Original Research Article

Role of FNAC in the diagnosis of salivary gland lesions - A tertiary care hospital experience

Mili Jain[1*], Upasana Punatar[2], Sanyam Modi[3], Kuntal Patel[4]

[1]Resident Doctor, [2]Resident Doctor, [3]Resident Doctor, [4]Associate Professor,
Smt. BK Shah Medical Institute and Research Centre, Sumandeep Vidyapeeth, Waghodia, Vadodara, Gujarat, India - 391760
[*]Corresponding author email: **dr.milijain.mj@gmail.com**

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Abstract

Introduction: Swelling of salivary glands, specifically parotid and submandibular gland presents as a common problem and being readily visible creates havoc among patients. In addition parotid/ submandibular swellings also remain a diagnostic challenge among clinicians. The aim of this study was to examine the sensitivity and specificity of Fine Needle Aspiration Cytology (FNAC) as a tool for diagnosis of salivary gland lesions.

Materials and Methods: This prospective observational study was done for 6 months from January 2022 to June 2022 at Dhiraj General Hospital, SBKSMI and RC, Waghodia, Gujarat. In present study, total 42 cases were taken with salivary gland lesions that underwent FNAC in Pathology department.

Results: In the present study, we had included 42 cases of salivary gland lesions. Out of 42cases, 12 (28.5%) cases were neoplastic and 30 (71.5%) cases were non-neoplastic. Among 12 neoplastic cases, 8 (67%) cases were found out to be benign and 4(33%) cases were diagnosed as malignant. Among malignant lesions, mucoepidermoid carcinoma has the highest number of cases (50%) followed by Carcinoma-ex pleomorphic adenoma and Adenoid cystic carcinoma.

Conclusion: We found a good concordance between FNAC and final histology. Awareness of the therapeutic implications and limitations of the cytological interpretation amongst both the clinicians and the cytopathologists should enable FNAC to its best advantage.

Key words

FNAC, Salivary glands, Neoplastic, Non-neoplastic.

Introduction

FNAC was introduced in 1920's and soon it gained wide acceptance among clinicians due to ease of its performance and rapidity of diagnosis [1]. Fine needle aspiration cytology (FNAC) is accurate, simple, rapid, inexpensive, well tolerated and harmless for the patient. The easy accessibility and high diagnostic accuracy makes FNAC a popular method for evaluating the salivary gland lesions. There is a wide spectrum of salivary gland lesions which are morphologically and clinically different. There are three major salivary glands – parotid, submandibular and sublingual as well as minor salivary glands. In these glands various non neoplastic as well as neoplastic lesion may arise. These may be benign or malignant. The aim of this study was to examine the sensitivity and specificity of FNAC as a tool for diagnosis of salivary gland lesions.

Materials and methods

This prospective observational study was done for 6 months from January 2022 to June 2022 at Dhiraj General Hospital, SBKSMI and RC, Waghodia, Gujarat. In present study, total 42 cases were taken with salivary gland lesions that underwent FNAC in Pathology department. Written consent was taken before the procedure. FNAC was performed according to standard protocol and 10 ml disposable syringe and 23/24 gauge needle were used [2-15]. Smears were prepared and slides were stained using H & E stains. The clinical data pertaining to patients' age, sex and anatomical site along with detailed clinical history and physical examination was done. Microscopic examination was done and final diagnosis was given. Data was collected and analyzed statistically.

Results

In our study, we had included 42 cases of salivary gland lesions. Out of 42 cases, 12 (28.5%) cases were neoplastic and 30 (71.5 %) cases were non-neoplastic. Among 12 neoplastic cases, 8 (67%) cases were found out to be benign and 4(33%) cases were diagnosed as malignant. Males slightly predominated (23 cases) where as females comprised of 19 cases. Hence Male to female ratio was 1.2:1 (**Table – 1**).

Table – 1: Age wise distribution of lesions.

Age (Years)	Benign	Inflammatory	Malignant	Total
21-30	1	2	0	3
31-40	0	7	1	8
41-50	4	6	0	10
51-60	3	11	2	16
61-70	0	4	1	5
Total	8	30	4	42

According to **Table – 2**, parotid gland was involved in 54.7% of cases followed by submandibular and minor salivary gland. As per **Table - 3**, non-neoplastic lesions of salivary gland included highest number of cases of chronic sialadenitis (60%) followed by cystic lesions, acute on chronic sialadenitis and chronic granulomatous inflammation. According to **Table – 4**, about frequency distribution of benign neoplasms, pleomorphic adenoma was the commonest among all benign neoplasms. As per **Table – 5**, about frequency distribution of malignant lesions, mucoepidermoid carcinoma had the highest number of cases (50%) (**Photograph - 1, 2, 3**) followed by Carcinoma-ex pleomorphic adenoma and Adenoid cystic carcinoma.

Table - 2: Distribution of type of gland involved.

Type of gland involved	Frequency	%
Parotid	23	54.7%
Submandibular	14	33.3%
Minor	05	12%

Table - 3: Frequency distribution of non-neoplastic lesions.

Non-neoplastic lesions	Frequency	%
Chronic sialadenitis	18	60%
Cystic lesions	07	23%
Acute on chronic sialadenitis	03	10%
Chronic granulomatous inflammation	02	7%

Table - 4: Frequency distribution of benign neoplasms.

Cytologic diagnosis of benign neoplasms	Frequency	%
Pleomorphic adenoma	6	75%
Warthin's tumor	2	25%

Table - 5: Frequency distribution of malignant lesions.

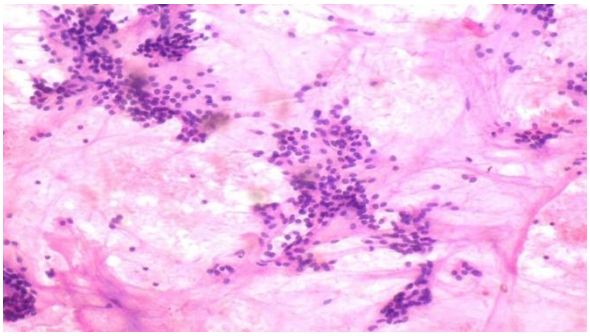
Cytologic diagnosis of malignant lesions	Frequency	%
Mucoepidermoid carcinoma	2	50%
Acinic cell carcinoma	0	00%
Carcinoma-ex pleomorphic adenoma	1	25%
Adenoid cystic carcinoma	1	25%

Table - 6: FNAC and Histopathology correlation of salivary gland lesions.

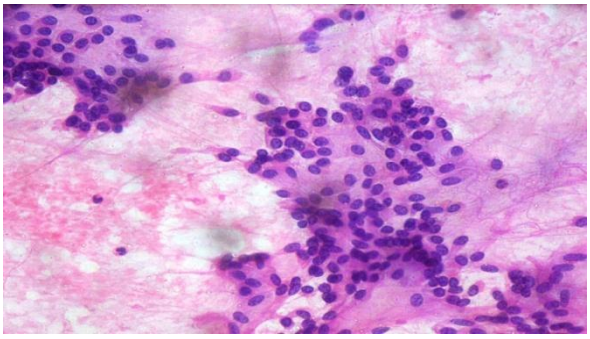
FNAC diagnosis	No. of cases	Histopathologically correlated Diagnosis
Chronic sialadenitis	18	16
Acute on chronic sialadenitis	03	02
Chronic granulomatous inflammation	02	02
Pleomorphic adenoma	06	05
Warthin's tumor	02	02
Mucoepidermoid carcinoma	02	02
Adenoid cystic carcinoma	01	01

Photograph – 1: Parotid gland swelling.

Photograph – 2: Benign cells trapped in fibromyxoid stroma (10X).



Photograph – 3: Benign epithelial and myoepithelial cells (40X).



In the above cyto-histopathological correlation study, the sensitivity, specificity and the diagnostic accuracy were detected by using the SPSS software (version 10). It was showing a sensitivity of near 100% for non neoplastic, benign and malignant neoplasms; and specificity of around 87% (**Table – 6**).

Discussion

Swelling of salivary glands, specifically parotid and submandibular gland presents as a common

problem and being readily visible creates havoc among patients. In addition parotid/ submandibular swellings also remain a diagnostic challenge among clinicians. FNAC provides a convenient way to obtain a tissue based diagnosis and therefore has now become a diagnostic test of choice to solve this dilemma. Our study explains the role of this procedure in our setup to diagnose salivary gland lesions and the spectrum of disease pathology in our population. Literature review revealed a wide variation in the sensitivity and specificity of FNAC for salivary gland swelling in different populations and setups. Zerpa, et al. studied 93 cases of parotid gland tumors, revealing a sensitivity and specificity of 57% and 95% respectively [16]. On the other hand, Pastore, et al. found a sensitivity and specificity of 83% and 93% respectively. They evaluated 357 cases of salivary gland lesions [17]. In this 6 month study, salivary gland tumors were found in patients between ages of 21 to 75 years with very slight male predominance. The incidence of benign neoplasm was more in fourth and fifth decade whereas malignant neoplasms were seen more common in fifth and sixth decade. In the present study, benign tumor was found to be more common than malignant tumor. Malignant tumor found in older age group. Parotid gland was the most common site of salivary gland tumor followed by submandibular gland and minor salivary glands. Among benign tumors pleomorphic adenoma was most common and mucoepidermoid was the commonest among malignant tumors. Rare adenoid cystic carcinoma was also encountered in one of the minor salivary glands. The present was a single institutional experience. The findings of age, sex, site distribution and pathologic features encountered in present study were comparable with those studies reported from India and other parts of the world. Although the number of salivary gland tumors discussed in this study is small, the findings should contribute in better understanding of the disease.

Conclusion

In conclusion, we found a good concordance between FNAC and final histology. Awareness of the therapeutic implications and limitations of the cytological interpretation amongst both the clinicians and the cytopathologists should enable FNAC to its best advantage.

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