Histopathological Study of Salivary Gland Tumours

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ABSTRACT

BACKGROUND

Salivary gland tumours are relatively uncommon neoplasms encountered in the head and neck region. They are a subject of interest because they present with diversified and complex histopathological findings, thus posing a diagnostic difficulty. Histopathological diagnosis plays a major role in the diagnosis of these neoplasms. This study was carried out to study the histopathological spectrum of salivary gland lesions and to know their pattern of distribution.

METHODS

This is a 4-year retrospective study of all salivary gland tumours received at the Department of Pathology, Konaseema Institute of Medical Sciences & Research Foundation, Amalapuram, AP, India, from January 2016 to December 2019. The neoplasms were analysed based on age, sex, site, and histopathological features.

RESULTS

Out of a total of 68 specimens of salivary gland tumours that were received during the study period, 50 cases (73.52%) were benign and 18 cases (26.48%) were malignant. The highest incidence for benign tumours was in the fourth and fifth decade, whereas for malignant tumours, it was the 5th and 6th decades of life. These tumours were found to be more common in females (58.8%). Parotid was the most common site of salivary neoplasms (66.17%) followed by the submandibular gland (25%). Pleomorphic adenoma was the most common benign neoplasm (42 cases) followed by Warthin tumour (4 cases). Mucoepidermoid carcinoma was the most common malignant neoplasm (8 cases) followed by acinic cell carcinoma and adenoid cystic carcinoma (3 cases each).

CONCLUSIONS

Histopathological examination is the mainstay for diagnosis and clinical management of salivary neoplasms owing to their varied histopathological spectrum. Pleomorphic adenoma was the commonest salivary gland tumour observed in both sexes. Mucoepidermoid carcinoma was the most common malignant salivary gland tumour. The parotid gland was the most common site of origin in both benign and malignant tumours.

KEYWORDS

Histopathology, Mucoepidermoid Carcinoma, Pleomorphic Adenoma, Salivary Gland Tumours

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BACKGROUND

Salivary gland tumours are rare, comprising approximately 3% to 10% of the neoplasms of the head and neck region[1] and their annual incidence is <1/100,000 population.[2] The global annual incidence of these tumours is 0.4–13.5 per 100,000 persons.[3] The salivary glands consist of a wide variety of benign and malignant neoplasms which pose diagnostic difficulty as they are not only rare tumours but also have a wide range of morphological diversity with variable disease outcome. All types of salivary tumours, both benign and malignant, can occur in the major and minor salivary glands. The parotid gland accounts for nearly 80% of the salivary gland tumours followed by the submandibular gland which accounts for approximately 10-15% of the tumours. 80-85% of the tumours are benign with Pleomorphic adenoma being the most common tumour constituting 70% of benign tumours.[4,5] The incidence of malignant salivary gland tumours is relatively higher in minor salivary glands. Salivary gland tumours occur in all ages, albeit the highest incidence of benign tumours is observed in the fourth and fifth decades. Malignant salivary neoplasms are more common in the sixth and the seventh decade.[6] Benign salivary gland tumours are more common in women than men while malignant tumours are more common in men.[7] This study aims to acknowledge the histopathological features of various salivary gland tumours, their frequency, their incidence according to age and site-wise distribution.

METHODS

This is a 4-year retrospective study of 68 salivary gland tumour cases (neoplasms of both major and minor salivary glands) received at the Department of Pathology, Konaseema Institute of Medical Sciences & Research Foundation, Amalapuram, AP, India from January 2016 to December 2019. Relevant data including the age & sex of the patient, the site of the tumour was obtained from the histopathology requisition forms. All specimens were fixed in 10% formalin, then processed into paraffin-embedded blocks from which sections were made with 4 micron thickness and stained with haematoxylin and eosin. Re-staining of the slides and fresh sections of tissue blocks were prepared where ever required. All tumours were classified according to the latest WHO histological typing of tumours. All non-neoplastic lesions including cysts, inflammatory lesions, and mesenchymal tumours were excluded from the present study.

RESULTS

A total of 68 specimens of salivary gland tumours were received during the study period. The number of cases was slightly higher in females with 40 cases (58.82%) compared to males with 28 cases (41.18%). The male to female ratio was 1:1.43. Among the 68 neoplastic cases, benign tumours with 50 cases (73.52%) outnumbered the malignant ones with 18 cases (26.48%).The highest incidence for benign tumours was in the fourth and fifth decade, whereas for malignant tumours, it was the 5th and 6th decade of life. In the present study, the tumours of salivary glands occurred with an age range of 18 to 72 years. (Table 2).

The parotid gland is the most common site of benign and malignant tumours in this study (45 cases, 66.17%) followed by the submandibular salivary gland (17 cases, 25%). There were 6 cases in minor salivary glands (8.83%). Pleomorphic adenoma was the most common benign tumour with 42 cases (61.76%) followed by Warthin tumour with 4 cases (5.88%). (Table 1). Mucoepidermoid carcinoma was the most common malignant lesion with eight cases (11.76%) followed by acinic cell carcinoma and adenoid cystic carcinoma with three cases each (4.41%). (Table 2).

Tumours	Parotid Gland	Submandibular Gland	Minor Salivary Glands	Total
Pleomorphic adenoma	27	12	3	42
Warthin tumour	4	0	0	04
Oncocytoma	2	0	0	02
Basal cell adenoma	0	1	0	01
Sebaceous lymphadenoma	1	0	0	01
Mucoepidermoid carcinoma	4	3	1	08
Acinic cell carcinoma	2	0	1	03
Adenoid cystic carcinoma	1	1	1	03
Secretory carcinoma	1	0	0	01
Carcinoma ex pleomorphic adenoma	1	0	0	01
Clear cell carcinoma	1	0	0	01
Adenocarcinoma NOS	1	0	0	01
Total	45	17	06	68

Table 1. Distribution of Type and Site of Salivary Gland Neoplasms

Age	PA	WT	ONC	BCA	SL	MEC	ACC	AdCC	SC	CaEx PA	CC	Ade	Total
<20	2	0	0	0	0	0	0	0	0	0	0	0	2
21-30	3	0	0	0	0	0	0	0	0	0	0	0	3
31 - 40	13	0	0	0	0	1	0	0	0	0	0	0	14
41 - 50	17	2	0	1	1	1	2	1	1	0	1	0	27
51 - 60	5	2	1	0	0	4	1	2	0	0	0	1	16
61 - 70	2	0	0	0	0	2	0	0	0	1	0	0	5
71 - 80	0	0	1	0	0	0	0	0	0	0	0	0	1
Total	42	4	2	1	1	8	3	3	1	1	1	1	68

Table 2. Age Wise Distribution of Various Salivary Neoplasms

PA - pleomorphic adenoma, WT - Warthin's tumour, ONC - oncocytoma, BCA - basal cell adenoma, SL - sebaceous lymphadenoma, MEC - mucoepidermoid carcinoma, ACC - acinic cell carcinoma, AdCC - adenoid cystic carcinoma, SC - secretory carcinoma, CaExPA - carcinoma ex pleomorphic adenoma, CC - clear cell carcinoma, Ade - adenocarcinoma NOS

DISCUSSION

In the present study of 68 cases of salivary gland tumours, 50 (73.52%) were benign and 18 (26.48%) were malignant. This observation was similar to the studies by Nepal et al,[8] Naeem et al,[9] and Moghadam SA et al,[10] in which they have observed predominance of benign tumours over the malignant ones. The age range of the patients in this study

is 18-72 years. Most of the patients with salivary gland tumours were between the ages group of 41-60 years.

All salivary gland tumours are common in women except Warthin tumour which is common in males. In our study, there was a female preponderance with 58.8% of tumours in females. Dandapat et al[11] and Rewsuwan et al[12] also reported a female preponderance in their series. The parotid gland was the most common site of SGTs, followed by the submandibular gland and the minor salivary glands in the palate and floor of the mouth. This conforms with Rewusuwan et al[12] and Bashir S et al.[13]

Pleomorphic adenoma was the most common benign salivary gland tumour encountered in the parotid, submandibular and minor salivary glands similar to several other studies followed by Warthin tumour.[14,15,16] Pleomorphic adenoma accounted for 61.7% of all tumours and 84% of benign tumours. Out of the total 42 pleomorphic adenomas in our study, 27 cases occurred in the parotid gland followed by the submandibular gland with 12 cases and minor salivary glands with 3 cases. All four cases of Warthin tumour involved only the parotid gland, which is similar to what has been reported by Eveson et al.[17]

Among malignant tumours, mucoepidermoid carcinoma is the most common neoplasm (8 cases) similar to other studies.[18,12] This is followed by acinic cell carcinoma and adenoid cystic carcinoma in 3 cases each.

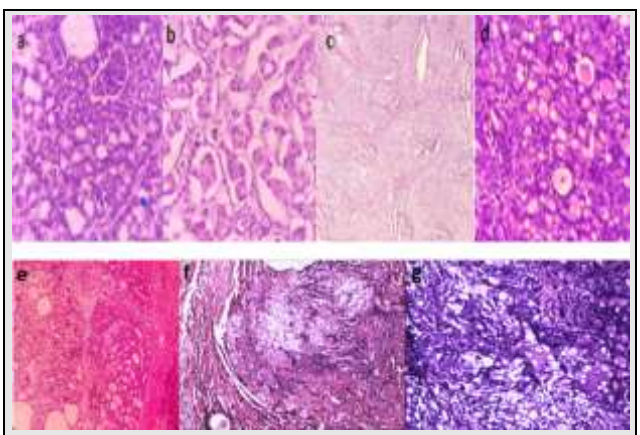

Figure 1. Various Salivary Neoplasms (H & E, 40X). a- Adenoid Cystic Carcinoma, b- Oncocytoma, c- Clear Cell Carcinoma, d- Secretory Carcinoma, e- Ca ex Pleomorphic Adenoma, f- Pleomorphic Adenoma, g- Mucoepidermoid Carcinoma

Carcinoma ex pleomorphic adenoma (Ca ex PA) is a malignant neoplasm which arises from benign pleomorphic adenoma. It can also occur from a recurrent pleomorphic adenoma. It accounts for 3.6% (range, 0.9%–14%) of all salivary neoplasms and for 11.7% (range, 2.8%–42.4%) of salivary malignancies.[19] There was only 1 case of Carcinoma ex Pleomorphic adenoma in this study.

Secretory carcinoma (SC) (synonym- Mammary Analogue Secretory carcinoma) (Figure 1) is a recently described entity occurring in the salivary glands characterized by a specific rearrangement of the ETV6 gene locus. MASC is mostly located in the parotid region but can appear in any location of the head and neck region. The current study observed one case of secretory carcinoma in which the tumour displayed a characteristic morphological pattern with PAS positivity and IHC for Mammaglobin was also positive.

In our study, we noted three cases each of benign and malignant tumours of minor salivary glands of the total six cases suggesting equal incidence as described by Vargas et al.[20]

CONCLUSIONS

Salivary gland tumours are uncommon and exhibit a broad histopathological spectrum with morphological overlap. Male and the parotid gland were the most affected and pleomorphic adenoma was the most frequent lesion followed by mucoepidermoid carcinoma and Warthin tumour.

REFERENCES

[1] Ansari MH. Salivary gland tumours in an Iranian population: a retrospective study of 130 cases. J Oral Maxillofac Surg 2007;65(11):2187-2194.

[2] Sando Z, Fokouo JV, Mebada AO, et al. Epidemiological and histopathological patterns of salivary gland tumours in Cameroon. Pan Afr Med J 2016;23:66.

[3] Tian Z, Li L, Wang L, et al. Salivary gland neoplasms in oral and maxillofacial regions: a 23-year retrospective study of 6982 cases in an eastern Chinese population. Int J Oral Maxillofac Surg 2010;39(3):235-242.

[4] Batsakis JG, Regezi JA. The pathology of head and neck tumours: salivary glands, part 1. Head Neck Surg 1978;1(1):59-68.

[5] Paparella MM, Shumrick DA, Gluckman JL, et al. Otolaryngology: Vol. 3. 3rd edn. Philadelphia: W. B. Saunders 1991: p. 2099.

[6] Gnepp DR. Diagnostic surgical pathology of the head and neck. Philadelphia: W. B. Saunders Co, 2001.

[7] Dardick I, Daya D, Hardie J, et al. Mucoepidermoid carcinoma: ultrastructural and histogenetic aspects. J Oral Pathol 1984;13(4):342-358.

[8] Nepal A, Chettri ST, Joshi RR, et al. Primary salivary gland tumours in Eastern Nepal tertiary care Hospital. J Nepal Health Res Counc 2010;8(1):31-34.

[9] Ali NS, Nawaz A, Rajput S, et al. Parotidectomy: a review of 112 patients treated at a teaching hospital in Pakistan. Asian Pac J Cancer Prev 2010;11(4):1111-1113.

[10] Moghadam SA, Moghadam FA, Dadfar M. Epithelial salivary gland tumours in Ahvaz, Southwest of Iran. J Dent Res Dent Clin Dent Prospect 2010;4(4):120-123.

[11] Dandapat MC, Rath BK, Patnaik BK, et al. Tumours of salivary glands. Indian J Surg 1991;53:200.

[12] Rewusuwan S, Settakorn J, Mahanupab P. Salivary gland tumours in Maharaj Nakorn Chiang Mai hospital: a retrospective study of 198 cases. Chiang Mai Med Bull 2006;45(2):45-53.

[13] Bashir S, Mustafa F, Malla HA, et al. Histopathological spectrum of salivary gland tumours: a 10 year experience. Sch J App Med Sci 2013;1(6):1070-1074.
[14] Kalburge JV, Kalburge V, Latti B, et al. Salivary gland tumours: clinicopathologic analysis of 73 cases. J Cranio Max Dis 2014;2:111-115.
[15] Chatterjee MT, Panda PK. A pathological study of benign and malignant tumours of salivary glands. Med J Armed Forces India 2000;56(4):282-286.
[16] Potdar GG, Paymaster JC. Tumours of salivary glands. Am J Surg 1969;118:440-447.
[17] Eveson JW, Cawson RA. Warthin's tumour (cystadenolymphoma) of salivary glands. A clinicopathologic investigation of 278 cases. Oral Surg Oral Med Oral Pathol 1986;61(3):256-262.
[18] Richardson GS, Dickason WL, Gaisford JC, et al. Tumours of salivary glands. An analysis of 752 cases. Plast Reconstr Surg 1975;55(2):131-138.
[19] Olsen KD, Lewis JE. Carcinoma Ex pleomorphic adenoma: a clinicopathologic review. Head Neck 2001;23(9):705-712.
[20] Vargas PA, Gerhard R, Araújo Filho VJF, et al. Salivary gland tumours in a Brazilian population: a retrospective study of 124 cases. Rev Hosp Clin Fac Med Sao Paulo 2002;57(6):271-276.