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Original Research Article

A study of fine needle aspiration cytology in salivary gland lesions in a rural population

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ABSTRACT

Background: 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.
Methods: This was a prospective study done from October 2011 to October 2013. Fine needle aspiration cytology was performed in 64 patients with clinically significant salivary gland lesions.
Results: Fine needle aspiration cytology categorized 38 (59.4%) of the salivary gland lesions as neoplastic and 26 (40.6 %) as non- neoplastic lesions. Amongst the neoplastic lesions, 86.9% were benign and 13.2% were malignant cases.
Conclusions: FNAC of the salivary gland is simple, cheap, safe and reliable technique in the primary diagnosis of salivary gland lesions.

Keywords: FNAC, Salivary gland, Neoplastic, Non-neoplastic

INTRODUCTION

Salivary gland tumours are uncommon, corresponding to approximately 3-10% of neoplasms of the head and neck regions.[1,2] However, a wide variety of benign and malignant tumours that can originate in these glands and insufficient tumour cells make their diagnosis difficult in some patients.[3] 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.[4]

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.

METHODS

Present study was carried out in the Department of Pathology, SRTR Rural Medical college prospectively during the period 2011 to 2013. In the present study, 64 cases of salivary gland swelling were included attending the outpatient department of pathology and admitted in surgical wards. All patients were clinically evaluated by detailed history, clinical examination. FNA was

performed from different sites of the salivary gland swelling using a 10 mL disposable syringe and 21/23-gauge needle without local anaesthesia. FNA air-dried smears were stained with Giemsa stain and wet smears fixed in 95% ethyl alcohol were stained with Papanicolaou stain. Paraffin embedded tissue sections obtained from salivary gland tissue were stained with haematoxylin and eosin and few special stains were performed whenever required. Salivary gland lesions were studied under the three groups including non-neoplastic lesions and benign and malignant tumours.

RESULTS

In the present study, non-neoplastic lesions accounted for 40.6% (26/64), and neoplastic lesions were 59.4% (38/64). In neoplastic, 86.9% (33/64) were benign tumours and 13.2% (05/64) malignant. Commonest gland involved was parotid (51.6%, 33/64), followed by submandibular gland (34.4%, 22/64), minor salivary glands (10.9%, 07/64) and sublingual salivary gland (3.1%, 02/64) were observed in the present study. Age range for non-neoplastic lesions was 10 years to 65 years with commonest age group being 21 to 40 years. Male: female ratio was 1.6:1. Age range for neoplastic lesions was 18 years to 70 years with commonest age group for benign neoplasms being 21 to 40 years, and, for malignant neoplasms, it was 61 to 80 years. Male: female ratio was 1.53:1.

Table 1: Frequency of occurrence of various cytological types of salivary gland lesions.

Cytological type	No. of cases	%
Sialadenosis	04	6.25
Sialadenitis	14	21.9
Non-neoplastic cysts	08	12.5
Pleomorphic adenoma	31	48.4
Myoepithelioma	01	1.56
Basal cell adenoma	01	1.56
Mucoepidermoid carcinoma	03	4.69
Adenoid cystic carcinoma	01	1.56
Adenocarcinoma NOS	01	1.56
Total	**64**	**100**

Table 2: Frequency of age wise distribution of neoplastic lesions of salivary glands.

Age group in years	Benign tumors		Malignant tumors	
	No. of cases	%	No. of cases	%
0-20	01	2.63	0	0
21-40	15	39.5	01	2.63
41-60	12	31.6	01	2.63
61-80	05	13.1	03	7.89
Total	**33**	**86.8**	**05**	**13.2**

Table 3: Frequency of sex wise distribution of neoplastic lesions of salivary glands.

Sex	Benign tumors		Malignant tumors		Total	
	No. of cases	%	No. of cases	%	No. of cases	%
Male	18	47.3	5	13.2	23	60.5
Female	15	39.4	0	0	15	39.5
Total	**33**	**86.8**	**05**	**13.2**	**38**	**100**

Table 4: Frequency of distribution of neoplastic tumors according to cytological types and site of occurrence.

Cytological types	Total cases	Parotid gland		Submandibular gland		Minor salivary glands	
		No. of cases	%	No. of cases	%	No. of cases	%
Pleomorphic adenoma	31	21	55.3	10	26.3	0	0
Myoepithelioma	01	0	0	0	0	01	2.63
Basal cell adenoma	01	0	0	0	0	01	2.63
Mucoepidrmoid carcinoma	03	02	5.26	01	2.63	0	0
Adenoid cystic carcinoma	01	0	0	01	2.63	0	0
Adenocarcinoma NOS	01	01	2.63	0	0	0	0
Total	**38**	**24**	**63.2**	**12**	**31.6**	**02**	**5.26**

In non-neoplastic lesions, 10 lesions involved the submandibular gland (38.5%, 10/64), 09 lesions involved the parotid gland (34.6%, 09/64), 05 lesions involved the minor salivary gland (19.2%, 05/64) and 02 lesions in sub lingual gland (7.69%, 02/64). Acute sialadenitis was the commonest lesion (50%, 13/26) followed by benign cysts (30.8%, 08/26), sialadenosis (15.4%, 04/26) and chronic sialadenitis (3.84%, 01/26). In neoplastic lesions, most commonly involved site was the parotid gland (63.2%) followed by submandibular gland (31.6%) and minor salivary gland (05.26%). In benign tumours, pleomorphic adenoma accounted for maximum number of cases (81.6%), followed by Basal cell adenoma (2.63%) and Myoepithelioma (2.63%). In malignant lesions, mucoepidermoid carcinoma was the most common

malignant tumour (7.89%) followed by adenoid cystic carcinoma (2.63%), and adenocarcinoma (2.63%).

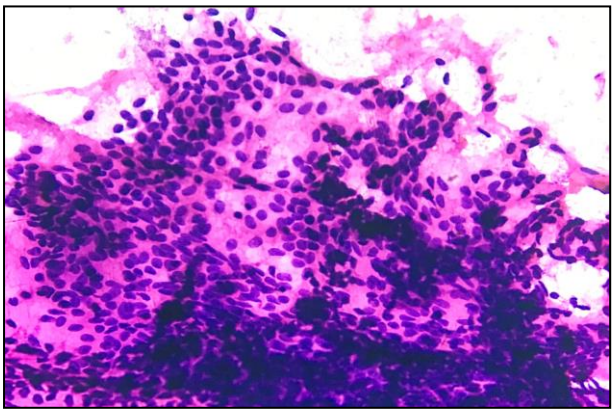

Figure 1: Pleomorphic adenoma. Aspirate showing benign epithelial cells mixed with some spindled cells in a light pink myxoid stroma (Papanicolaou stain X400).

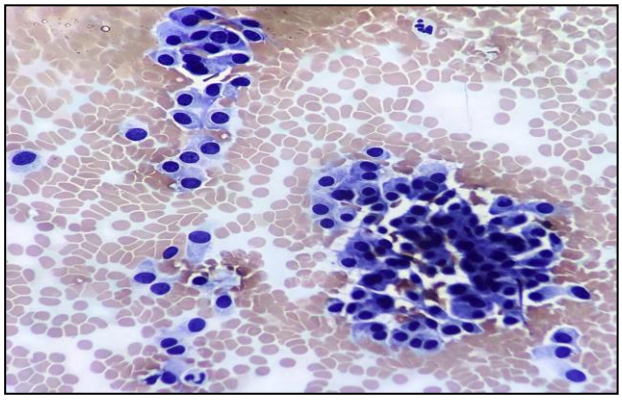

Figure 2: Oncocytoma. Aspirate showing sheets of polygonal oncocytes with abundant granular cytoplasm (May-Grunwald-Giemsa stain X400).

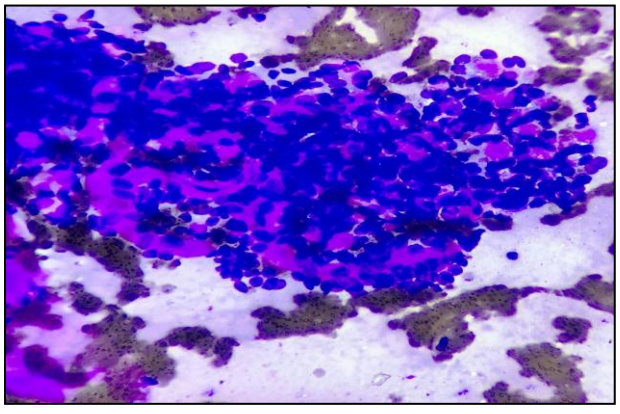

Figure 3: Basal cell adenoma. Aspirate showing uniform cells with oval nuclei in clusters with some branching and scanty, pink, homogenous matrix material in the background (Papanicolaou stain X100).

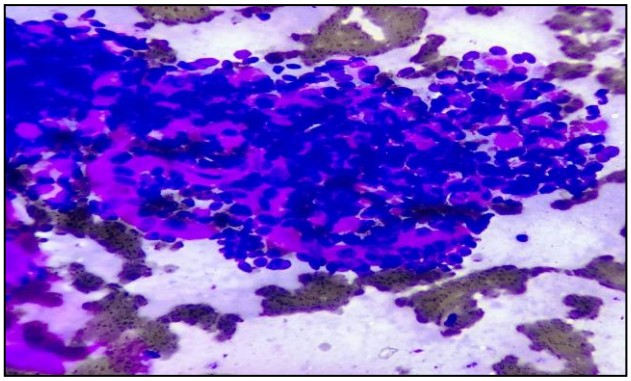

Figure 4: Adenoid cystic carcinoma. Aspirate showing clusters of small epithelial cells surrounding globules of acellular homogenous material (May-Grunwald-Giemsa stain X400).

DISCUSSION

FNAC is a safe and reliable and relatively painless procedure for the preoperative diagnosis of the salivary gland lesions. In the present study salivary gland lesions were more common in the 21-40 age group, which is comparable with the study done by Akhter et al.[6] Male predominanace was observed in our study similar to that reported by Jain et al, Gandhi SH et al and Singh Nanda KD.[7-9]

In site, wise distribution, parotid gland was most commonly involved followed by the submandibular, minor salivary gland and sublingual gland in present study. Similar observations were reported by Jain C7, Singh A et al and Ashraf A et al.[10,11] However study by Vaidya S et al revealed that parotid and submandibular glands were equally affected.[12]

In this study, benign tumours were more common than malignant tumours. Similar findings were reported by kumar et al, Ahmad et al and Fernandes et al.[13-15] However our study was closely related with the findings of Ahmad et al.[14]

Pleomorphic adenoma was the commonest salivary gland lesions followed by sialadenitis which is similar to studies of Gandhi et al and Roy AD.[8,16] In Non-neoplastic lesions, submandibular gland was most commonly involved followed by parotid which were similar with findings by Gandhi SH and Singh Nanda.[8,9]

In the present study, benign tumours were more common in the age group of 21-40 year, which is comparable with study done by Ahmad Set al.[14] Malignant tumours were more common in the age group of 61-80 years, whereas study done by Ahmad S et al, the most common age group was 41-60 years.[14]

Neoplastic lesions were common in males (60.5%) in our study which are similar to findings by Kumar SY 13 and Fernandes et al.[15] Pleomorphic adenoma and

Mucoepidermoid carcinoma were most common benign and malignant tumours in our study which are comparable with studies conducted by Singh N and Fernandes GC.[9,15]

Diagnostic problems in FNA cytology of salivary glands are discussed by various authors, based on a very large series of cases. 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.

FNAC of the salivary gland is a safe and reliable technique in the primary diagnosis of salivary gland lesions. Although, limitations are encountered while predicting specific lesions on cytology, especially when dealing with cystic and some malignant lesions. Lastly every clinician who uses FNAC must be aware of the limitations of the method.

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