

Role of FNAC in Parotid Gland Tumours

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This study was conducted at Allama Iqbal Medical College/Jinnah Hospital during 1998. Nineteen patients with parotid disease were aspirated. Most of the patients were male. A wide spectrum of diseases was diagnosed on FNAC. Most of the patients were diagnosed to have pleomorphic adenoma. The statistical analysis showed specificity of 83.33%. FNAC is a reliable procedure for initial evaluation in benign disorders. FNAC is superior to other investigations used for the diagnosis of salivary gland disease.

Key words: FNAC, parotid gland tumours

Tumours of salivary tissue constitute about 5% of head and neck tumours. Seventy five percent of the salivary neoplasia arise in the parotid gland. Eighty percent of these neoplasia are benign and 80% of the benign tumours are pleomorphic adenoma.

The practical value of aspirates in salivary gland swelling is mainly assisting the surgeon in advanced planning of the proper therapeutic procedures.

Biopsy of the salivary neoplasms shed cells if they were incised and will seed readily giving rise to recurrence. Biopsy of the parotid also has a risk of damage to the fascial nerve. So FNAC is the only tool to confirm the pre-operative microscopic diagnosis. It is most valuable for deep lobe tumours if guided by C.T. (Computed tomography).

There is no evidence that this diagnostic approach has significantly modify either the therapy or natural history of salivary gland tumours. The principal reason for sampling by aspirates is the rapid and inexpensive answer to three key question.

1. Is the tumour from salivary gland or other origin.
2. Is it benign or malignant.
3. Can the Optimal mode of treatment be determined from the aspirated sample, or further investigation are necessary?

Because of the great complexity of histologic and cytologic patterns of salivary gland tumours, accurate answers to these questions require great deal of personal experience with both diagnostic modalities.

Out of these Nineteen cases three aspirates were inadequate. The inadequacy rate in my study is 15.78%. The inadequacy rate in the study of Cardillo-MR¹ is 10.3%. While it is 17.72% in the study of Young-JA: (1990)².

The inadequacy rate in this study is bit high because of personal inexperience.

Most of the swellings of the parotid gland in our study proved out to be neoplastic as rightly mentioned by Cardillo-MR³ in his studies & Armed Forces Institute of Pathology review of 350 cases.

The study conducted in the postgraduate institute of medical education and research Chandigarh, India, by

Jaurana-N⁴ has shown the similar results.

Patients and Methods.

In the study nineteen patients were included. All were having unilateral parotid swelling of varying duration ranging from 02-10 years. Average size of the swellings varied from 3.5x2.5cm upto 10x6cm. All were solid except one which was both cystic as well as solid.

Nineteen salivary glands were aspirated with fine needle and smears of three (15.78%) were found inadequate and not suitable for cellular interpretation.

Out of these 19 patients two (10.52%) were female with age of 35 and 72 years and seventeen (89.47%) were males with age range of 28-56 years. All the aspiration were performed on parotid gland.

Results:

The cytological diagnosis showed chronic sialadenitis, in two patients and pleomorphic adenoma in eleven cases. Among the malignant lesions FNAC showed Mucoepidermoid carcinoma in one patient, while two aspirates were found to be suspicious for malignancy (Table 1)

Table 1 Diseases Diagnosed on FNAC.

Diseases	Total Cases	With Histo-pathology	Without Histopathology
Chronic Sialadenitis	02	00	02
Pleomorphic adenoma	11	09	02
Mucoepidermoid Carcinoma	01	01	-
Suspicious for malignancy	02	02	-
Total	16	12	04

Histology confirmed the pleomorphic adenoma in eight cases while the one patient was diagnosed as a case of carcinoma arising in pleomorphic adenoma. The case of mucoepidermoid carcinoma was confirmed on histology. Among the two suspicious cases one was diagnosed as Mucoepidermoid carcinoma and the other as pleomorphic adenoma., the patients diagnosed as Chronic Sialadenitis were not advised for biopsy and put on antibiotics (Table

2&3)

Table 2. Diseases Diagnosed on Histopathology.

Diseases	No. of Pts.
Chronic Sialadenitis	00
Pleomorphic adenoma	09
Mucoepidermoid Carcinoma	02
Carcinoma arising in Pleomorphic adenoma	01
Total:-	12

Table 3 Cytological Diagnosis Versus Histopathological Diagnosis.

Diseases	Cytological Diagnosis	Histopathological Diagnosis	False +ve	False -ve
Pleomorphic adenoma	09	08	-	01
Mucoepidermoid Ca.	01	01	-	-
Suspicious for malignancy	02	01	01	-
Total	12	10	01	01

One case of pleomorphic adenoma diagnosed on cytology was proved to be a carcinoma arising in pleomorphic adenoma on histopathology.

The reason for this misdiagnosis, is on part of microscopy because cellular atypical pleomorphic adenoma posed difficulties in cytodiagnosis, the cellular pleomorphic adenoma can cause considerable diagnostic difficulty and on the part of aspiration because it is small hidden nodes in the swelling which can be missed on aspiration so the exact diagnosis is not possible on cytology. Even such small hidden foci can be missed in surgical excision of parotid.

One patient out of two suspicious cases turned out to be a Mucoepidermoid Carcinoma. An accurate diagnosis of this tumour on FNAC is only possible when all the three components were identified (i.e. epidermoid cells, intermediate cells and mucous producing cells). Mucoepidermoid and cellular atypical pleomorphic adenoma pose considerable difficulty in cytodiagnosis.

So this diagnostic problem was faced by the previous worker. The second case of suspicious diagnosis on cytology was declared as Pleomorphic Adenoma (Table 4).

Table-4 Diagnostic Discrepancies.

Cytological Diagnosis	No.	Histopathological Diagnosis
Pleomorphic adenoma	01	Carcinoma in pleomorphic adenoma
Suspicious for malignancy	01	Pleomorphic adenoma
Total	2	

Pleomorphic adenomas are composed of epithelial & stromal elements that vary widely in appearance and in proportion in different areas of same tumour and among

different tumour.

Occasionally diagnostic problem can be considerable. In one case of pleomorphic adenoma the aspirates yielded a mixture of unusual epithelial & myxochondroid feature associated with cell clusters arranged in spherical, ball like structure as commonly observed in adenoid cystic carcinoma (Koss). Reported two cases of marked atypia of the epithelia cells resembling carcinoma. Zjicek reported two such cases in his study. The rate of misdiagnosis is 5.5% in the study carried out by Chung-Hua-Ping⁵.

The statistical indices of this series is compared with those of the others in the following table which shows that the results, of this study are within acceptable limits.

The statistical analysis showed an accuracy of 83.33% sensitivity of 66.66%, specificity of 88.88% and predictive values for positive and negative diagnosis of 66.66% and 88.88% respectively (Table 5).

Table 5 Accuracy, specificity and sensitivity of different authors.

Year	Author	Cases	Accuracy	Specificity	Sensitivity
1980	Coloacchio et al.	300	97.3%	98.6%	82.6%
1962	Einhorn & Frazen	177	94.4%	92.3%	95.2%
1977	Garhengosn	32	81.3%	77.3%	90%
1981	Young et al..	16	93%	95.8	84.6%
	Present study	12	83.33%	88.88%	66.66%

Discussion

FNAC is a reliable procedure for the initial evaluation in benign disorders. It is cheap speedy and easy to perform with little complications. For evaluation of the head and neck masses it is suitable for in office use. It's wider application in developing countries for diagnosis is suggested. The use of this technique for the management of all benign and most malignant salivary gland lesions is beneficial.

FNAC is superior to the other investigations used for the diagnosis of salivary gland diseases for example sialography, computed tomography and CT sialography . FNAC can also be used for screening in children with doubtful superficial masses^{6,7}.

Aspiration biopsy cytology will identify the lesions of the salivary glands that are not clinically obvious and provide the surgeon with the required pre-operative information.

FNAC of the major salivary glands is easy to perform with high predictive value. The main indications for the FNA in salivary glands are inflammatory and neoplastic lesions. Benign lesions for follow-up if immediate surgery is not possible and for cytological confirmation of the malignant growths⁸.

The pre-operative cytological diagnosis of the salivary gland tumour may warrant a more extensive radiological work up and therapy inducing radical surgery and neck dissection followed by the radiotherapy.

A better therapeutic planning is possible for a surgeon with the help of pre-operative cytological diagnosis in salivary gland disease.

Incision biopsy in case of salivary glands is not suggested due to the complication of shedding of cells which seed readily and give rise to recurrence. There is a danger for damage to the fascial nerve in doing the incision biopsy of parotid gland. FNAC of major salivary gland is easy to perform and is of considerable value in the management of head & neck masses but particular diagnostic difficulties are encountered in salivary gland tumours^{9,10}.

Errors of cytodiagnosis in salivary glands, are due to the morphological variability of these tumours which make sampling and interpretation difficult. Mucoepidermoid tumour and cellular atypical pleomorphic adenoma are difficult to diagnose^{10,11}.

The complexity and variability of salivary gland lesions make it difficult to diagnose exactly on cytology but sarcoidosis of the salivary glands presenting primarily as head and neck masses can be diagnosed on cytology.

Diagnostic accuracy can be improved with experience and good communication between the cytopathologist and clinician.

FNAC can play a valuable role in the clinically alarming but benign postlumpectomy lesion for their non-surgical management.

In spite of above mentioned pitfalls of FNAC of salivary glands. It has been a frequently used technique for the diagnosis of the neoplasia of head and neck and has high sensitivity and specificity for cytological diagnosis of

salivary gland lesions. FNAC percutaneous biopsies in general are associated with significantly lower complication rates as compared with punch biopsies.

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