

Study Of Fine Needle Aspiration Cytology In Head And Neck Lesions

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Abstracts: Background and Objectives: This study is done to evaluate the role of FNAC in head and neck masses and so to study their distribution. A correlation was done between cytology and histopathology whenever surgical specimens were available and to assess the accuracy, sensitivity, specificity, positive predictive value and negative predictive value in various head and neck lesions. **Methodology:** From 500 cases, FNA smears were taken and stained with PAP, MGG and special stains whenever required. FNA results were interpreted and analysed according to the anatomical sites and the lesions were categorized into inflammatory and neoplastic conditions. **Results:** Among 500 cases, histopathological correlations were available only in 103 cases. The sensitivity, specificity, predictive value of the positive test, predictive value of the negative test lesions which were being detected were 88.89%, 80.64%, 66.67%, 50% respectively. There were no false positives. The diagnostic accuracy of the salivary gland, lymph node and soft tissue lesions were 87.13%. **Conclusion:** There was perfect agreement in a majority of the lesions. The technique is simple, safe, convenient and an accurate method for tissue diagnosis. Hence, FNAC is an effective diagnostic tool in the diagnosis of head and neck masses. [Joshi D NJIRM 2015; 6(6):43-46]

Key Words: FNAC, histopathology, thyroid, lymph nodes, salivary glands, soft tissue.

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Introduction: Fine needle aspiration cytology (FNAC) is one of the most valuable tests in the initial assessment of the patient who presents with a mass in the head and neck region.¹

It is accurate, inexpensive and quick. Particular relevance in the head and neck area because of easy accessibility of the target site, excellent patient compliance, minimally invasive nature of the procedure and helping to avoid surgery in non-neoplastic lesions, inflammatory conditions and also some tumors.² The tissues which are most frequently sampled are lymph nodes, thyroid and major salivary glands

Material and Methods: A total 500 cases of head and neck lesions were studied over a period of 5 yrs in AMC MET Medical college, Ahmedabad. FNAC was done using a 23 gauge needle fitted to a 10ml disposable syringe. An average of 2 attempts were performed and smears were prepared. The slides were fixed in methanol and stained by the Papanicolaou stain. May-Grunwald Giemsa stain and Zeihl-Neelsen's stain were done when required. All patients were subjected to relevant general history, history regarding the swelling, general physical examination, systemic examination, local examination of the swelling and routine and other relevant investigations. Histopathological correlation was obtained in 103 cases out of 500 cases.

Results:

The distribution of the 500 cases is given in [Table-1]. Thyroid gland was the commonest site aspirated (46%), followed by lymph node (40%), salivary gland (10%), and soft tissue lesions (3.2%) and miscellaneous lesions (0.80%).

Table 1: Distribution of head and neck masses

Location	Number of cases	Percentage
Thyroid	230	46%
Lymph node	200	40%
Salivary gland	50	10%
Soft tissue	16	3.2%
Miscellaneous	4	0.80%
Total cases	500	100 %

Patients with a thyroid swelling comprised of 30 males and 200 females and their ages ranged from 20-73 years. The commonest lesion encountered in the thyroid gland was Nodular goiter (78.23%), followed by Hashimoto's thyroiditis (8.69%). Amongst the malignant neoplasms, Papillary carcinoma (8.69%) was the most common lesion noted. Psammoma bodies were found in only one case of papillary carcinoma. Patients with lymph node swelling comprised of 50 males and 150 females and their ages ranged from 2-76 years. Reactivelymphadenopathy (55%) was the commonest cause of lymphadenopathy, followed by tuberculous and granulomatous (30%), metastatic lymphadenopathy (12.5%) and lymphoma (2.5%). All cases of

tuberculous lymphadenopathy showed moderately cellular smears. There were epithelioid granulomas in 20 cases and caseating necrosis in 10 cases. The special stain for acid fast bacilli was positive in ten cases.

A subsequent biopsy confirmed the cytological diagnosis. Patients with salivary gland lesions comprised of 30 males and 20 females and their ages ranged from 20-49 years. The commonest benign and malignant tumours reported were Pleomorphic adenoma (60%) and Mucoepidermoid carcinoma (20%) respectively and miscellaneous (20%). Fibrillary chondromyxoid ground substances were seen in all the cases. One case showed plasmacytoid cells with

well defined cell borders. Cyst macrophages were seen in one case. One case of mucoepidermoid carcinoma was confirmed by histological diagnosis. The diagnostic accuracy for salivary gland lesions was 100%.

Patients with soft tissue lesions comprised of 10 females and 6 males and their ages ranged from 13-60 years with lipoma (62.5%), hemangioma (6.25%) and hemangioma (18.75%) and malignant spindle cell tumours (12.5%).

We obtained histopathological correlation in 103/500 cases. Statistical analysis is shown in table 2.

Table 2: Sensitivity of FNAC in diagnosis of Head and Neck lesions in the study

	FNAC	HPE correlation	FP	FN	TP	TN	Sensitivity	Specificity	PPV	NPV
Lymph node	200	40	1	3	30	6	90.90%	85.71%	93.75	37.5
Thyroid	230	48	4	2	30	12	93.75%	75%	89.47	40
Salivary gland	50	8	1	2	1	4	33.33%	80%	60	66.67
Soft tissue	16	4	0	0	2	2	100%	100%	100	100
Miscellaneous	4	3	0	1	1	1	50%	100%	66.67	50
Total	500	103	6	8	64	25	88.88%	80.64%	91.42	75.75

Discussion: The differential diagnosis of a head and neck swelling covers a broad spectrum of disease with differing implications for management. The nature of lesion will determine whether patient can be managed non operatively or has to be subjected to a major surgical procedure and in malignant lesions whether further chemotherapy or radiotherapy is required. The gold standard for diagnosing head and neck swellings is open biopsy (incisional/excisional) and histopathological examination of the specimen within here ntrisk of surgical and anesthetic complications particularly local recurrence in malignant lesions. But aspiration cytology has the advantages of relatively less morbidity, quick to perform, no need for anesthesia, less cost and most without any contraindications. The results of 500 aspirates from head and neck masses have been categorized into inflammatory, benign and malignant lesions. Four

aspirates (0.64%) were excluded, as they were inadequate. The incidence of inadequate or unsatisfactory samples in various studies has ranged from 0-25%.

Unsatisfactory aspirates were the result of poor handling of the aspirated material and the lack of trained cytopathologists. Inadequacy was also attributed to the small size of the lesions⁴.

In thyroid lesions, the diagnostic errors were most commonly due to inadequate specimens, haemorrhagic aspirates, and cystic lesions. In the study of Jayaram G⁵, intra nuclear cytoplasmic inclusions and psammoma bodies were detected in upto 83% and 24% of cases of Papillary thyroid carcinoma respectively, while in our study only one case showed psammoma bodies.

In lymph node aspirates, FNAC coupled with ZN

staining for AFB is a very useful diagnostic tool in the diagnosis of tuberculous lymphadenitis. In the study of Tong et al⁶ the special stain for AFB showed negative results. Tuberculous lymphadenitis and metastatic lesions of lymph node showed good correlation with subsequent histopathological findings while lymphomatous lesions diagnosed by FNAC showed poor histopathological correlation.

Among the salivary gland lesions, the parotid was the most commonly involved gland. Among benign tumours, pleomorphic adenoma was the commonest tumour and among the malignant tumours mucoepidermoid carcinoma was the most common one. Review of literature shows that the accuracy has ranged from 80 to 90.8%⁹ which we found very less (16.5%) The possible reason might be the less no of the cases available for histopathological correlation. (8/50 cases)

FNAC usually faces no problem in distinguishing high grade soft tissue sarcomas from benign lesions. However, border line and low grade lesions are susceptible to be missed.

Accurate typing and grading of the tumour is not possible in many cases by FNAC alone.

Almost all studies on soft tissue tumours have reported this limitation of FNAC¹⁰

In the present study the overall sensitivity, specificity, PPV, NPV and diagnostic accuracy was found to be 88.89%, 80.64%, 66.67%, 50% and 87.13% respectively.

In the study of Shaan Khetrpal et al¹¹ the sensitivity and specificity was found to be 93.24% and 100% respectively, while in the study of Fernandes et al¹² overall diagnostic accuracy of 96.7% with specificity of 100% and sensitivity of 87.5% was reported.

Limitations of the procedure in the head and neck region, namely:

- Typing the various Reactively lymphadenopathies^{6,7,8}.
- To categorize the border line and malignant soft tissue tumors¹⁰.
- To differentiate Colloid goiter from the Follicular variant of papillary carcinoma¹.

Conclusion: Fine Needle Aspiration Cytology is a rapid, convenient and accurate method of tissue diagnosis that can be done on an outpatient basis. FNAC offers an ample method of diagnosis of neoplastic and non neoplastic lesions of the head and neck. The procedure is safe and free from complications and is well tolerated by the patients. There is no need of anesthesia and speedy results are obtained. It serves as a complementary diagnostic procedure to histopathological examination. There was almost perfect agreement between the cytological and histological findings and there was fairly good accuracy. There were only few false negative and false positive cases in our study. Hence we conclude that Fine Needle Aspiration Cytology is a highly effective diagnostic procedure in the diagnosis and management of head and neck masses.

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