

Fine Needle Aspiration Cytology of Salivary Gland Lesions: A Retrospective Study in a Tertiary Care Hospital of North India

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Abstract

Original Research Article

Background: Fine needle aspiration cytology (FNAC) of salivary gland lesions is an excellent technique for the diagnosis of suspected salivary gland lesions. Nodule or diffuse enlargement of the salivary glands may be caused by inflammation, cystic lesions, degenerative process, or benign/malignant neoplasm and needs correct diagnosis for proper management. **Aim/Objectives:** To evaluate the spectrum of salivary gland lesions in a Tertiary Care Centre in North India. **Material and Methods:** This retrospective study was carried out in the Department of Pathology in Government Medical College, Jammu. All Patients with suspected salivary gland lesions who underwent FNAC during one year were included in the study. The slides along with records of the patient were retrieved and findings recorded. **Results:** Inadequate/Non-Diagnostic aspirations were seen in 6 cases. Parotid gland was the commonest gland to be involved in our study. Non-neoplastic lesions accounted for 59.8% cases followed by benign tumours (24.4%) and malignant tumours (8.5%). Chronic sialadenitis was the commonest non-neoplastic lesion (38.8%, 19/49), Pleomorphic adenoma (65%, 13/20) was the commonest benign neoplasm and Mucoepidermoid carcinoma was the commonest malignant lesion (42.8%, 3/7) observed in our study. **Conclusions:** FNAC is a useful, quick and reliable diagnostic technique for evaluating salivary gland lesions in developing countries. FNAC provides useful information on the management of salivary gland lesions and prevents unnecessary surgery in cases of nonneoplastic lesions and identification of malignancy helps the surgeon in deciding type and extent of surgery.

Keywords: Cytology; Salivary; Neoplasm; Malignant.

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INTRODUCTION

Fine needle aspiration cytology (FNAC) is a cytodagnostic method based on morphologic findings of individual and small group of cells aspirated using a fine needle [1]. FNAC was introduced in 1920's and soon it gained wide acceptance among clinicians due to ease of its performance and rapidity of diagnosis [2]. FNAC of the salivary gland lesions is an established technique in preoperative diagnosis. FNAC of suspected salivary gland lesions is an excellent but challenging method and has acquired an edge over incisional biopsy and frozen section [1].

FNAC in suspected salivary gland swellings has two important roles. Firstly it can confirm the origin of swelling as preauricular and submandibular lymph node swellings can mimic salivary gland neoplasm clinically. Secondly it can give a preliminary diagnosis about the nature of the disease process before proceeding to definite management plan. FNAC is a

accepted technique to differentiate inflammatory and neoplastic lesions. Though role of FNAC in evaluation of salivary gland lesions has been studied in various studies, it has not been widely assessed in our set up. So the aim of the present study is to describe the varied cytological spectrum of salivary gland lesions with emphasis on differential diagnosis and anatomical site.

MATERIAL AND METHODS

This retrospective study was conducted for a period of one year in cytology section of Post Graduate Department of Pathology, GMC Jammu from January 2017 to December 2017. All the patients with suspected salivary gland lesions who underwent FNAC in our Department were included. The clinical data pertaining to patient's age, sex and anatomical site were recorded from the requisition forms and data registers. All the aspirations were performed by cytopathologists using a 10 mL disposable syringe and 23/24-gauge needle without local anaesthesia. Air-dried smears were

stained with Giemsa stains and wet smears fixed in 95% ethyl alcohol were stained with haematoxylin and eosin stain. The special stains such as Ziehl–Neilson (ZN) were used as and when required. The stained FNA smears were examined by two cytopathologists independently for cytomorphological findings, diagnosis and differential diagnosis where needed.

RESULTS

82 salivary gland aspirates were included in the study. Majority of these cases were seen in 4th decade of life with Male to female ratio of 1.8:1 and age range of 5-70 years. Parotid Gland was involved in majority of cases (51.2%) followed by submandibular (42.7%) and sublingual glands (6.1%). On cytological

evaluation, adequate aspirations were seen in 92.7% cases while inadequate aspirations were seen in 7.3% cases. Non-neoplastic lesions accounted for 59.8% cases followed by benign tumours (24.4%) and malignant tumours (8.5%) (Table 1).

Chronic sialadenitis was the most common non-neoplastic lesion (38.8% cases) followed by Acute Sialadenitis (16.3%), Abscess (12.2%) and mucus retention cysts (12.2%). Pleomorphic adenoma (65%) was the most common benign neoplasm followed by Warthin's tumour (20%). Mucoepidermoid carcinoma was the most common malignant lesion (42.9%) followed by adenoid cystic carcinoma (28.6%).

Table-1: Distribution of salivary gland lesions (n=82)

FNAC		Number	Percentage
Non Diagnostic		6	7.3
Non-Neoplastic	1. Chronic Sialadenitis	19	23.2
	2. Acute Sialadenitis	8	9.8
	3. Abscess	6	7.3
	3. Mucus Retention Cysts	6	7.3
	4. Sialadenosis	5	6.1
	5. Granulomatous Sialadenitis	3	3.6
Benign	6. Lymphoepithelial Cyst	2	2.5
	1. Pleomorphic Adenoma	13	15.9
	2. Warthins Tumour	4	4.9
	3. Basal Cell Adenoma	1	1.2
	4. Shwannoma	1	1.2
Malignant	5. Myoepithelioma	1	1.2
	1. Mucoepidermoid Carcinoma	3	3.6
	2. Adenoid Cystic Carcinoma	2	2.5
	3. Acinic Cell Carcinoma	1	1.2
	4. Poorly Differentiated Carcinoma	1	1.2

DISCUSSION

Swelling of salivary glands, specifically parotid and submandibular glands are a common problem. Role FNA in the diagnosis of salivary gland lesions has evolved over the years [4]. Though clinical examination and radiological techniques help to narrow the differential diagnosis, the tissue diagnosis still remains the gold standard [4]. FNAC provides useful information on the management of salivary gland lesions and prevents unnecessary surgery in cases of non-neoplastic lesions and identification of malignancy helps the surgeon in deciding type and extent of surgery [4]. Majority of cases in our study were seen in 4th decade of life. Males accounted for majority of cases with M:F ratio of 1.8:1. Parotid Gland was involved in majority of cases (51.2%) followed by submandibular (42.7%) and sublingual glands (6.1%). On cytological evaluation, adequate aspirations were seen in 92.7% cases while inadequate aspirations were seen in 7.3% cases. Das DK *et al.* [5] in their study showed 96% aspirates as adequate for evaluation. Similar results were obtained by Nguansangiam S *et al.* [6] who found 94.8% aspirates as adequate. Of adequate aspirations, non-neoplastic lesions were seen in 59.8% cases while neoplastic lesions were seen in 32.9% cases. Singh Nanda *et al.* [7] in their study on 127 salivary gland

aspirates revealed 44.1% aspirates as neoplastic and 55.9% as non-neoplastic. Aspirates with neoplastic cytology were further characterised as benign (24.4%) and malignant aspirates (8.5%). The results of our study are in concordance with studies by Verma S *et al.* [8] who reported 31.75% benign and 12.70% malignant aspirates in their study. Among benign tumours, pleomorphic adenoma was the commonest benign neoplasm similar to those previously reported studies [4, 6, 9]. The pleomorphic adenoma is a notorious neoplasm and is readily identified because of its biphasic pattern, comprising epithelial/myoepithelial cells and magenta chondromyxoid stroma [4]. These tumors exhibit wide morphological spectrum varying from predominantly epithelial types to predominantly stromal types which often poses diagnostic challenge to cytopathologists. If epithelial component predominates in smears, then the tumor needs to be differentiated from monomorphic adenoma, myoepithelioma and low-grade carcinoma while in cases of increased stroma with or without hyaline globules, it has to be differentiated from adenoid cystic carcinoma [10, 11]. Warthin's tumor was second commonest benign neoplasm in our study. The three main components that characterize the cytological smears of Warthin's tumor are oncocytes, lymphocytes and dirty fluid background. Differential diagnosis includes lymphoepithelial cysts

of salivary gland, chronic inflammatory and obstructive duct lesions exhibiting oncocyctic metaplasia and lymphocytes [12, 13].

In our study, the commonest malignant salivary gland tumor was mucoepidermoid carcinoma which accounted for 42.9% of all malignant neoplasms followed by adenoid cystic carcinoma. Verma S *et al.* [8] observed mucoepidermoid carcinoma as the commonest malignancy in their study while Sandhu VK *et al.* [4] observed adenoid cystic carcinoma as the commonest malignancy. The aspirates from adenoid cystic carcinoma usually have two components: epithelial cells and acellular basement membrane material seen as homogenous spherical structures. The cytological smears from mucoepidermoid carcinoma show presence of mucus producing cells and intermediate cells exhibiting varying degree of atypia according to which the tumor is categorized as low, intermediate and high grade. Low-grade tumor has to be differentiated from Warthins tumor, benign salivary gland cyst, branchial cleft cyst, sialolithiasis and pleomorphic adenoma with excess of mucoid stroma [14].

Chronic sialadenitis was the commonest non-neoplastic pathology seen in 38.8% cases followed by acute sialadenitis (16.3%) and abscess and mucus retention cysts (12.2% each). Singh Nanda KD *et al.* [7] and Gupta R *et al.* [15] observed chronic sialadenitis as the commonest non-neoplastic pathology in their studies. Smears in chronic sialadenitis comprised clusters of ductal epithelial cells along with the presence of lymphomononuclear cells in the background [4]. Acute sialadenitis showed numerous polymorphonuclear neutrophils and cell debris while aspirate in cases of mucocele was watery in consistency and smears exhibited numerous foamy macrophages admixed with lymphomononuclear cells [4].

CONCLUSIONS

The current study highlights the role of FNAC as a simple rapid, safe, minimally invasive technique for diagnosis of salivary gland lesions. It also helps to study the pattern and epidemiology of salivary gland lesions in our set up. Adequate sampling, high quality smear preparation and experienced cytopathologist can diagnose majority of nonneoplastic and common benign and malignant neoplasms on FNAC.

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