

Role of FNAC in the diagnosis of salivary gland swellings

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Abstract

Objectives: The aim of this study was to evaluate the diagnostic accuracy and efficacy of Fine Needle Aspiration Cytology (FNAC) in various salivary gland swellings.

Materials and methods: This retrospective study was performed at Kathmandu Medical College Teaching Hospital (KMCTH) from January 2004- December 2006. During this period a total of 978 FNAC's were done out of which 40 FNAC's were on salivary gland swellings. Correlation was done between cytological smear slides and biopsy slides.

Results: In this series of FNAC, 16 cases (40%) were benign neoplasms, 5 cases (12.5%) malignant neoplasms, non-neoplastic cysts 3 cases (7.5%) and inflammatory lesions 16 cases (40%). Histopathology was available in 24 cases out of which 22 cases correlated with cytology. There were no false positive reports but false negative result was seen in 4 cases. Sensitivity and specificity were 90% and 100% respectively.

Conclusion: FNAC is useful in the diagnosis of salivary gland swellings especially in benign conditions with a sensitivity of 90% and specificity of 100%.

Key words: Fine needle aspiration cytology (FNAC); Salivary gland swelling (SGS)

There are 3 pairs of major salivary glands, namely the parotid, submandibular and sublingual glands. In addition, there are hundreds of minor salivary glands situated in the mucosal lining of the upper aerodigestive tract. Salivary gland diseases usually present as a swelling of the affected gland. These lesions are commonly encountered in day to day practice. FNAC is being increasingly used in the diagnosis of the Salivary Gland Swellings (SGS). This article offers an overview of the management of patients with salivary gland swellings.

Aims and objectives

1. To evaluate the diagnostic accuracy and efficacy by FNAC in various salivary gland swellings.
2. To correlate the FNAC diagnosis with histopathology.

Materials and methods

This is a retrospective study performed at KMCTH over a period of three years from January 2004 to December 2006. During this period a total of 978 FNAC's were done out of which 40 FNAC's were on salivary gland swellings. Cytology slides were stained with Giemsa and Papanicolaou stain. Biopsy slides were stained with Hematoxylin and Eosin (H & E) stain.

Results

Sex distribution showed 18 (45%) male patients and 22 (55%) female patients. In this series of FNAC, 16

cases (40%) were benign neoplasms, 5 cases (12.5%) were malignant neoplasms, 3 cases (7.5%) were non-neoplastic cysts and 16 cases (40%) were inflammatory lesions.

Malignant lesions were common in 45-60 yrs age group with a male predominance. Adenoid cystic carcinoma was found in 3 cases followed by one each of Acinic cell carcinoma and Mucoepidermoid carcinoma.

Benign lesions were common in 30-40 yrs age group with a female predominance. The commonest benign lesion was pleomorphic adenoma (30%) followed by Warthin's tumour (5%) and vascular tumours (5%).

Histopathology was available in 24 cases out of which 22 cases correlated with cytology. There were no false positive reports but false negative result was seen in 4 cases. Sensitivity and specificity were found to be 90% and 100% respectively.

Correspondence

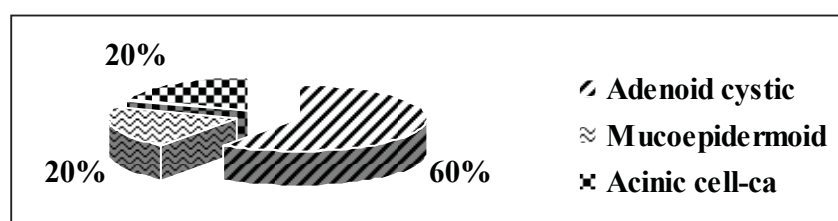
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Table 1: Distribution of SGS on FNAC

Lesions	No of cases	% of cases
Benign	16	40%
Malignant	5	12.5%
Inflammation	16	7.5%
Non neoplastic cyst	3	40%
Total	40	100%

Table 2: Distribution of benign tumours on cytology

Lesions	No of cases	% of cases
Pleomorphic adenoma	12	30%
Warthin's tumour	2	5%
Vascular tumour	2	5%
Total	16	40%

**Fig 1:** Distribution of malignant tumours on cytology**Table 3:** Comparison between cytology & histopathology

Lesion	Cytology	Histology
Plemorphic adenoma	12	9
Warthin's tumour	2	2
Vascular tumour	2	2
Adenoid cystic carcinoma	3	3
Muco-epidermoid carcinoma	1	1
Acinic cell carcinoma	1	1
Chronic sialadenitis	4	2
Non-neoplastic cyst	3	3
Total	29	22

Table 4: Age wise distribution of SGS

Age group(yrs)	No of cases	Percentage
0-20	4	10%
21-40	21	52.5%
41-60	14	35%
61-80	1	2.5%

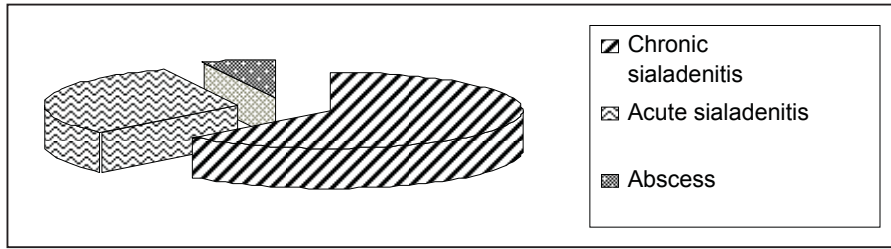


Fig 2: Distribution of Inflammatory lesions on FNAC

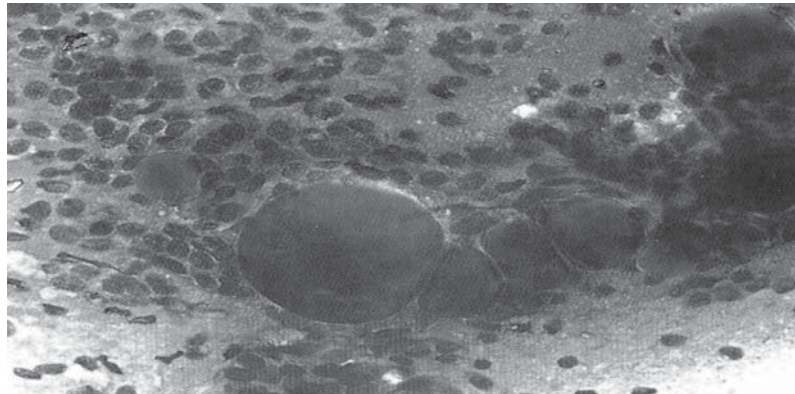


Fig 3: Adenoid Cystic Carcinoma(FNAC) Giemsa stain

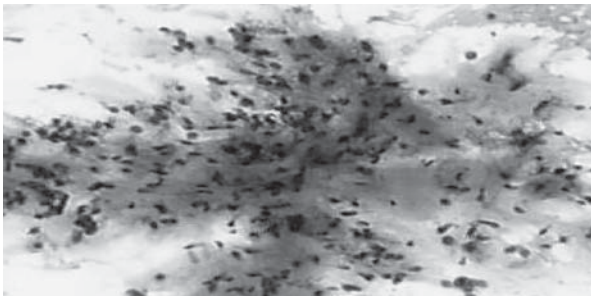


Fig 4a: Pleomorphic Adenoma (Papanicolou stain)

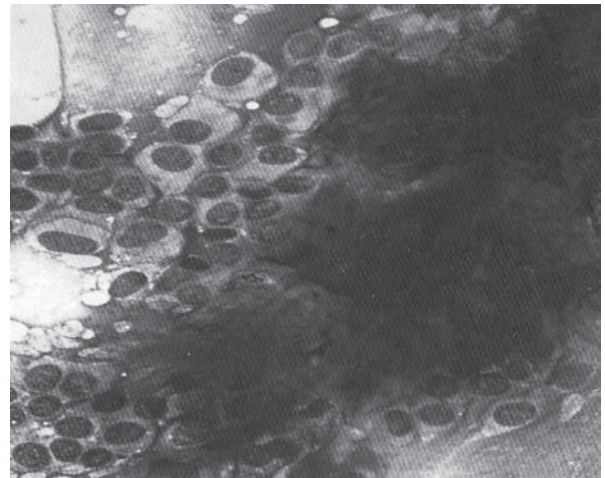


Fig 4b: Pleomorphic Adenoma (Giemsa stain)

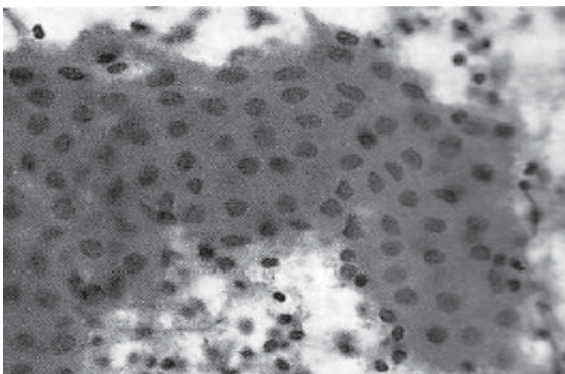


Fig 5: Warthin's Tumour

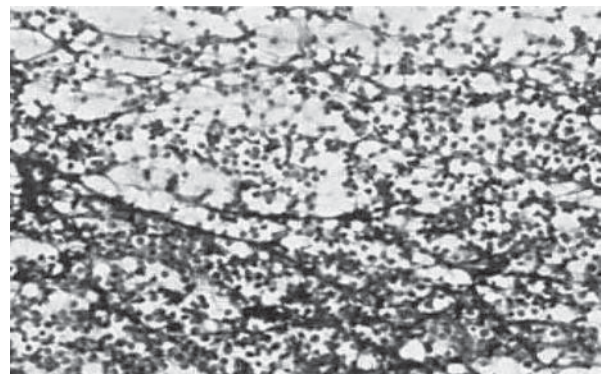


Fig 6: Chronic Sialadenitis

Discussion

A salivary gland swelling can present in a variety of locations, depending on the salivary gland affected. A swelling that arises in the parotid or submandibular gland usually presents as an upper neck mass. A swelling of a minor salivary gland or sublingual gland typically presents as an intra-oral swelling. However, minor salivary gland tumours can sometimes occur in other areas of the upper aerodigestive tract including the nasal cavity, paranasal sinuses and larynx.

Fine-needle aspiration cytology (FNAC) of the salivary gland is a commonly accepted, sensitive and specific technique in the diagnosis of both neoplastic and non-neoplastic lesions of the salivary gland. In this study the commonest benign lesion was pleomorphic adenoma (30%) followed by Warthin's tumour (5%) and vascular tumour (5%). S. Elagoz¹ et al found pleomorphic adenoma (45%) followed by Warthin's tumour (9%). This study shows adenoid cystic carcinoma is the commonest malignancy (3 cases) followed by one each of acinic cell carcinoma and mucoepidermoid carcinoma. C.J.R. Stewart² et al also found that adenoid cystic carcinoma (2 cases) is the commonest malignancy.

The most commonest age group of SGS was 21-40 years (52.5%) followed by 41-60 yrs (35%) with a female predominance. The occurrence of salivary gland tumour increases with age. H. Keun⁶ et al found in another study.

Although fine needle aspiration cytology (FNAC) is usually done routinely, most salivary gland tumours, with the exception of lymphomas, need to be excised even if the FNAC is reported as benign. There are a number of reasons for this. Firstly, FNAC is not 100% accurate, and the accuracy varies according to the experience of the cytopathologist.⁸ Secondly, the commonest benign tumour is a pleomorphic adenoma which has the potential to undergo malignant transformation in a long-standing case. Thirdly, many patients may also want the tumour removed for cosmetic reasons. Despite the drawbacks, FNAC is still useful and usually forms part of the diagnostic work-up. There are 2 main reasons for this. Firstly, non-neoplastic lesions can sometimes be confidently diagnosed e.g. TB. In these cases, surgery can be avoided altogether and patients treated accordingly. Secondly, if cytology does diagnose a malignancy, which is highly specific⁷⁻⁹ It helps in the surgical planning and enhances better pre-operative counselling.

Non-neoplastic lesions of the parotid are not uncommon. In our study inflammatory lesions & non neoplastic cysts were diagnosed in 16 & 3 cases respectively. Z. Baren³ et al found 13 inflammatory lesions and 5 non-neoplastic

cysts. Arshad⁴ et al found 20 inflammatory lesions and 10 non-neoplastic cysts. Differential diagnosis of non-neoplastic salivary lesions is required to exclude benign and malignant salivary tumours.

Fine needle aspiration cytology (FNAC) of a parotid mass, to distinguish neoplastic lesion from inflammatory mass is very useful⁵. In this study, clinically one case was sialadenitis, but later on it is diagnosed as adenoid cystic carcinoma on FNAC. Usually tumours are painless, but adenoid cystic carcinomas are associated with pain due to perineural invasion. Hence it is diagnosed as an inflammatory lesion by the clinicians. Differentiation on clinical grounds alone is not accurate⁵. No complications such as haematoma, nerve injury or infection occurred following the FNAC. In this series of patients, fine needle aspiration was also diagnostic for parotid abscess and could exclude malignancy in parotid cysts. There were no false positive reports but false negative results were seen in 4 cases. Sensitivity and specificity were 90% and 100% respectively.

Conclusion

The variety of salivary gland diseases is wide. The commonest causes include infections, duct stones and neoplasms. By taking a careful history and performing a thorough physical examination, supplemented with ultrasonography when necessary, the clinician can make an accurate diagnosis in the majority of cases. FNAC is useful in the diagnosis of salivary gland swellings especially in benign conditions with sensitivity of 90% and specificity of 100%.

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