

Case Report

FNAC of Salivary Gland - A Useful Tool in Preoperative Diagnosis or a Cytopathologist's Riddle?

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Abstract

Fine needle aspiration cytology (FNAC) of suspected salivary gland lesions has an established role in preoperative diagnosis and management of patients. However diverse morphological patterns and overlapping features make it a challenging job, to give a precise diagnosis, at times. The aim of the present study is to discuss the problems and pitfalls in FNAC of salivary gland lesions and try to find out possible solutions. From cytology records of last 18 months (January 2004 to June 2005), four problematic cases were picked up, out of total 101 aspirates of salivary gland lesions. Cytology diagnosis was pleomorphic adenoma in first three cases and low grade mucoepidermoid carcinoma in the fourth case. The histopathological diagnoses in these cases were low grade mucoepidermoid carcinoma, squamous cell carcinoma with fibromyxoid stroma, basal cell adenoma and benign lymphoepithelial cyst respectively. Cytology slides were reviewed. The problems in all these cases are discussed with possible solutions to solve the riddle. Certain guidelines can be practiced in order to avoid these pitfalls to a certain extent. MGG staining is a must in FNA of salivary gland lesions. Genuine problems do occur in typing of salivary gland tumours and it is prudent on occasions to limit the cytology report to differential diagnosis.

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Key Words: FNA salivary gland, pitfalls in cytology of salivary gland

Introduction

Fine needle aspiration cytology (FNAC) of suspected salivary gland lesions has an established role in preoperative diagnosis and management of patients. It has acquired an edge over incisional biopsy and frozen section.¹⁻³

The interpretation of FNA of suspected salivary gland lesions has to be done step by step. In the first place one has to decide whether the lesion is of salivary origin or a clinical mimic. The next step is to identify cells and their morphology to classify them into cystic, inflammatory or neoplastic process. This essentially eliminates unnecessary surgery in about one third of cases.²

When FNA smears reveal classical features of one or the other tumour it becomes satisfying for a

cytopathologist to designate benign or malignant nature of the neoplasm and further subtype it. However diverse morphological patterns and overlapping features the name is salivary gland tumours. No two pleomorphic adenomas (PA) look alike. Thus it becomes a challenging job to give precise diagnosis at times.

The diagnostic utility and sensitivity of FNA in salivary gland tumours has already been reported by the present author.³ The aim of the present study is to discuss pitfalls and problems in salivary gland lesions and try to find out possible solutions.

Cytology records of 18 months i.e. from 1 January 2004 to 30 June 2005 were taken out from the Cytopathology division of Government Medical College, Nagpur. Four problematic cases were picked

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up from a total 101 FNA from salivary lesions, in which cytology and histopathology did not correlate. Aspirations were performed by the standard procedure using a 23-gauge needle and 10-ml syringe. Patients were subjected to repeat aspiration if the initial aspirate was found to be inadequate for interpretation. Air-dried smears were stained with May-Grünwald Giemsa(MGG) stain and alcohol fixed smears were stained with Haematoxylin and Eosin (H&E) and Papanicolaou(Pap) stains.

Case Reports

Case - 1

A 35 year old female presented with a 3x4 cm, well defined, mobile, tender swelling in right parotid region. There was no lymphadenopathy.

FNA smears revealed mostly myxoid stroma (Fig.1), with presence of banal looking cells (Fig.2). A diagnosis of pleomorphic adenoma(PA) was offered. On subsequent excision of the tumour the picture was that of low grade mucoepidermoid carcinoma (MEC) (Fig.3). There was invasion in surrounding muscle tissue. On review of cytology, myxoid stroma was seen in Pap stained smears.

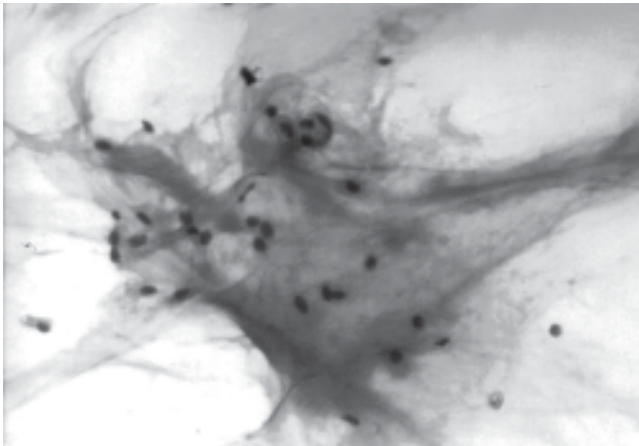


Fig. 1 : Case 1- FNAC smear showing myxoid stroma (Pap, x 400).

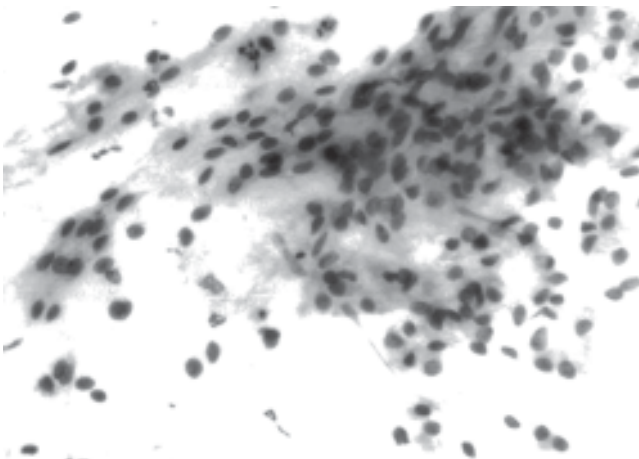


Fig. 2 : Case 1- FNAC smear shows banal looking cells (H&E, x 400).

The MGG stained smears did reveal amorphous background and singly distributed mucoid cells, a feature which was overlooked. Bland intermediate cells were mistaken for benign cells of PA. Occasional cells did show well defined cell boundaries with epidermoid features.

Case - 2

A 21 years old male presented with a 2x2 cm firm to hard swelling behind left ear. Patient had mild facial palsy. With a clinical diagnosis of pleomorphic adenoma, FNA was performed. Cytology smears revealed stroma and epithelial cells, suggesting a biphasic pattern. Spindly to polygonal squamous cells were also noted. Pleomorphic adenoma with squamous metaplasia was the official diagnosis.

Superficial parotidectomy was done. Histopathology revealed squamous cell carcinoma with plexiform pattern and fibromyxoid stroma.

On review, age, clinical diagnosis and FNA findings of biphasic pattern tilted the balance towards the diagnosis of PA. Squamous cells were noted but their malignant nature was not appreciated. Intensely stained red to purple stroma of pleomorphic adenoma is to be differentiated from fibromyxoid stroma associated with malignant tumours. Primary squamous cell carcinoma of salivary glands is extremely rare. This patient received radiotherapy after final diagnosis.

Case - 3

A 41 year old lady had a firm, mobile, 3x2 cm parotid swelling. FNA smears comprised of cohesive clusters of cells and stroma (Fig.4). Cyst macrophages and large dissociated cells were also present. Pleomorphic adenoma with atypia was the diagnosis on cytology. On excision a solid, cystic, encapsulated tumour revealed features of basal cell adenoma with tubular, trabecular, solid and membranous areas (Fig.5). For a cellular pleomorphic adenoma commonest differential diagnosis is basal cell adenoma. It is more of an academic discussion as the management remains the same. On review the stroma in this case was amorphous and was surrounding the neoplastic cells. The large cells were probably the columnar cells of the cystic component. The differences between the two tumours are shown in the Table 1.⁴

Case - 4

The patient was a 58 year old male with a 2x2 cm, mobile,

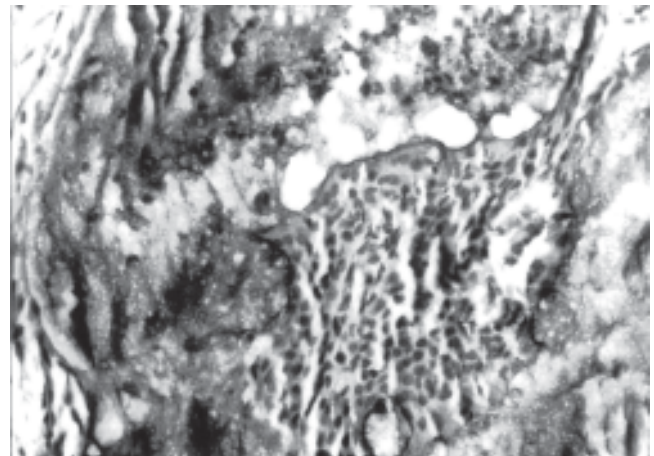


Fig. 3 : Case 1- Low grade mucoepidermoid carcinoma (H&E, x 400).

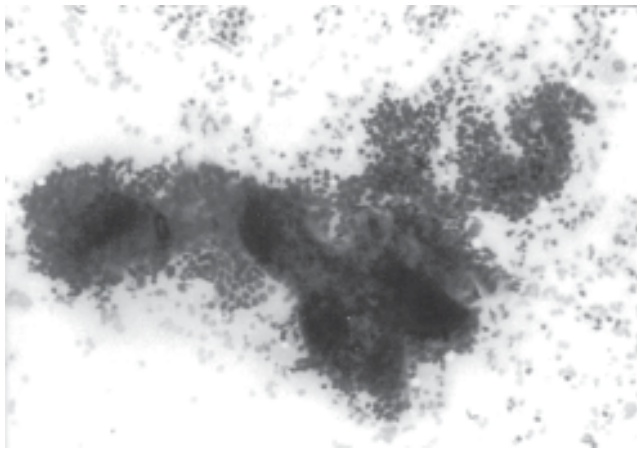


Fig. 4 : Case 3- FNAC smear shows cohesive clusters and stroma (MGG, x 400).

Table 1 : Differences between basal cell adenoma and cellular pleomorphic adenoma⁴

	Basal cell adenoma	Cellular pleomorphic adenoma
Extracellular matrix	Amorphous, homogenous stroma surrounding neoplastic cells	Fibrillary myxoid to chondroid stroma admixed with spindle cells
Cellular features	Tightly cohesive sheets, small cells, round to oval nuclei with finely granular chromatin	Loosely cohesive sheets, intermediate size cells, round to oval nuclei with finely granular chromatin
Background	Naked nuclei	Plasmacytoid cells

submandibular swelling, clinically labeled as cervical lymph node with possibility of metastasis. On FNA, cytology findings were amorphous background, dissociated epithelial cells with eccentric nuclei, and squamous cells. Lymphocytes were also noted. The smears were however sparsely cellular. FNA was repeated twice. The possibility of metastatic lesion was ruled out on complete clinical evaluation. The diagnosis ventured was that of a low grade mucoepidermoid carcinoma. Type 1 modified radical neck dissection was performed.

Histopathological diagnosis was benign lymphoepithelial cyst. On review it was observed that the diagnosis could have remained the same i.e. low grade muco epidermoid carcinoma.

Discussion

We referred to already diagnosed cases of PA from our own records, studied the literature and got some guidelines about PA.⁴⁶ The stroma is classically fibrillary and stains intensely red to purple with MGG. In Pap stained smears it is rather pale and amorphous. Sunburst appearance is imparted by the peripheral cells of the cluster, streaming into the stroma. Cell clusters are loosely cohesive and have scanty to moderate cytoplasm and bland nuclei. Naked nuclei are not a feature of PA.

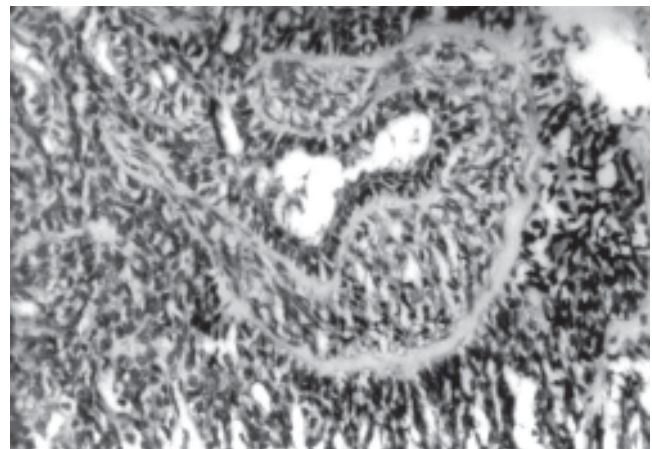


Fig. 5 : Case 3- Basal cell adenoma (H&E, x 400).

Low grade mucoepidermoid carcinoma and pleomorphic adenoma need to be differentiated as it is a recognized pitfall and as also encountered in the present study (Case1). Following points can form a valuable guideline.⁴ 1) The intermediate cell population is the counterpart of and closely resembles the basal/myoepithelial cells of PA. 2) Myxochondroid and fibrillary stroma is absent in MEC, MGG staining thus becomes mandatory. 3) Squamous differentiation in PA may show keratisation, a feature much less evident in MEC. 4) Goblet cells occur only infrequently in PA.

Plasmacytoid cells, since they have not been described in MEC are a good marker for PA. 5) MEC can also be mistaken for cystic lesion and vice versa (Case 4).

It needs to be emphasized that sampling and genuine problems do occur in typing of salivary gland neoplasms.⁷ The differences between cellular PA and basal cell adenoma (Case 3) are given in Table 1.⁴

Diagnostic problems in FNA cytology of salivary glands are discussed by various authors, based on a very large series of cases.⁸⁻¹⁰ Their vast experience proves utility of FNAC in salivary glands beyond doubt. It is further stated that if established diagnostic criteria are present and are strictly observed, a high level of accuracy can be achieved. There remains however, a proportion of problematic cases – depending on level of experience, continued desire to better oneself and acceptance of limitations. In such cases the uncertainty must be openly conveyed to the surgeon, rather than issuing a misleading report that will lead to inappropriate surgery. Lastly every clinician who uses FNAC must be aware of the limitations of the method.

Conclusions

Diagnostic criteria depend on cytological features,

architectural organization and synthetic cellular products. Background of the smear is equally important. Romanowsky type of stain is a must for FNA of salivary gland lesions. Pleomorphic adenoma and mucoepidermoid carcinoma both are common in occurrence and create problems in diagnosis. Certain guidelines can be formed in order to avoid the pitfalls to a certain extent. It is prudent on occasions to limit the FNA report to differential diagnosis. Communication and co-operation between a clinician and a cytopathologist can solve the riddle.

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2. Anatomy and Histology of normal kidneys and Adrenals – Dr. P.A. Singh (Allahabad).
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