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Dr. Aneesha Asok Kumar
Assistant Professor,
Department of Pathology,
MES Medical College,
Perintalmanna, Kolathur,
Kerala, India

Dr. Rakshitha HB
Assistant Professor,
Department of Pathology,
Adichunchanagiri Institute of
Medical Sciences, BG Nagara,
Mandya District, Karnataka,
India

Dr. Nanda Kishore Alva
Professor, Department of
Pathology, M S Ramaiah
Medical College, Bangalore,
Karnataka, India

Dr. Sharon Roshin Reginald
Assistant Professor,
Department of Pathology, DM
Wayanad Institute of Medical
Sciences, Meppadi, Naseera
Nagar, Kerala, India

Correspondence

Dr. Rakshitha HB
Assistant Professor,
Department of Pathology,
Adichunchanagiri Institute of
Medical Sciences, BG Nagara,
Mandya District, Karnataka,
India

Histopathological spectrum of salivary gland neoplasms in a tertiary care center

Dr. Aneesha Asok Kumar, Dr. Rakshitha HB, Dr. Nanda Kishore Alva and Dr. Sharon Roshin Reginald

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Abstract

Introduction: Salivary gland tumors are common neoplasms encountered in the head and neck region. Salivary gland neoplasms have varied histopathological findings with some of the tumors showing morphologic overlap. Majority of these neoplasms are benign in nature. They occur in both major and minor salivary glands. Benign tumors are more common in major salivary glands and malignant tumors generally occur in minor salivary glands. 80% of major salivary gland tumors occur in the parotid gland. Most of the minor salivary gland tumors are located in the palate. Proper diagnosis of malignant tumors with accurate staging is very important in the treatment and management of the patient.

Aims and Objectives: This study was carried out to study the histopathological spectrum of salivary gland neoplasms in a tertiary care center.

Materials and methods: The present study was conducted in the Pathology department of M.S Ramaiah Hospital on the surgically resected salivary gland tumor specimens received for routine histopathological evaluation, from January 2010 to December 2014. A total of 66 cases of salivary gland neoplasms were included in the study.

Results: Out of total 66 cases studied, 38 cases (57%) were benign and 28 cases (43%) were malignant. Most common age group for salivary gland tumor was between 40- 60 years. Among the tumors, female preponderance was seen in all except Warthin tumor. Pleomorphic adenoma was the most common benign tumor and mucoepidermoid carcinoma was the common malignant tumor. Parotid gland was the commonest site for various tumors, notable exception being adenoid cystic carcinoma, which showed predilection for the minor salivary glands. Pleomorphic adenoma was the most common salivary gland tumor representing 76.3% of benign and 43.9% of total salivary gland neoplasms

Conclusion: Due to the varied histopathological findings with some morphologic overlap in salivary gland neoplasms histopathological examination is the mainstay for diagnosis and clinical management. Pleomorphic adenoma is the most common neoplasm of salivary glands.

Benign tumors are more common in major salivary glands and malignant tumors are more common in minor salivary glands.

Keywords: Histopathology, salivary gland tumors, pleomorphic adenoma, benign neoplasms

Introduction

Salivary gland neoplasms account for less than 1% of all tumors and 3-5.5% of all head and neck tumors^[1, 2]. The worldwide annual incidence of salivary gland tumors ranges from 0.4 to 13.5 cases per 1 lakh. A salivary gland neoplasm consists of a wide variety of benign and malignant tumors. These tumors not uncommonly pose problems in diagnosis due to rarity, broad morphologic spectrum and morphologic overlap among the different tumor types. These tumors exhibit differences in biological behavior and also in prognosis.

Parotid gland accounts for nearly 80% of the salivary gland tumors followed by the submandibular gland accounting for approximately 10-15% of the tumors. 80-85% of the tumors are benign in nature with Pleomorphic adenoma being the most common tumor constituting 70% of benign tumours^[3].

Salivary gland tumors are commonly seen in 6th and 7th decades of life^[4, 5]. Incidence of Benign Salivary gland tumors are more in females whereas malignant tumors are more in Males^[6]. Mucoepidermoid carcinoma is the most common malignant tumor which involves mostly the parotid gland followed by the minor and submandibular gland^[7].

Adenoid cystic carcinoma is a highly malignant neoplasm which is more commonly seen in the minor salivary glands^[8].

Acinic cell carcinoma accounts for 1-3% of all salivary gland tumor with male predominance and a peak incidence in the third decade of life [9].

Although FNAC is a tool for pre-operative evaluation, Histopathology still remains the gold standard in giving the final diagnosis.

Objectives

To study the histopathological spectrum of salivary gland neoplasms in patients presenting to a tertiary care center.

Materials and methods

The present study was conducted in the Pathology department of M.S Ramaiah Hospital on the surgically resected salivary gland tumor specimens received for routine histopathological evaluation, from January 2010 to December 2014.

Method of data Collection

For prospective cases, we studied the salivary gland tumor specimens received in the Pathology department in 10% formalin. In every case the standard protocol for surgical grossing of the specimens was followed.

After conventional processing, paraffin sections of 5µm thickness were stained by haematoxylin and eosin (H & E) for histopathological study. For the retrospective cases, the histopathology reports, slides and paraffin blocks were retrieved from the archives. Additional sections were made from the retrieved paraffin blocks.

Sample size - A total of 66 cases were studied.

Inclusion criteria

All epithelial origin, major and minor salivary gland tumors

Exclusion criteria

1. All inflammatory and cystic lesions of salivary glands.
2. All mesenchymal origin salivary gland tumors.
3. Metastasis in salivary glands.

Results

The present study included 66 cases of salivary gland neoplasms that were reported in the Department of Pathology, M.S Ramaiah medical college over a period of four years from January 2010 to December 2014.

Table 1: Distribution of Benign tumor in patients

Tumor	No. of patients	%
Pleomorphic adenoma	29	44
Warthin tumour	9	13
Total	38	57

Out of 66 cases, 38 cases (57%) were benign tumors. Most common benign salivary gland tumor was pleomorphic adenoma (Fig 1), 29 cases (44%). Warthin tumor (Fig 2) constituted 9 cases (13%) (Table 1).

Table 2: Distribution of Malignant tumor in patients

Tumor	No of patients	%
Mucoepidermoid carcinoma	19	29
Adenoid cystic carcinoma	7	11
Acinic cell carcinoma	2	3.0
Total	28	43

There were 28 cases (43%) of malignant salivary gland tumors. Most common malignant tumor was mucoepidermoid carcinoma (Fig 3), 19 cases (29%) (Table 2).

Table 3: Age distribution in patients studied

Age in years	No. of patients	%
<20	4	6.1
20-30	9	13.6
31-40	15	22.7
41-50	18	27.3
51-60	12	18.2
61-70	7	10.6
>70	1	1.5
Total	66	100.0

Most of the patients with salivary gland tumors were between the age group of 41-50 (Table 3).

Table 4: Age distribution of patients studied according to tumor type

Age in years	Pleomorphic adenoma	Warthin Tumor	Mucoepidermoid Carcinoma	Adenoid Cystic Carcinoma	Acinic Cell Carcinoma
<20	10.3%	0%	5.3%	0%	0%
20-30	13.8%	0%	21.1%	14.3%	0%
31-40	27.6%	0%	21.1%	41.9%	0%
41-50	31%	11.1%	31.6%	0%	100%
51-60	13.8%	44.4%	5.3%	43.9%	0%
61-70	3.4%	33.3%	15.8%	0%	0%
>70	0%	11.1%	0%	0%	0%

Most of the salivary gland tumors were common between the age group of 41-60. Mucoepidermoid carcinoma showed a wide age distribution (Table 4).

Table 5: Gender distribution according to tumor type

Gender	Pleomorphic adenoma	Warthin Tumor	Mucoepidermoid Carcinoma	Adenoid Cystic Carcinoma	Acinic Cell Carcinoma
Male	48.3%	88.9%	36.8%	42.9%	0%
Female	51.7%	11.1%	63.2%	57.1%	100%

All salivary gland tumors were common in women except warthin tumour which was common in males (Table 5).

Table 6: Location of tumor

Location	Pleomorphic adenoma	Warthin Tumor	Mucoepidermoid Carcinoma	Adenoid Cystic Carcinoma	Acinic Cell Carcinoma	Total
Parotid	72.4%	100%	78.9%	14.3%	100%	72.7%
Submandibular	6.9%	0%	0%	0%	0%	3%
Minor salivary Gland	20.7%	0%	21.1%	85.7%	0%	24.2%

Most common location of salivary gland tumor was parotid except in case of Adenoid Cystic Carcinoma which was more common in minor salivary glands (Table 6).

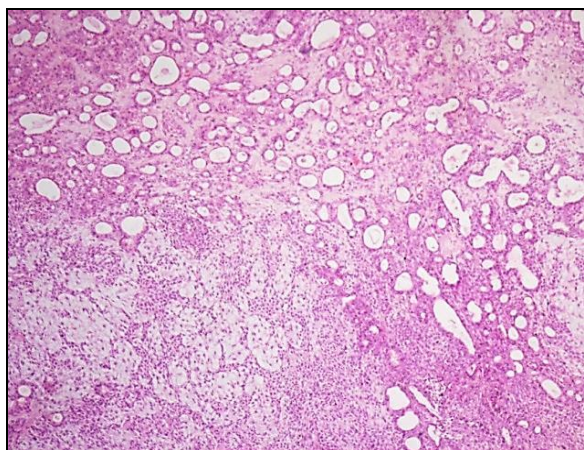


Fig 1: Microscopic appearance of Pleomorphic adenoma showing both epithelial and mesenchymal components. H&E stain (10X).

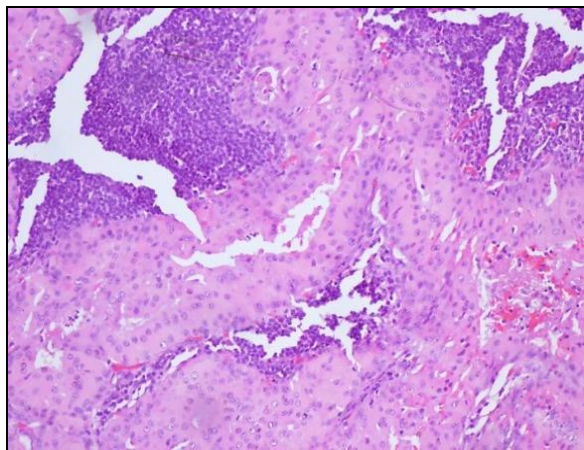


Fig 2: Microscopic appearance of Warthin tumour. H&E stain (10X).

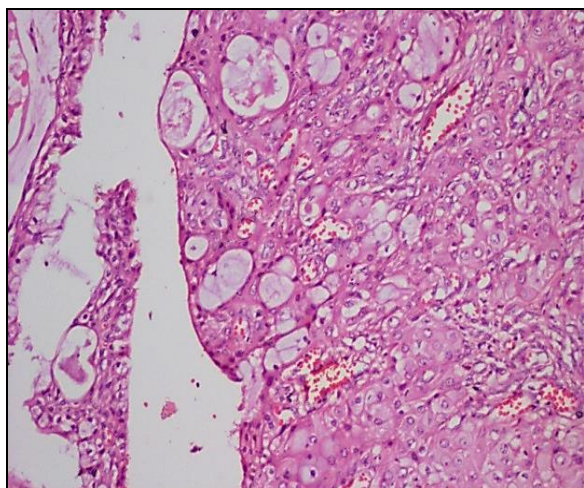


Fig 3: Microscopic appearance of Mucoepidermoid Carcinoma showing epidermoid cells and mucous cells. H&E stain (10X).

Discussion

Present study included 66 cases of salivary gland neoplasms. Most of the patients with salivary gland tumors were between the age group of 41-60. All salivary gland tumors were common in women except warthin tumor which was common in males. Dandapat *et al.* [10] and Rewsuwan *et al.* [11] also reported a female preponderance in their series.

Benign tumors constituted majority of the cases. Out of 66 cases, 38 cases (57%) were benign tumors and 28 cases (43%) were malignant tumors. This observation was similar to the studies by Nepal *et al.* [12], Ali *et al.* [13] and Moghadam SA *et al.* [14] in which they have observed redominance of benign tumors over the malignant ones.

Pleomorphic Adenoma was the most common salivary gland tumor followed by warthin tumor. There were 29 cases (44%) of Pleomorphic adenoma, representing 76.3% of benign and 43.9% of total salivary gland neoplasms.

9 cases (13%) of Warthin Tumour were encountered with all of them presenting in parotid glands of elderly males. The observed findings were similar to the studies conducted by Shrestha S *et al.* [15], Bashir *et al.* [16] and Ali *et al.* [13] in which pleomorphic adenoma was the most common benign tumor followed by Warthin tumor.

Most common malignant tumor in our study was mucoepidermoid carcinoma which accounted for 19 cases (29%).

Mucoepidermoid carcinoma was reported to be the most common malignant salivary gland tumor. Richardson *et al.* [17] and Ali *et al.* [13] also observed mucoepidermoid carcinoma to be the most common salivary gland tumor in their studies.

Adenoid Cystic Carcinoma constituted 10.6% of all tumors and 25% of malignant ones. It is the second common malignant tumor in our study. This observation is similar to studies by Vergas *et al.* [18]. The common location of Adenoid cystic carcinoma was in minor salivary glands this is similar to the observations done by Bhavani *et al.* [19] and Rewusuwan *et al.* [11]. There were 2 cases (3%) of Acinic cell carcinoma in our study. Both the cases were seen in the Parotid gland.

In our study parotid gland was the commonest site for salivary gland tumors (72.7%) which is similar to the observations by Ahmed *et al.* [20], Pablo *et al.* [21], Rewusuwan *et al.* [11] and Bashir S *et al.* [22].

Conclusion

Our study revealed that benign tumors are more common than malignant tumors in salivary gland. Pleomorphic adenoma is the most common benign tumor and mucoepidermoid carcinoma is the common malignant tumor in this study. Most common age group for salivary gland tumor is between 40-60 years. Among the tumors, female preponderance is seen in all except Warthin tumor. Parotid gland is the commonest site for various tumors, notable

exception being adenoid cystic carcinoma, which showed predilection for the minor salivary glands. Salivary gland neoplasms show overlapping features. Proper diagnosis needs consideration of histological findings to differentiate between benign and malignant neoplasms.

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