Original Research Paper

Volume - 11 | Issue - 06 | June - 2021 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Pathology

HISTOPATHOLOGICAL SPECTRUM OF SALIVARY GLAND LESIONS AND ROLE OF IMMUNOHISTOCHEMISTRY

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ABSTRACT

Introduction: Salivary gland neoplasm are relatively uncommon and constitute about 3% of all head and neck tumours. 80% of tumours are located in the parotid gland followed by submandibular, sublingual and in minor salivary glands

Aims And Objectives: The aim of this study was to recognize various histomorphological patterns of salivary gland lesions, their frequency, age, gender and site wise distribution with special emphasis on malignant cases and role of immunohistochemistry.

Materials And Methods: The biopsy and excised specimens of salivary gland tumours received in the department of pathology over a period of one year from June 2020 to May 2021 were included in the study. Following gross examination all the biopsy specimens were well fixed in 10% neutral buffered formalin, processed routinely. Paraffin embedded blocks were sectioned and stained with Haematoxylin and Eosin (H and E). The stained slides were examined and lesions categorized as per WHO 2017 classification. Immunohistochemistry was done in malignant cases.

Results: A total of 27 salivary gland tumour specimens were included in the present study conducted for one year duration. The analysis revealed that 19 cases were benign amounting to 70.3% and the remaining 8 were malignant making it to 29.7% of the total salivary gland tumours. Pleomorphic Adenoma was the most common benign tumour. Out of 19 benign tumours 13 cases were pleomorphic adenoma ,2 cases were oncocytoma,3 cases were Warthin's tumour,1 case of basal cell adenoma. Out of the 8 malignant cases 4 cases were of mucoepidermoid carcinoma followed by 2 cases of adenoid cystic carcinoma one each case of polymorphous adenocarcinoma and salivary duct carcinoma which were confirmed by immunohistochemistry. **Conclusion:** Histopathological examination and other techniques like IHC are important in establishing the final diagnosis, typing, grading and predicting prognosis.

KEYWORDS : Salivary gland, carcinoma, IHC, histopathology

INTRODUCTION

Salivary tumours account for less than 1% of all tumours and 3-5.5% of all head and neck tumours. Annual incidence of salivary gland tumours ranges from 0.4 to 13.5 cases per 1 lakh worldwide. Salivary gland tumours pose problems in diagnosis due to rarity, broad morphologic spectrum and morphologic overlap among the different tumour types. These tumours exhibit differences in biological behaviour and also prognosis. As per the WHO revised classification (2017) salivary gland tumours account for more than 35 distinct variants.[1]

Fine Needle Aspiration Cytology although used as a tool for initial diagnosis histopathological examination remains the gold standard. In the present era use of ancillary techniques like IHC and molecular markers helps in better management and personalised treatment.[2,3]

AIMS AND OBJECTIVES:

The aim of this study was to recognize various histomorphological spectrum of salivary gland lesions, their frequency, age, gender and site wise distribution.

RESULTS

A total of 27 salivary gland tumour specimens were included in the present study. The study report revealed that 19 cases were benign amounting to 70.3% and the remaining 8 were malignant making it to 29.7% of the total salivary gland tumours. Male to female ratio was 1:1.1. (Table 1). Parotid gland was more commonly involved followed by submandibular gland. Pleomorphic adenoma was the most common benign tumour. Out of 19 benign tumours 13 cases were pleomorphic adenoma ,2 cases were oncocytoma,3 cases were Warthin's tumour,1 case of basal cell adenoma. Out of the 8 malignant cases 4 cases were of mucoepidermoid carcinoma followed by 2 cases of adenoid cystic carcinoma one each case of polymorphous adenocarcinoma and salivary duct carcinoma which were confirmed by immunohistochemistry. (Figure1)

DISCUSSION

Salivary gland neoplasm is relatively uncommon and constitute about 3% of all head and neck tumours. 80% of tumours are located in the parotid gland followed by submandibular, sublingual and in minor salivary glands .[1,2]

Signs and symptoms related to major salivary gland tumours differ from minor salivary gland tumours, as they depend on the different location of the salivary gland.

Parotid gland accounts for nearly 80% of the salivary gland tumours followed by the submandibular gland which account for 10-15% of the tumours. 80-85% of the tumours are benign in nature with pleomorphic adenoma being the most common tumour constituting 70% of benign tumour. Salivary gland tumours are commonly seen in 6th and 7th decades of life. Incidence of benign salivary gland tumours is more in females whereas malignant tumours are more in males. [1,2,3]

Mucoepidermoid carcinoma (MEC) is the most common malignant tumour which involves mostly the parotid gland followed by the minor and submandibular gland. This study had 4 cases of MEC. Parotid gland was involved and adequate parotidectomy was performed. On histopathological examination varied proportion of clear, intermediate and epidermoid cells were seen. (Figure1-A, B, C). t (11;19) (q14- 21; p12-13) with CRTC1(MECT1)-MAML2 fusion is present in 66% cases detected either by FISH or RT-PCR. Mucoepidermoid carcinomas have excellent prognosis especially the low to intermediate grade tumors.[3,4]

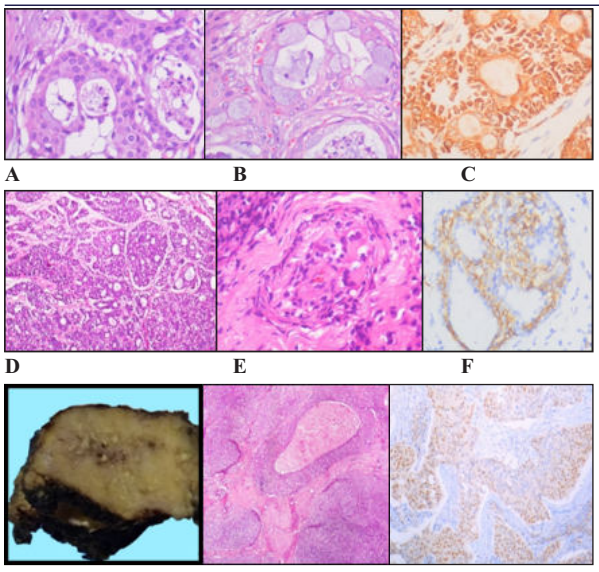
Adenoid cystic carcinoma is a highly malignant neoplasm which is more commonly seen in the minor salivary glands. This study had 2 cases of adenoid cystic carcinoma involving submandibular gland. On histopathological examination cribriform, tubular solid pattern of arrangement is seen. Current WHO does not endorse any specific grading system. These tumours have high propensity for perineural invasion and increased risk of local recurrence and distant metastases. (Figure1-C, D, E). Diagnosis is based on histologic examination and/or presence of fusion involving MYB, MYBL1 or NFIB genes.

Acinic cell carcinoma accounts for 1-3% of all salivary gland tumour with male predominance and a peak incidence in the third decade of life. We did not encounter any case of acinic cell carcinoma in this study .[2,3,5,6]

The 2017 edition the Blue Book has abandoned the qualifier low grade for polymorphous adenocarcinomas. This study had one case of polymorphous adenocarcinoma of sublingual gland with low grade cytology occurring in a 49-year male patient.[2]

Salivary duct carcinoma (SDC) is an aggressive salivary gland carcinoma occurring most commonly in parotid gland of older men, and often presents with advanced stage at presentation and high chances of metastasis and recurrence.

Microscopically resembles high-grade breast ductal carcinoma as seen in our case which occurred in a 68-year-old male. (Figure1-G). Immunohistochemical expression of androgen receptor (Figure1-H, I) coupled with its characteristic histomorphology aids the diagnosis of SDC .[1,7]



Legend for Figure1: A) Mucin containing cells of MEC (H and E ,40x) B) High power view of MEC C) IHC positivity for Keratin5/6 D) Cribriform pattern of low-grade adenoid cystic carcinoma E) Perineural invasion in adenoid cystic carcinoma F) CD117 positive by IHC in adenoid cystic carcinoma G) Gross specimen of salivary duct carcinoma showing grey white tumour with tiny necrotic foci H) Hand E showing central comedo type necrosis I) AR positivity in SDC.

Table1: Spectrum Of The Lesions And Site Of Involvement

Type of lesion	Total no. of cases	Male	Female	Site
Pleomorphic adenoma	13	4	9	Parotid gland
Warthin's tumour	3	1	2	1 each in parotid and submandibular gland
Oncocytoma	2	1	1	Submandibular gland
Basal cell adenoma	1	1	0	Parotid gland
MEC	4	2	2	Parotid gland
Adenoid cystic carcinoma	2	1	1	Submandibular gland
Polymorphous adenocarcinoma	1	1	0	Sub lingual gland
SDC	1	1	0	Parotid gland
	27			

Surgical excision is the standard option in the treatment of tumours of both major and minor salivary glands if they are resectable. Surgery, irradiation or re-irradiation are treatment options for local relapse, and radical neck dissection is indicated for regional relapses. Radiotherapy or palliative chemotherapy is used for metastatic disease depending on the site of metastases. Anti-androgen therapy is indicated for SDC.[8]

Future Perspective

Many monomorphic salivary tumours are now known to have translocations. Pleomorphic, high-grade carcinomas have complex alterations that are often misdiagnosed by morphologic and immunophenotypic features. Next-generation sequencing techniques have great potential in many aspects of salivary gland tumour classification and biomarker discovery.[9]

CONCLUSION

It is evident that association of histopathological examination and other techniques like IHC is the important method in establishing the final diagnosis, typing, grading and predicting prognosis of neoplasm.

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