

HISTOPATHOLOGICAL STUDY OF SALIVARY GLAND NEOPLASMS – A RETROSPECTIVE STUDY

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Abstract

Background: Salivary gland tumours in the head and neck are a rather uncommon kind of cancer. The study's objective was to track the prevalence, histological characteristics, and age and sex distribution of salivary gland neoplasms. **Materials and Methods:** From May 2019 to April 2022, cases that presented to the Government General Hospital, Guntur with swellings in the head and neck region were sent to the pathology department. Cases that were identified as salivary gland neoplasms were included in the present study (108 cases), and histopathological analysis was completed. **Results:** Of the 108 cases, 64 (59.3%) were benign and 44 (40.7%) were malignant, with a M:F ratio of 1.9:1. The age range of the patients included in the study was 10 to 80 years. The majority of benign tumours (67.1%) are pleomorphic adenomas, followed by Warthin's tumour (26.6%), basal cell adenomas (4.6%), and monomorphic adenomas (1.6%). The majority of malignant tumours (47.7%) were mucoepidermoid carcinomas, which were followed by adenoid cystic carcinoma (25%), acinic cell carcinoma (11.4%), polymorphous low grade adenocarcinoma (6.8%), adenocarcinoma NOS (2.2%), salivary duct carcinoma (2.2%), Clear cell carcinoma (2.2%), and basal cell adenocarcinoma (2.2%). **Conclusion:** Males were more affected than females, and among benign neoplasms, pleomorphic adenoma and warthin's tumour were the most prevalent lesions. Mucoepidermoid carcinoma is the most common variety among the malignant tumours followed by adenoid cystic carcinoma.

INTRODUCTION

Salivary glands are glands of exocrine origin; they are responsible for the production of saliva; and they are found within the mouth and the oropharynx. The parotid, submandibular, and sublingual glands are the three principal pairs of salivary glands in the human body.^[1] Although salivary gland lesions are very uncommon, they are responsible for less than one percent of all cancers and around three point nine percent of all epithelial neoplasms seen in the head and neck region.^[2,3] The incidence of these tumours ranges from 0.3 to 12.5 per 100,000 people around the world. The parotid gland is responsible for approximately 79% of the salivary gland tumours, while the submandibular salivary gland is responsible for between 10% and 15%. 4 around 70-80% parotid tumours and 45-50% of submandibular tumours are of benign origin. However, the largest occurrence of benign salivary gland tumours is recorded in people in their third and fourth decades, whereas the highest incidence of malignant salivary gland tumours is reported in people in their fourth and fifth decades. Salivary gland tumours were

found in all age groups. The purpose of the research was to investigate the many different histological characteristics of salivary gland tumours, as well as the frequency of their occurrence and the age and gender breakdown of those affected.^[3]

MATERIALS AND METHODS

From May 2019 until April 2022, the cases that were brought to the Government General Hospital in Guntur with swellings in the head and in the neck region were sent to the pathology department. The cases that were diagnosed as salivary gland neoplasms were the ones that were included in the present study. The age, gender, frequency, and incidence of several benign and malignant salivary gland tumours were detected. These tumours were found in both major and small salivary glands. The large salivary glands accounted for the majority of the cases. After being processed into paraffin embedded slices, each of the biopsy specimens were stained with haematoxylin and eosin. The specimens were then fixed in 10% formalin for 24 hours (H&E).

RESULTS

The 108 cases that were recognised as salivary gland neoplasms out of a total of 164 biopsies taken from head and neck swellings in Government General Hospital, Guntur throughout the study period were all included in our research. These biopsies were taken during the study period. In total, there were 108 cases, 64 (59.3%) of which involved benign neoplasms, and 44 (40.7%) involved malignant neoplasms [Table 3]. This represents a ratio of 1.45:1 between the two types. Both benign and malignant salivary gland tumours are more common in men. Males are more likely to be affected. The ratio of males to females affected by salivary gland tumours is 1.9 to 1. [Table 2]. The peak incidence of benign salivary gland neoplasms occurred in the second and third decades, while the

highest incidence of malignant salivary gland neoplasms occurred in the fourth and fifth decades. The peak incidence of benign salivary gland neoplasms occurred in the second and third decades [Table 1]. [Table 3] demonstrates the distribution of benign neoplasms found in salivary glands. Among benign salivary gland neoplasms, pleomorphic adenoma made up 67.1% [Figure 1] of all cases, making it the most common histologic type. Warthin's tumour made up 26.6% of all cases, making it the second most common variant [Figure 2]. Malignant tumours in salivary glands neoplasms and their distribution is illustrated in Table 3. The histological type of mucoepidermoid carcinoma, which accounts for 47.72 percent of all malignant salivary gland neoplasms, is the most prevalent, followed by adenoid cystic carcinoma, which accounts for 25 percent [Table 3].

Table 1: Distribution of salivary gland neoplasms according to Age

Distribution of Ae	Benign neoplams	Malignant neoplasms	Total Number of patients
10-20	2	1	3
21-30	10	4	14
31-40	26	6	32
41-50	15	16	31
51-60	5	10	15
61-70	4	5	9
70-80	2	2	4

Table 2: Distribution of benign and malignant salivary neoplasms according to sex

Sex	Total cases	Benign	Malignant
Male	71(65.7%)	41 (57.7%)	30 (42.3%)
Female	37(34.3%)	23 (62.1%)	14 (37.9%)

Table 3: Distribution of benign and malignant salivary gland neoplasms

S no	Benign	Number of cases	Malignant	Number of cases
1	Pleomorphic Adenoma	43	Mucoepidermoid carcinoma	21
2	Warthin's tumor	17	Adenoid cystic carcinoma	11
3	Basal cell Adenoma	3	Acinic cell carcinoma	5
4	Monomorphic Adenoma	1	Polymorphous low grade adenocarcinoma	3
5			Adenocarcinoma NOS	1
6			Salivary duct carcinoma	1
7			Clear cell carcinoma	1
8			Basal cell adenocracinoma	1

DISCUSSION

In the current investigation of 108 cases of neoplasms found in the salivary glands, 64 (59.3%) were found to be of a benign type, whereas 44 (40.7%), were found to be of a malignant nature (Table 3). This was consistent with the findings of the previous investigations, which found that benign salivary neoplasms were significantly more common than malignant ones.^[4,5,6] In patients between the ages of 31 and 40, the incidence of salivary gland neoplasms with a benign origin was at its highest, while the peak incidence of salivary gland neoplasms with a malignant origin occurred in patients between the ages of 41 and 50. According to Chatterjee and colleagues' research, the peak incidence of benign tumours occurs in the third decade, followed by cases in the fourth. This was very comparable to the research that we did.^[7]

According to the findings of his research, malignant tumours were more prevalent among patients in their 50s. According to the findings of our research, tumours of the salivary gland are approximately 1.9 times more common in males than they are in females. This is comparable to the series that Potdar GG and colleagues reported. Spiro et al.^[8,9] However, this was not in accordance with the case series that were published by Dandapat et al,^[10] and Rewsuwan et al,^[11] which revealed a higher incidence of salivary gland cancers in females than in males. Pleomorphic adenoma was the most prevalent benign salivary gland tumour, and it most commonly occurred in the parotid salivary gland, followed by the submandibular salivary gland, and then in the minor salivary glands.^[12,13,14] Pleomorphic adenoma was the most common histologic form of benign salivary gland tumour at all locations, as was found to be the case in the

present investigation, which produced similar findings. In a total of 43(67.1%) pleomorphic adenomas diagnosed in our investigation, majority of them are of origin in the parotid gland.

Histopathological Pattern of Salivary Gland Tumors

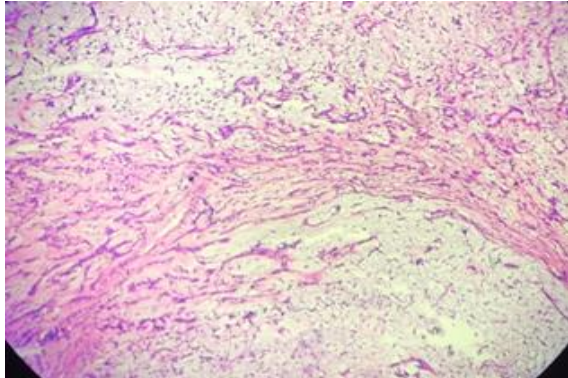


Figure 1: Pleomorphic Adenoma comprising of both the epithelial and the mesenchymal components showing myxoid and chondroid areas (H&E stain X 200).

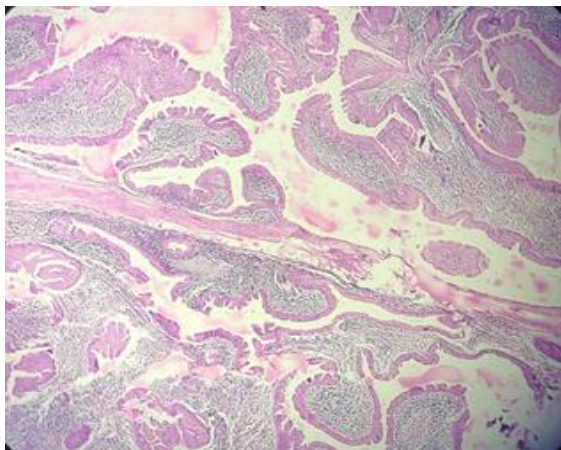


Figure 2: Warthin's tumour. The papillary structures showing a lining of oncocytic cells and the beneath stroma showing abundant lymphocytes (H&E stain, X 200).

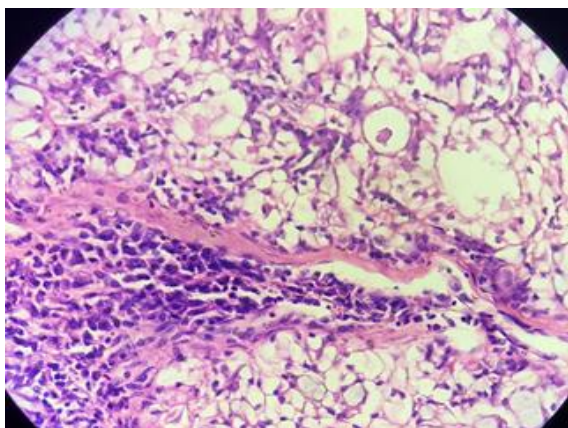


Figure 3: Mucoepidermoid carcinoma (Low Grade) showing glandular spaces comprising of mucin secreting cells and intermediate type of cells (HE stain, X200).

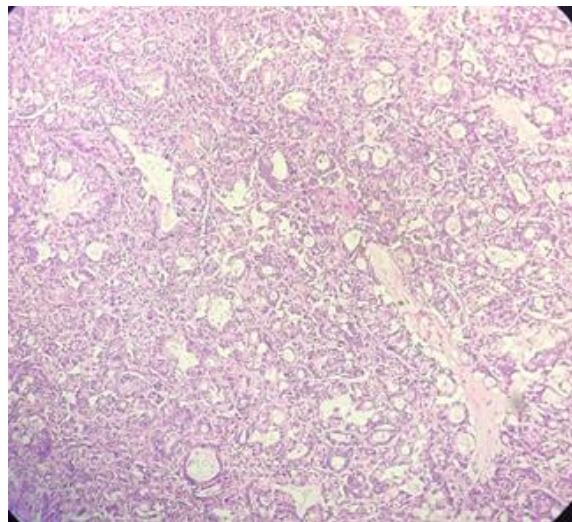


Figure 4: Polymorphous adenocarcinoma low grade showing uniform looking cells in glandular, cribriform, trabecular pattern (HE stain, X 200).

Among the 43 instances (67.2%) that were classified as having pleomorphic adenoma, were observed in the males, while only were observed in the girls, resulting in a male to female ratio of 1.9:1.^[15] According to Chung et al,^[16] Warthin's tumour [17] (26.5% of cases) was the second most prevalent benign salivary gland neoplasm. Basal cell Adenoma constitute 3 instances (4.7%) and Monomorphic Adenoma constitute 1 case (1.6%). Mucoepidermoid carcinoma was the most common tumour found in malignant salivary gland neoplasms. The parotid gland is the site of origin for the majority of cases of mucoepidermoid carcinoma, which made up 21 (47.7% of all malignant salivary gland neoplasms) of the cases in the study that was the basis for this research. According to Richardson et al,^[12] and Spiro et al 9, the mucoepidermoid carcinoma that develops in the parotid gland is the most prevalent type of malignant salivary gland tumour. This was comparable to the study being discussed.

The adenoid cystic carcinoma was the second most common one among the malignant salivary gland neoplasms that were observed. It was responsible for 11 (25%) of all of the malignant salivary gland tumours. Similar findings were reported by Potdar et al,^[8] Richardson et al,^[12] and Rewsuwan et al.^[11] All three groups discovered that the histological type of adenoid cystic carcinoma was the second most common one among malignant salivary glands neoplasms. Vergas et al,^[13] identified five cases of the variations of adenoid cystic carcinoma in their series, accounting for 3.9% of all cases or 19% of malignant salivary gland neoplasms. This percentage accounts for 19% of malignant salivary gland neoplasms. This was in line with the findings of our research. In contrast to the findings of the current investigation, Rewsuwan et al,^[11] found that the histologic type of adenoid cystic carcinoma was the most prevalent form of malignant salivary gland tumour among the patients in their case series. This

can be attributed to regional variation of research population.

There are 5 cases of acinic cell carcinoma, which accounts for 11.4% of the total number of malignant neoplasms that originate in the salivary glands. This is comparable to the research done by Nabil and colleagues,^[16] which found a comparable incidence of malignant salivary gland neoplasms in their investigation of salivary gland neoplasms.

The minor salivary glands are the only ones that can develop polymorphous low-grade adenocarcinoma, also known as PLA. In the course of our research, three patients, or 6.8%, were found to have polymorphous adenocarcinoma (Low Grade). Adenocarcinoma not otherwise specified was detected in one case (2.2%). According to the findings of Batsakis et al., the true mode of incidence ranges from 0.29% to 1.49%. One instance of salivary duct carcinoma, one instance of clear cell carcinoma, and one instance of basal cell adenocarcinoma are all included in the total number of malignant salivary gland neoplasms, each accounting for 2.2% of the total.

CONCLUSION

Neoplasms that originate in the salivary gland are uncommon. The frequency of these tumours was higher in males than in females, and the pleomorphic adenoma was the most prevalent histological type among benign salivary gland neoplasms. The Warthin's tumour was the second most common benign salivary gland neoplasm. After adenoid cystic carcinoma, the histological subtype known as Mucoepidermoid carcinoma is the most prevalent kind of malignant tumour. It is followed by adenoid cystic carcinoma.

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