 31-40 year age group. Least commonly affected age group was above 70 years. And showed male predominance i.e, 60 (75%) compared to females 20 (25%).

Shrestha et al[7] in their study reported the mean age as 44.76 years with age range of 12 to 75 years. Khattak et al[8] observed mean age for salivary gland tumors as 31.2 years and Venugopal et al[9] reported higher incidence in fourth and fifth decades.

Gender distribution: In the present study there was a male predominance with the male to female ratio being 3:1. Shrestha et al[7] and Khattak et al[8] also observed slight male predominance in their studies as 1.7:1 and 1.2:1 respectively. Venugopal et al[9] also found slight male preponderance. On the contrary, Laishram et al,[10] Sando et al[11] and Ochicha et al[12] found slight female predominace in their studies as 1:1.08, 0.7:1 and 1:1.1 respectively.

Site of involvement: In present study (Table 2) parotid gland was the most common site of involvement 55 (68.7%) cases, followed by submandibular gland 20 (25%) and minor salivary glands were least commonly affected, only 5 (6.2 %) cases.

Khattak et al[8] also observed that parotids were involved in 48 (82.35%) cases, followed by submandibular gland 11 (14.10%) cases, and minor salivary glands were less commonly affected as in 24.35% cases. Among the minor salivary glands, palatal lesions comprised 16.6% cases, followed by buccal mucosal gland involvement in 3.8% cases.

Venugopal et al[9] also observed Parotids to be most common site (83.63%) for salivary gland neoplasms.

Benign versus malignant lesions: In the present study, (Tables 3and 4), 50 (62.5%) were benign and 30 (37.5 %) were malignant.

Shrestha et al[7] reported more (62.5%) of malignant lesions and less (37.5%) of benign tumors. In the study by Laishram et al[10] among 78 neoplastic cases, benign tumors 56 (71.79%) cases out-numbered the malignant ones with 22 (28.21%) cases.

Table 5: Comparative studies of benign salivary gland tumors

Benign salivary gland tumor	Khattak et al[8]	Ochicha et al[12]	Venugopal et al[9]	Teeda et al[13]	Present study
Pleomorphic adenoma	57(73.8%)	38(48.7%)	76(84.1%)	24(77.4%)	35(70%)
Warthins tumor	2(2.5%)	-	3(3.6%)	3 (9.67%)	5(10%)
Monomorphic adenoma	5(6.4%)	-	-	3 (9.67%)	5(10%)
Basal cell adenoma	-	2 (2.0%)	3(3.6%)	-	3(6%)
Oxyphil adenoma	-	2 (2.0%)	-	-	-
Myoepithelioma	1(1.2%)	1(1.3%)	-	1 (3.2%)	2(4%)
Hemangioma	1(1.2%)	1 (1.3%)	-	-	-
Total	66	44	82	31	50

Various authors have reported pleomorphic adenoma as the commonest benign tumor. Our findings compare well with the above authors. (Table 5)

Table 6: Comparative studies of malignant salivary gland tumors

Malignant salivary gland tumor	Khattak et al[8]	Ochicha, et al[12]	Venugopal et al[9]	Teeda et al[13]	Present study
Mucoepidermoid carcinoma	5(6.4%)	18 (23.1%)	13(46.4%)	5 (50%)	15(50%)
Adenoid cystic carcinoma	3(3.8%)	4 (5.1)	9(32.1%)	2 (20%)	9(30%)
Acinic cell carcinoma	2(2.5 %)	1 (1.3%)	2(7.1%)	-	2(6.6%)
Carcinoma ex pleomorphic adenoma	-	-	-	1 (10%)	2(6.6%)
Poorly differentiated carcinoma	-	1 (1.3%)	-	1 (10%)	2(6.6%) 10
Adenocarcinoma NOS		4 (5.1%)	-	-	-
Salivary duct carcinoma	1(1.2%)	-	-	1 (10%)	-
Papillary adenocarcinoma	-	3(3.8)	2(7.1%)	-	-
Small cell carcinoma	-	1 (1.3%)	-	-	-
lymphoma	-	1 (1.3%)	-	-	-
Basal cell carcinoma	-	1 (1.3%)	1(3.5%)	-	-
Epithelial – myoepithelial carcinoma	-	-	1(3.5%)	-	-
Malignant mixed tumor	1(1.2%)	-	-	-	-
Total	12	34	28	10	30

Most common malignant salivary gland tumors as reported by various authors are mucoepidermoid carcinoma, followed by adenoid cystic carcinoma and acinic cell carcinoma in decreasing order of frequency. Our findings compare well with the observations of above authors. (Table 6)

Conclusion

Of all salivary glands, Parotid glands are most commonly affected by tumors. Salivary gland tumors are more common in the fourth decade. Pleomorphic adenoma is the most common benign tumor and Mucoepidermoid carcinoma is the most common malignant tumor in salivary glands.

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