Histopathological Study of Neoplastic and Non-neoplastic Lesions of Salivary Gland: An Institutional Experience of 5 Years

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Abstract

Background: There is a wide spectrum of salivary gland lesions with morphologically and clinically diversity which is a difficult task for histopathological interpretation. There are three major salivary glands-parotid, submandibular, and sublingual as well as minor salivary glands distributed throughout the mucosa of the oral cavity. Neoplastic and non-neoplastic disease may develop within any of these.

Aims and Objectives: (1) To study the morphological appearances of salivary gland lesions, (2) To study the prevalence of salivary gland lesions, (3) To evaluate the incidence, age at the occurrence, and sex ratio among the patients with salivary gland lesions.

Materials and Methods: Retrospective study was done for 5 years from January 2011 to 2015 December. The study was done on 55 specimens from patients with salivary gland lesions which are referred to the Department of Pathology from Department of ENT and Surgery, SVS Medical College and Hospital, Mahabubnagar, Telangana. Salivary gland specimens were immediately fixed in 10% formalin and processed by paraffin embedding. Sections were stained by hematoxylin and eosin stain. Finally, microscopic examination was done to diagnose.

Results: Of 55 cases, 40 cases are neoplastic and 15 cases are non-neoplastic. Among 40 neoplastic lesions, 30 cases are benign and 10 cases are malignant. Most common benign tumor of salivary glands is pleomorphic adenoma followed by Warthin's tumor. Most common malignant tumor of salivary glands is mucoepidermoid carcinoma followed by adenoid cystic carcinoma.

Conclusion: Histopathological study of salivary gland lesions is the most important method in establishing the final diagnosis.

Key words: Mucoepidermoid carcinoma, Pleomorphic adenoma, Salivary gland

INTRODUCTION

Salivary gland lesions constitute <1% of all tumors and about 4% of all epithelial neoplasms in head and neck region.¹ These comprise a wide variety of benign and malignant neoplasms, non-neoplastic lesions which exhibit a difference in biological behavior. Non-neoplastic lesions range from an inflammatory disorder of infectious,



granulomatous, or autoimmune etiology to obstructive, developmental, and idiopathic disorders. These often clinically present as tumors and may have pathological feature similar to some of the neoplasm.²

Salivary gland tumors can show a striking range of morphological diversity between different tumor types and sometimes within an individual tumor mass. In addition, hybrid tumors, dedifferentiation and the propensity for some benign tumors to progress to malignancy can confound histopathological interpretation. About 80% of the salivary gland tumors are found in the parotid gland, 10-15% in the submandibular gland. The majority of salivary gland tumors (80-85%) are of benign histology, with pleomorphic adenoma being the most common,³ constituting 70% of benign tumors. The probability of

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Anil, Raghu, C. Sekhar: Histopathological Study of Neoplastic and Non Neoplastic Lesions of Salivary Gland: An Institutional Experience of Five years

malignancy is relatively inversely proportional to the size of the gland. Overall, benign tumors of the salivary glands tend to present somewhat earlier than malignant ones. Pleomorphic adenoma is the most common among benign tumors. Mucoepidermoid carcinoma is the most common among malignant tumors. Affected patients are between 15 and 70 years age group. Predominantly, females are affected.

Aims and Objectives

- 1. To study the morphological appearances of salivary gland lesions
- 2. To study the prevalence of salivary gland lesions
- 3. To evaluate the incidence, age at the occurrence, sex ratio among the patients with salivary gland lesions.

MATERIALS AND METHODS

A retrospective study was done for 5 years from January 2011 to 2015 December. A study was done on 55 specimens from patients with salivary gland lesions which are referred to the Department of Pathology from Department of ENT and Surgery, SVS Medical College and Hospital, Mahabubnagar, Telangana. Salivary gland specimens were immediately fixed in 10% formalin and processed by paraffin embedding. Sections were stained by hematoxylin and eosin stain. Finally, microscopic examination was done to diagnose.

RESULTS AND OBSERVATIONS

A total of 55 specimens of salivary gland specimens were reviewed. Out of 55 cases (Table 5), 40 cases are neoplastic and 15 cases are non-neoplastic. Among 40 neoplastic lesions, 30 cases are benign, and 10 cases are malignant. Most common benign tumor of salivary glands is Pleomorphic adenoma followed by Warthin's tumor. Most common malignant tumor of salivary glands is mucoepidermoid carcinoma followed by adenoid cystic carcinoma. Affected patients are between 15 and 70 years age group. Predominantly females are affected.

A maximum number of cases are seen in parotid gland constituting 37 cases (67.27%) followed by submandibular gland constituting 14 cases (25.45%) (Table 1).

A maximum number of cases are seen in 41-50-year age group followed by 51-60-year age group. Table 2 shows female preponderance with M:F ratio 0.5:1.

Nature of salivary gland lesions are non-neoplastic lesions are 15 cases (27.27%) Neoplastic lesions are 40 cases (72.72%) (Table 3).

A maximum number of salivary gland neoplasms are benign neoplasms are 30 cases (75%) malignant cases are 10 cases (25%) (Table 4).

DISCUSSION

The salivary gland disorders represent a distinct group of disorders affecting both the major and minor glands. These conditions range from inflammatory disorders of infectious, granulomatous, autoimmune etiology to obstructive, developmental, idiopathic disorders, and neoplasm.

Among the salivary lesions studied, maximum cases were neoplasms - 40 cases (72.72%) and the non-neoplastic

Table 1: Site of lesion						
Site	Parotid gland	Submandibular gland	Minor salivary gland	Total		
Total (%)	37 (67.27)	14 (25.45)	4 (7.27)	55 (100)		

Table 2: Age and sex incidence

Sex	Number of cases (%)
Males	20 (36.36)
Females	35 (63.63)
Total	55 (100)

Table 3: Nature of salivary gland lesions					
Nature	Non-neoplastic	Neoplastic	Total		
Number of cases (%)	15 (27.27)	40 (72.72)	55 (100)		

Table 4: Incidence of salivary gland neoplasms		
Nature	Number of cases (%)	
Benign	30 (75)	
Malignant	10 (25)	
Total	40 (100)	

Table 5: Morphological spectrum of salivary glandlesions

Lesion	Number of cases (%)
Cysts	6 (10.9)
Sialadenitis	9 (16.36)
Pleomorphic adenoma	24 (43.63)
Warthin's tumor	6 (10.9)
Mucoepidermoid carcinoma	4 (7.27)
Adenoid cystic carcinoma	2 (3.63)
Carcinoma ex-pleomorphic	2 (3.63)
Poorly differentiated	2 (3.63)
Total	55 (100)

Anil, Raghu, C. Sekhar: Histopathological Study of Neoplastic and Non Neoplastic Lesions of Salivary Gland: An Institutional Experience of Five years



Figure 1: (a and b) Pleomorphic adenoma gross and cut section



Figure 2: (a and b) Microscopic pictures of pleomorphic adenoma low power view and high power view



Figure 3: (a and b) Mucoepidermoid carcinoma gross and cut section

cases were 15 (27.27%). Among the neoplasms studied, 30 (75%) cases were benign and 10 (25%) were malignant. This observation was comparable to most of the studies including case series by Nepal *et al.*,⁴ Ali *et al.*,⁵ and Atarbashi Moghadam *et al.*⁶

Among the neoplastic lesions, maximum incidence was seen with benign neoplasms. Among the benign neoplasms, pleomorphic adenoma (Figures 1 and 2) was frequently seen followed by Warthin's tumor. Among the malignant neoplasms, more commonly is Mucoepidermoid carcinoma (Figuress. 3 and 4) followed by adenoid cystic carcinoma (Figure 5).

Out of 15 non-neoplastic cases, there were 6 cystic lesions (10.9%) and 9 (16.36%) inflammatory lesions, sialadenitis



Figure 4: (a and b) Microscopic pictures of mucoepidermoid carcinoma low power view and high power view



Figure 5: (a and b) Microscopic pictures of adenoid cystic carcinoma low power view and high power view



Figure 6: (a and b) Microscopic pictures of sialadenitis and salivary duct cyst

(Figure 6). The majority of cystic lesions occurred in parotid gland. Among the cysts in the minor salivary glands, mucus retention cysts were common. Benign salivary gland tumors were more common in age group of 41-50 years. The youngest age of occurrence of benign salivary neoplasms was 15 years and the oldest age observed was 65 years. Both the cases were pleomorphic adenomas. The peak age incidence observed for malignant salivary gland tumors was 61-70 years. The youngest age for the Anil, Raghu, C. Sekhar: Histopathological Study of Neoplastic and Non Neoplastic Lesions of Salivary Gland: An Institutional Experience of Five years

occurrence of malignancy observed in the present study was 35 years and the oldest age observed was 64 years.

Shrestha *et al.*⁷ have done a retrospective study of 176 cases of salivary gland tumors at B. P. Koirala Memorial Cancer Hospital; pleomorphic adenoma was found to be the most common benign tumor (72.7%), followed by Warthin tumor (15.1%). Bashir *et al.*⁸ conducted a combination study was done with retrospective data of 8 years and prospective data of 2 years. Out of total 80 cases, 49 (61.25%) were benign and 31 (38.75%) were malignant. Parotid was the most common site for the location of tumors (65%) followed by submandibular (25%) and minor salivary glands (10%). Pleomorphic adenoma was the most common salivary gland tumor observed in both sexes. Mucoepidermoid carcinoma was the most common among the malignant salivary gland tumors followed by adenoid cystic carcinoma.

Dandapat *et al.*⁹ and Rewsuwan *et al.*¹⁰ also reported a female preponderance in their series Parotid was the most common site of lesion (73.5%) in this series followed by submandibular gland (16.9%) and minor salivary glands (9.4%).

Out of 55 cases studied there were 24 cases of pleomorphic adenoma, 6 cases were of cyst, 6 cases of Warthin's tumor, 4 cases of mucoepidermoid carcinoma, 2 cases of adenoid cystic carcinoma, 2 cases of poorly differentiated carcinoma, and 2 cases of carcinoma ex-pleomorphic adenoma. Out of 6 cysts received 3 cases were seen in the parotid gland, 1 case was in the submandibular gland, and 2 cases were in the minor salivary gland. Most of the cysts were of mucus retention type and mostly occurred in the minor salivary glands. Those in the major salivary glands were salivary duct cysts and retention cysts.

According to Foote and Frazell¹¹65-75% of the tumors are pleomorphic adenomas. 24 cases (43.63%) encountered in parotid, submandibular, and minor salivary glands. Most of these cases occurred in the parotid gland. Mucoepidermoid carcinoma was reported to be the most common malignant salivary gland tumor of parotid by Richardson *et al.*¹² There were 2 cases of adenoid cystic carcinoma. It is the second most common malignancy of the salivary glands in the present study.¹³

SUMMARY AND CONCLUSION

Following observations are noted.

- 1. During the 5 years study, total 55 cases of salivary gland lesions were studied
- 2. There were 20 males (36.63%) and 35 females (63.63%) with an M:F ratio of 0.5:1
- 3. Parotid was the most common site of lesion (67.27%)
- 4. Maximum cases were neoplasms 40 cases (72.72%) and the non-neoplastic lesions were 15 cases (27.27%)
- 5. Among the neoplasms, 30 cases were benign (75%), and 10 cases were malignant (25%)
- 6. Majority of cases among benign salivary gland tumors were pleomorphic adenoma
- 7. Majority of cases among malignant salivary gland tumors were mucoepidermoid carcinoma
- 8. The majority of cases among non-neoplastic lesions were inflammatory lesions, sialadenitis.

REFERENCES

- Luukkaa H. Salivary Gland Cancer in Finland Incidence, Histological Distribution, Outcome and Prognostic Factors. Turku, Finland: University of Turku; 2010.
- Barnes L, Everson JW, Reuichart P, Sidrawsky D. WHO classification of tumours. Pathology and Genetics of Head and Neck Tumours. Vol. 9. Lyon: IARC Press; 2005. p. 209-81.
- Spiro JD, Spiro RH. Salivary tumors. In: Shah JP, Decker SB, editors. Cancer of the Head and Neck. Hamilton: Decker BC Inc.; 2001. p. 240-50.
- Nepal A, Chettri ST, Joshi RR, Bhattarai M, Ghimire A, Karki S. Primary salivary gland tumors in eastern Nepal tertiary care hospital. J Nepal Health Res Counc 2010;8:31-4.
- Ali NS, Nawaz A, Rajput S, Ikram M. Parotidectomy: A review of 112 patients treated at a teaching hospital in Pakistan. Asian Pac J Cancer Prev 2010;11:1111-3.
- Atarbashi Moghadam S, Atarbashi Moghadam F, Dadfar M. Epithelial salivary gland tumors in Ahvaz, Southwest of Iran. J Dent Res Dent Clin Dent Prospects 2010;4:120-3.
- 7. Shrestha S, Pandey G, Pun CB, Bhatta R, Shahi R. Histopathological pattern of salivary gland tumors. J Pathol Nepal 2014;4:520.
- Bashir S, Mustafa F, Malla HA, Khan AH, Rasool M, Sharma S. Histopathological spectrum of salivary gland tumors: A 10 year experience. Sch J Appl Med Sci 2013;1:1070-4.
- Dandapat MC, Rath BK, Patnaik BK, Dash SN. Tumors of salivary glands. Indian J Surg 1991;53:200.
- Rewsuwan S, Settakorn J, Mahanupab P. Salivary gland tumors in Maharaj Nakorn Chiang Mai Hospital: A retrospective study of 198 cases. Chiang Mai Med Bull 2006;45:45-53.
- 11. Foote FW Jr, Frazell EL. Tumors of the major salivary glands. Cancer 1953;6:1065-133.
- 12. Richardson GS, Dickason WL, Gaisford JC, Hanna DC. Tumors of salivary glands. An analysis of 752 cases. Plast Reconstr Surg 1975;55:131-8.

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