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Original Research Paper

Pathology

AN ANALYSIS OF CYTOLOGICAL SPECTRUM OF SALIVARY GLAND LESIONS IN A TERTIARY CARE HOSPITAL IN SOUTH INDIA

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ABSTRACT

Introduction: Salivary gland tumors are uncommon neoplasm of head and neck tumors. FNAC can provide cytological categorization of salivary gland lesions for guiding the surgeons to make treatment decisions. **Aims and Objectives:** This study is intended to analyze the cytological spectrum of salivary gland lesions in correlation with age, gender, and site of the lesion. **Methods:** A total of 222 cases are included in this study spanning a period from January 2015 to December 2018. The clinical data pertaining to patients' age, sex and anatomical site were recorded. Cytological smears were reviewed. The clinical features, imaging findings, cytopathology and histopathology findings were analyzed. **Results:** In this three year study period, out of 222 cases, 129 cases were non-neoplastic and 93 cases were neoplastic. Commonest gland involved was parotid gland followed by submandibular gland. Malignant lesions accounted for about 17.2% of the neoplastic lesions. **Conclusion:** In our study, majority of lesions are non-neoplastic. Among them sialadenitis was the most commonly encountered lesion. Among benign neoplasm, pleomorphic adenoma was the most common neoplasm with slight female preponderance. Among malignant tumors, mucoepidermoid carcinoma was the most common malignant tumor

KEYWORDS : Salivary Gland Tumors, Fine-Needle Aspiration Cytology, Mucoepidermoid Carcinoma.

INTRODUCTION

Fine needle aspiration cytology of salivary gland lesions is an effective but challenging approach which provides a preliminary assessment for the operating surgeon to choose between conservative management or wide local excision or radical surgery or chemo radiotherapy. FNAC is useful to identify the site of origin of the lesion, to classify the lesions as non-neoplastic or neoplastic and if it is neoplastic, whether benign or malignant. However the heterogeneity and the cytomorphological overlap between the lesions makes it very difficult to arrive at a precise diagnosis. Salivary gland tumors account for about 2-6.5% of all head and neck neoplasms[1] and FNAC can provide cytological categorization for guiding further investigations. FNAC has an advantage over incisional biopsy and frozen section[2]. The present study analyses the cytological spectrum of salivary gland lesions and their distribution based on age, gender and anatomic site.

MATERIALS AND METHODS

In this retrospective study, the statistics of all the salivary gland lesions from January 2015 to December 2018 were collected from Department of Cytology, Institute of Pathology, Madras Medical College and Rajiv Gandhi Government General Hospital, Chennai, Tamil Nadu. All the information regarding the age, sex, site, size of the lesion, radiological findings, diagnosis were obtained from the registers of cytopathology department. All the cytology smears were reviewed and analyzed with the above parameters and with the corresponding Histopathology slides.

Inclusion Criteria

All cytosmears of the salivary gland during the study period.

Exclusion Criteria:

Smears with inadequate aspirate

RESULTS

A total of 222 cases are included in this study spanning a period of three years. Among this, about 129 cases were designated as non-neoplastic and 93 as neoplastic. Within the lesions termed as neoplastic, 77 were benign and 16 lesions were malignant.(Table 1)

Table 1

Cytological spectrum of salivary gland lesions		
Lesion	**No. of cases**	**Percentage**
Pleomorphic Adenoma	71	31.98%
Basal Cell Adenoma	2	0.9%
Warthin's tumour	4	1.8%
Mucoepidermoid carcinoma	14	6.3%
Acinic cell carcinoma	1	0.45%
Adenoid cystic carcinoma	1	0.45%
Non-Neoplastic Lesions	129	58.1%
Total	222	100%

Among the cases diagnosed as Non-Neoplastic, sialadenitis was the most common lesion. It accounted for 80% of the cases (103 out of 129), followed by sialadenosis-15% of the cases (20 out of 129), parotitis-2%, infected cyst-1% and granuloma-2%.(Table 2)(Figure 1). Commonest gland involved was parotid gland which constituted about 62% of the cases followed by submandibular gland accounting for 38% of the cases. The non-neoplastic lesions were more common among females in our study (about 55%). The mean age group of the patients was 41- 50. (Figure 2)

Table 2- DISTRIBUTION OF NON-NEOPLASTIC LESIONS 2015-18

AGE GROUP	SIALADENITIS					SIALADENOSIS				
	M	F	T	P	SM	M	F	T	P	SM
<20	9	6	15	5	10	2	1	3	-	3
21-30	6	3	9	6	3	1	1	2	-	2
31-50	17	20	37	25	12	5	2	7	4	3
51-60	7	21	28	22	6	2	3	5	4	1
61-70	5	6	11	6	5	2	1	3	2	1
71-80	2	1	3	0	3	-	-	0	-	-
TOTAL	46	57	103	64	39	12	8	20	10	10

AGE GROUP	PAROTITIS			INFECTED CYST					GRANULOMA				
	M	F	T	M	F	T	P	SM	M	F	T	P	SM
<20	-	-	-	-	-	-	-	-	-	1	1	1	0
21-30	-	-	-	-	-	-	-	-	-	-	-	-	-

31-50	-	-	-	-	1	1	1	-	-	1	1	1	-
51-60	-	3	3	-	-	-	-	-	-	-	-	-	-
TOTAL	-	3	3	-	1	1	1	-	-	2	2	2	-

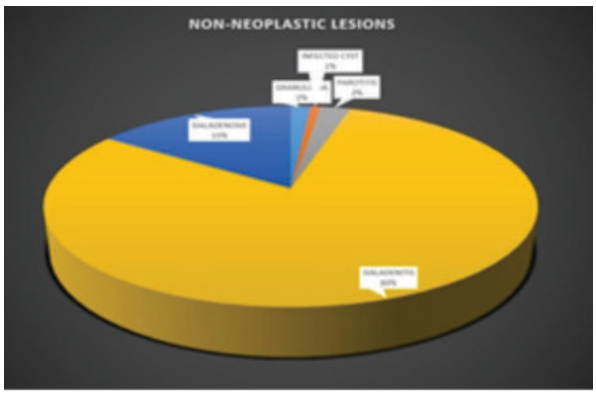

Figure 1

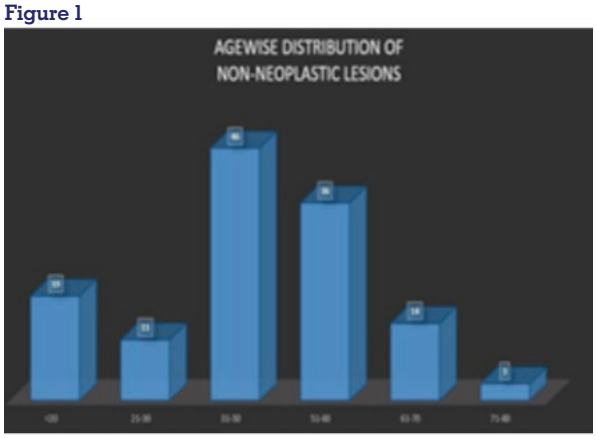

Figure 2

The benign neoplasms accounted for about 82.8% (77 out of 93) of the neoplastic lesions, of which pleomorphic adenoma accounted for the majority of the cases 92% (FIGURE 3)(71 out of 77), followed by warthin's tumor – 5% (4 out of 77) and basal cell adenoma-3%. There is slight female preponderance. Parotid gland was most commonly involved – 65% (50 out of 77) and the mean age group affected was 31-40. (Table 3)

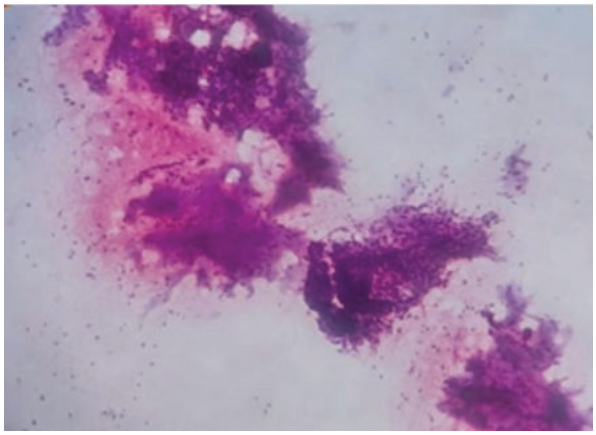

FIGURE 3: Pleomorphic adenoma – Ductal epithelial cells, myoepithelial cells in the background of chodromyxoid stroma (H&E stain 100 X)

Table 3

AGE GROUP	PLEOMORPHIC ADENOMA				
	M	F	TOTAL	PAROTID	SM
<20	2	3	5	2	3
21-30	11	4	15	11	4
31-40	10	17	27	15	12
41-50	3	8	11	8	3
51-60	8	5	13	9	4
Total	34	37	71	45	26

AGE GROUP	BASAL CELL ADENOMA				
	M	F	TOTAL	PAROTID	SM
<20	-	-	-	-	-
21-30	1	0	1	1	-
31-40	-	-	-	-	-
41-50	-	-	-	-	-
51-60	0	1	1	-	1
Total	1	1	2	1	1

AGE GROUP	WARTHINS TUMOUR				
	M	F	TOTAL	PAROTID	SM
<20	-	-	-	-	-
21-30	-	-	-	-	-
31-40	-	-	-	-	-
41-50	-	-	-	-	-
51-60	3	1	4	4	-
Total	3	1	4	4	0

Malignant lesions accounted for about 17.2% (16 out of 93) of the neoplastic lesions of which mucoepidermoid carcinoma was the most common one accounting for 87.5% of the cases (FIGURE 4) (14 out of 16), followed by adenoid cystic carcinoma and acinic cell carcinoma each accounting for 6.25% of the cases (1 out of 16 each). Males were more commonly affected in the case of mucoepidermoid carcinoma and the predominant age group affected was 31- 40 and the predominant gland affected was parotid.(Table 4).

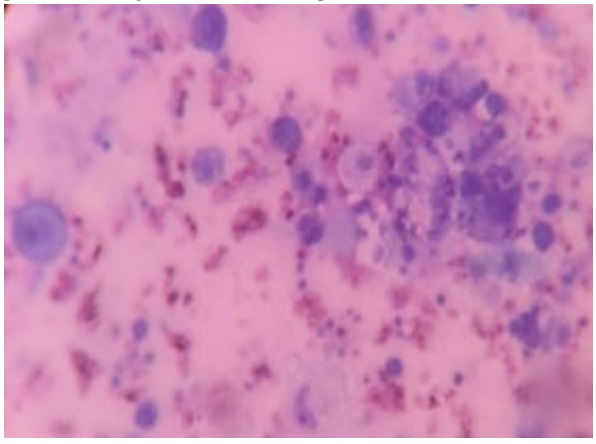

FIGURE 4: Mucoepidermoid carcinoma – low grade – Epidermoid cells, intermediate cells, mucocytes in the background of mucin (PAP stain : 400 X)

DISCUSSION

The role of FNAC in salivary gland lesions is to provide a preliminary diagnosis to aid the clinician in choosing the apt management. FNAC in the hands of a skilled pathologist can provide a specific diagnosis in majority of the cases. FNAC because of the low cost and minimal risk to the patient has gained widespread implementation [3]. Although clinical and radiological details narrow down the possible differentials, FNAC is much essential for arriving at a conclusion.

Our study aims to analyze the varied cytological spectrum of salivary gland lesions in our institute. During this study period, a total of 232 were performed. Total unsatisfactory aspirates are10 cases (4.5%) out of 232 cases. The range of unsatisfactory aspirates ranged from 3% to 12% [4-7] in various studies and is dependent upon the skill of the aspirator. In our study, non-neoplastic lesions accounted for 58.1% which is in concordance with the other studies ranging from 20% to 72.9% [1,4, 8-11]. The benign lesions accounted for 34.6% of the total cases in our institute which is in concordance with the study by verma et al- 31.75% [8] and lower in comparison with the other

studies which ranges from 49 to 83% [9-11].Pleomorphic adenoma is the most common benign tumor in our study which is in concordance with the other studies [4,8-11]. The incidence of malignant tumors in our studies is 7.2% of the total cases which is similar to the studies by verma et al [8] and nguansangiam et al [4] while in the other studies it ranged from 15% to 32% [9-11]. The most common malignancy in our study was mucoepidermoid carcinoma 87.5% which is similar to the study by verma et al [8] followed by acinic cell carcinoma and adenoid cystic carcinoma. In contrast, in the study by nguansangiam et al [4] lymphoma is the most common primary malignant salivary gland tumor followed by mucoepidermoid carcinoma. The parotid gland was the most commonly involved salivary gland in our study which is similar to study by verma et al [8] and Choudhury et al [12].

Of the 222 cases, 85 resected specimens were received for histopathological examination. The cytological diagnosis of the above specimens were correlated with the histopathological diagnosis. The concordance percentage of benign lesions was 96.10% and that of malignant lesions was 100%. There were two cases of low grade mucoepidermoid carcinoma that was diagnosed as pleomorphic adenoma in FNAC. One case which was diagnosed as warthin's tumour turned out to be acinic cell carcinoma in histopathological examination. In Klijanienko and Vielh et al study, they have suggested FNAC is an accurate technique for diagnosis of intermediate or high grade tumors and not for low grade tumors[13]

CONCLUSION

In our study, non neoplastic lesions and benign tumors are more common than malignant neoplasms with female preponderance, whereas slight male preponderance is seen in mucoepidermoid carcinoma and the most common site of all neoplastic and non neoplastic lesions was the parotid gland. Mean age group affected by both benign and malignant neoplasm was 31-40 years. Through our study we have arrived at a conclusion that FNAC is a reliable and safe tool for providing a specific diagnosis in the hands of an experienced pathologist in conjunction with clinical and radiological data. Multiple sampling avoids misinterpretation.

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