ORIGINAL RESEARCH PAPER

Pathology

"EVALUATION ON FINE NEEDLE ASPIRATION CYTOLOGY IN DIAGNOSIS OF SALIVARY GLANDLESIONS"

KEY WORDS: Salivary gland, FNAC, Non-neoplastic and Neoplastic.

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ABSTRACT

Fine needle aspiration cytology (FNAC) of suspected salivary gland lesions has now been accepted as an excellent, though challenging, primary method in preoperative diagnosis and management of patients. Aim of the present study was to evaluate the spectrum of salivary gland lesions in our setting and to assess the diagnostic accuracy of FNAC for salivary gland lesions. In the present study, non-neoplastic lesions accounted for 18.8%, followed by 71.7% benign tumours and 9.4% malignant tumours. The high accuracy, sensitivity, and specificity of FNAC affirm that preoperative cytology is a useful, quick and reliable diagnostic technique indispensable for resource constrained developing countries.

Introduction:

Salivary gland tumours are uncommon, corresponding to approximately 2-6.5% of neoplasms of the head and neck regions.[1,2] Fine needle aspiration cytology (FNAC) of suspected salivary gland lesions has an established role in preoperative diagnosis and management of patients. FNAC is accurate, simple, rapid, inexpensive, well tolerated and harmless for the patient.[3] All the head and neck tumours, their superficial location, easy accessibility and high diagnostic accuracy makes FNAC a popular method for evaluating them.[4] This technique assumes greater importance considering the lack of characteristic clinical or radiologic features that may suggest a particular diagnosis. Though, few symptoms and signs may suggest malignancy, most malignant salivary gland lesions cannot be differentiated from their benign counterparts on clinical criteria alone.[5] Salivary gland swellings can result from tumours, an inflammatory process or cysts. The characteristic cytological features of common salivary gland lesions have been well-delineated in literature.[6] However, there also exist cytological pitfalls and overlapping features that make an accurate diagnosis difficult in few cases. This has led to a wide-range of sensitivities (62-97.6%) and specificities (94.3-100%) of cytological diagnosis.[7,8]Based on the cytology diagnosis, the appropriate therapeutic management can be planned pre-operatively, whether it is local excision for benign neoplasms, conservative management for non-neoplastic lesions, radical surgery for malignant tumours and chemotherapy or radiotherapy for metastasis and lymphoproliferative disorders.[9] Aim of this study is to evaluate the spectrum of salivary gland lesions in our setting and to assess the diagnostic accuracy of FNAC for salivary gland lesions.

Material and Methods:

This present study was conducted in the department of pathology, of various service hospitals where the author was posted during the period from June 2006 to June 2013, which comprised of Eighty five cases of salivary gland lesions, attending the outpatient and inpatient wards of surgery and ENT department of a tertiary care hospitals were included in the study. The cases were thoroughly interrogated, clinically examined and relevant investigations done. FNAC procedure was explained to the patient and patient was placed in a comfortable position. They were then subjected to fine needle aspiration cytology. Aspirations were carried out with 23 or 24 gauge needles of varying lengths with 10 ml syringes in a syringe holder after careful clinical examination of the lesion. The samples were placed on a glass slide and smears were made by inverting second glass slide over the drop and pulling the slides apart horizontally or vertically to evenly spread the material without crushing it. Smears were stained by using Field's and Papanicolaou stains. Cytologic diagnosis was compared with histopathologic diagnosis wherever it was available. The data was compiled and analysed for publication while serving in Department of Pathology, Geetanjali Medical College, Udaipur,

Results and Discussion:

The report of evaluation on all 85 individual samples, Chart-1 shows the Maximum number of cases was observed in age group 25-34 years and there were 46(54.11%) male and 39(45.9%) female cases in this study. Chart-2 shows the Commonest gland involved was parotid (69.4%), followed by submandibular gland (25.9%) and minor salivary glands (4.7%) whereas no case of sublingual salivary gland lesion was observed in the present study. In the present study, non-neoplastic lesions accounted for (18.8%), followed by 71.7% benign tumours and 9.4% malignant tumours (Table-1). Chronic sialadenitis was the most common non-neoplastic lesion (10.6%) followed by cystic lesions (4.7%), acute on chronic sialadenitis (2.3%) and chronic granulomatous inflammation (1.2%). Pleomorphic adenoma (67.05%) was the most common benign neoplasm. Warthin's tumour accounted for (4.7%). Mucoepidermoid carcinoma was the most common malignant lesion (4.7%) followed by acinic cell carcinoma (2.3%), carcinoma-ex pleomorphic adenoma (2.3%) and adenoid cystic carcinoma (1.2%) (Table-2). In the present study, benign neoplasms accounted for 61 cases (71.7%).

CHART – 1 AGE AND SEX DISTRIBUTION OF SUBJECTS:

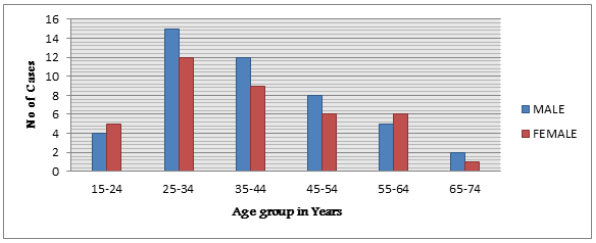

TABLE – 1Distribution of salivary gland lesions:

CYTOLOGICAL DIAGNOSIS		CASES (%)
Neoplastic	Benign	61(71.7%)
	Malignant	8(9.4%)
Non neoplastic	16(18.8%)	

CHART 2: Distribution of type of gland involved:

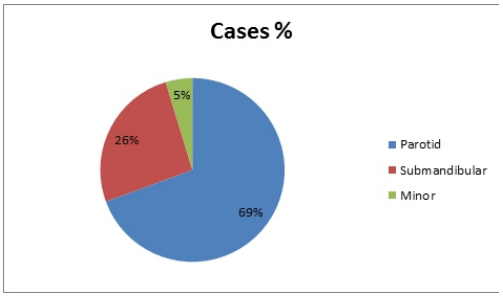

TABLE – 2Frequency distribution of non-neoplastic and Neoplastic lesions:

CYTOLOGICAL DIAGNOSIS		CASES (%)
Non-neoplastic (14)	Chronic sialadenitis	9(10.6%)
	Cystic lesions	4(4.7%)

	Acute on chronic sialadenitis	2(2.3%)
	Chronic granulomatous inflammation	1(1.2%)
Neoplastic Benign(45)	Pleomorphic adenoma	57(67.05%)
	Warthin's tumour	4(4.7%)
Neoplastic Malignant(06)	Mucoepidermoid carcinoma	4(4.7%)
	Acinic cell carcinoma	2(2.3%)
	Adenoid cystic carcinoma	2(2.3%)
	Carcinoma ex pleomorphic adenoma	1(1.2%)

The rate of benign neoplasm was lower than other reports which ranged from 49 to 83%.[10-12] We observed the pleomorphic adenoma as the commonest benign neoplasm similar to those previously reported in a number of studies.[10,14-16] Various authors have reported that the incidence of malignant tumours ranged from 15% to 32%, and in the present study it accounted for 9.4% similar to Nguansangiam et al, which have found a lower rate of malignant neoplasms.[10,14,15] In our study, the most common malignant salivary gland tumor was mucoepidermoid carcinoma which accounted for 4.7% of all malignant neoplasms followed by acinic cell carcinoma and malignant mixed tumours. In contrast, Nguansangiam et al. have found that lymphoma is the commonest primary malignant salivary gland tumor followed by mucoepidermoid carcinoma.[10]Parotid gland was observed as the commonest site of salivary gland lesions; 59(69.4%) of all salivary gland lesions involved the parotid gland in this series. Almost similar distribution of salivary gland neoplasms in the parotid gland has also been described by Choudhury et al.[17]

A review of literature revealed a wide variation in the sensitivity and specificity of FNAC for salivary gland swelling in different populations and setups.[18-20] The diagnostic sensitivity varied between 81% and 100%, specificity was 94-100% and the accuracy of tumour typing was 61-80%.[21] Klijanienko et al found a sensitivity of 94%, specificity of 97% and accuracy of 95%.[22] We found an overall diagnostic accuracy of FNAC to be 95.5%. Pleomorphic adenoma is a biphasic neoplasm and no two pleomorphic adenomas look alike. Epithelial metaplasia, mainly squamous and oncocytic, and significant cytologic atypia may at times be worrisome. Aspiration of mucoid paucicellular fluid or lack of stromal component may lead to a false positive diagnosis especially that of low grade mucoepidermoid carcinoma. Adenoid cystic carcinoma is a close differential of pleomorphic adenoma. This differentiation is very important as the surgical management is different. Adenoid cystic carcinoma shows basement membrane like material which may be misinterpreted as stromal component. Attention to nuclear morphology helps in distinguishing these two entities. One case initially diagnosed as Warthin's tumour was found to be low grade acinic cell carcinoma on histopathology. Interstitial infiltration of lymphoid cells is a prominent feature in some acinic cell carcinomas and cause confusion with Warthin's tumour.[23]

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.

Conclusion:

My study shows that, the 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 orders a FNAC must be aware of the limitations of the method.

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