

FNAC of Head and Neck Swellings

Garima Gupta*, D.S. Joshi**, Alpa Shah***, Minesh Gandhi****, N.R. Shah*****

Abstract

Background : Fine Needle Aspiration Cytology is simple, quick, inexpensive, majority are on OPD basis and minimally invasive technique used to diagnose different types of swellings located in the head and neck commonly originate from cervical lymph node, thyroid, salivary glands and soft tissues. **Aim :** To assess the frequency of incidences at different sites of head and neck region, and amongst the sex group. To assess distribution amongst inflammatory and neoplastic lesions. **Methodology:** A retrospective study was conducted at a tertiary care hospital, Ahmedabad from October 2013 to January 2014. Patients between the ages of 1 to 80 years were enrolled into the study. A total of 146 patients with a head and neck swelling underwent FNAC. Fine needle aspiration diagnosis was correlated with detail of relevant clinical findings and investigations. **Results :** Out of 146 fine needle aspiration procedures, 107 (73.29%) were of lymph nodes, 25 (17.12%) were of thyroid gland, 08 (5.48%) from soft tissue and 06 (4.11%) from salivary glands. Amongst lymph node swellings (73.29%), tuberculous involvement was seen in 73 cases (68.22%) with a female preponderance. Out of total 146 lesions, 109 (74.66%) were inflammatory, 29 (19.86%) were benign and 08 (5.48%) were malignant. **Conclusions :** The head and neck swellings are very common conditions encountered, with most of them being on OPD basis. Our study found that FNAC is simple, quick, inexpensive and minimally invasive technique to diagnose different types of head and neck swellings. It could differentiate the infective process from neoplastic one and avoids unnecessary surgeries. In case of neoplastic conditions, patient may be referred to Regional Cancer Centre.

Key Words : Fine needle aspiration cytology, Benign and Malignant lesions.

Introduction :

Fine needle aspiration cytology (FNAC) is a simple, quick and cost effective method to sample superficial masses found in the head and neck. ⁽¹⁾ The technique is performed in the outpatient department and causes minimal trauma to the patient. An early differentiation of benign from malignant pathology is beneficial as it greatly influences the planned treatment. ⁽²⁾ It can be both diagnostic and therapeutic in cystic swellings. ⁽³⁾ It is helpful for the diagnosis of salivary gland tumours where it can differentiate between a malignant and a benign tumour with over 90% accuracy. ⁽⁴⁾ FNAC is particularly helpful in the work-up of cervical masses and nodules because biopsy of cervical swelling should be avoided unless all other diagnostic modalities have failed to establish a diagnosis. ⁽⁵⁾ FNAC does not give the same architectural detail as histology but it can provide cells from the entire lesion as many passes through the lesion can be made while aspirating. ⁽⁶⁾

Aim

To assess the frequency of incidences at different sites of head and neck region. To assess its incidence amongst two sex group. To assess distribution amongst inflammatory and neoplastic lesions.

Methodology

The present study included 146 cases of head and neck swellings attended as outdoor patient at a tertiary care hospital, Ahmedabad during October 2013 to January 2014. From all the patients the detailed clinical history related to the swelling was taken. The past and family history of tuberculosis, and other relevant diseases was obtained. The FNAC was performed as an OPD procedure. The palpable swelling was fixed with one hand, the skin was cleaned and 22-23 gauged 3-5 cm long needle with 10ml syringe was inserted into the swelling and a full suction pressure was applied. The tip of the needle was moved around. The pressure was neutralized and the needle was withdrawn. The aspiration material was placed on the glass slides. In all the cases, alcohol fixed smears were made and stained with H & E stains.

Results

The study included 146 cases of the age ranged from 1 to 80 years out of which 61.64% were females and 38.36% were males. Among the diagnostic outcome, higher incidences of lesion are in the neck region than in the head region.

Lymph node involvement (73.29%) was common than any other lesion. Among 107 cases of lymph node lesions, 73 cases (68.22 %) were having tuberculous inflammation, 29 (27.10%) were having non - tuberculous inflammatory lesions and 5 (4.67 %) were having malignant lesions.

Out of 25 cases of thyroid lesion, 23 cases (92%) were females and 2 cases (8 %) were males. 9 cases (36%) were of colloid goiter with cystic changes. 5 cases (20%) were of Hashimoto's thyroiditis. Others were Adenomatous nodule, nodular goiter, Primary hyperplasia etc. Out of the 6 salivary gland lesions, 4 cases (66.67%) were of Pleomorphic Adenoma, 1 case was Warthin's tumor and 1 case was of chronic sialadenitis.

* Resident
 **** Assistant Professor
 ***** Professor & Head
 Department of Pathology, Smt. N.H.L. Municipal Medical College,
 Sheth V.S. General Hospital, Ahmedabad, Gujarat,
 ** Professor & Head
 *** Associate Professor
 Department of Pathology, AMC-MET Medical College, Sheth L.G.
 General Hospital, Ahmedabad
 Correspondence : ggarima19@yahoo.com

Table 1: Distribution of cases as per tissue involved and gender

Tissue	Male	Female	Total
Lymph nodes	47	60	107 (73.29%)
Thyroid gland	02	23	25 (17.12 %)
Soft tissues	05	03	08 (5.48%)
Salivary glands	02	04	06 (4.11%)
Total	56	90	146 (100%)

Out of total 146 cases, 107 were of lymph nodes and 25 were of thyroid gland accounting to 73.29% and 17.12% respectively. It is clearly seen that female affection is much more as compared to males due to more thyroid pathology seen in females. (Table 1)

Figure 1: Metastatic squamous cell carcinoma : 100X FNAC smears showing binucleated cell with eosinophilic cytoplasm.

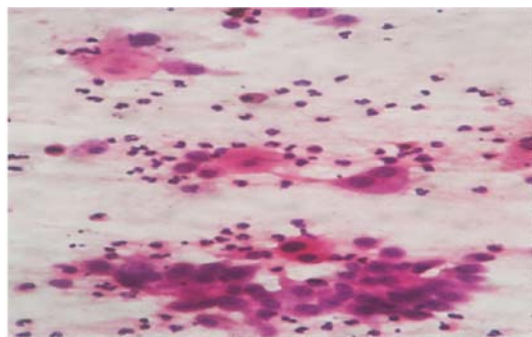


Figure 2: FNAC smear: Hodgkin's lymphoma; 40x

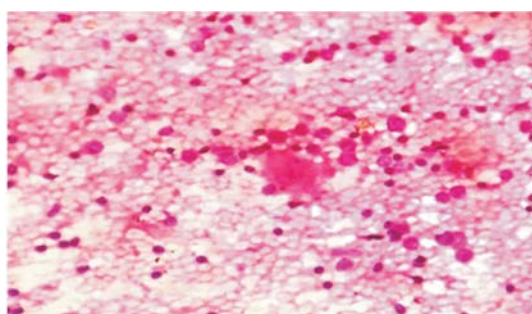


Table 2: Distribution of cases as per types of lesions and gender

Type of lesion	Males		Females		Total	
	No.	(%)	No.	(%)	No.	(%)
Inflammatory	46	82.14	63	70.00	109	74.66
Benign	05	9.09	25	27.78	30	20.55
Malignant	05	9.09	02	2.22	07	4.79
Total	56	100.00	90	100.00	146	100.00

Table 2 shows clearly that the incidence of malignancy is higher in males, may be due to more tobacco chewing and smoking habits.

Figure 3: Cytology smear of a soft tissue lesion of a 3 year old male child diagnosed as Spindle cell tumor; 40x. It was confirmed histopathologically as Rhabdomyosarcoma

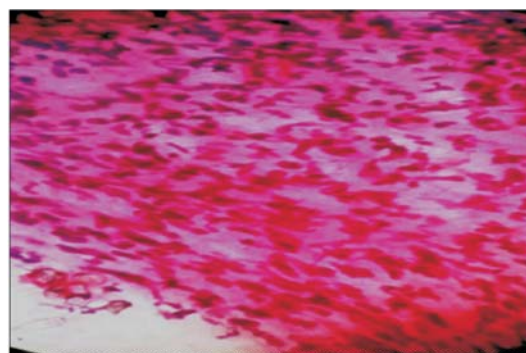


Figure 4 : Histopathology of same case as Figure 3 - Rhabdomyosarcoma; 40x

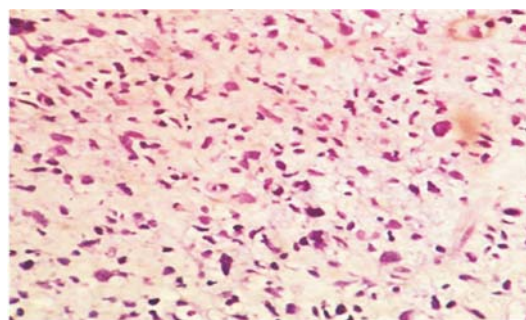


Table 3: Distribution of cases as per different types of lesions in lymph nodes.

Variable	Type of finding	Males		Females		Total	
		No.	(%)	No.	(%)	No.	(%)
Inflammation	Reactive/Nonspecific	14	29.78	15	25	29	27.10
	Tuberculous	30	63.83	43	71.67	73	68.22
Metastasis		03	06.38	01	1.67	04	3.74
Hodgkin s lymphoma		-	-	01	1.67	01	0.94
Total		47	100.00	60	100.00	107	100.00

Table 3 shows that Tuberculosis is the most common pathology in our study followed by non tuberculous inflammation.

Figure 5: FNAC smear: Warthin’s tumor; 40x

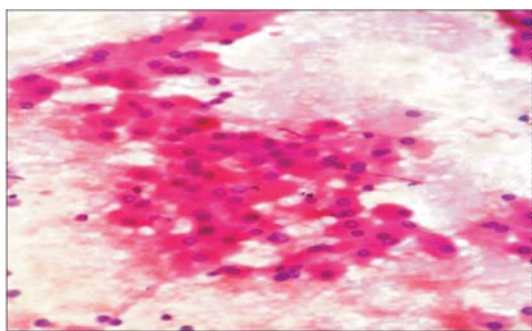


Figure 6: Papillary carcinoma of thyroid; 10x FNAC smear showing nuclear edging and nuclear crowding.

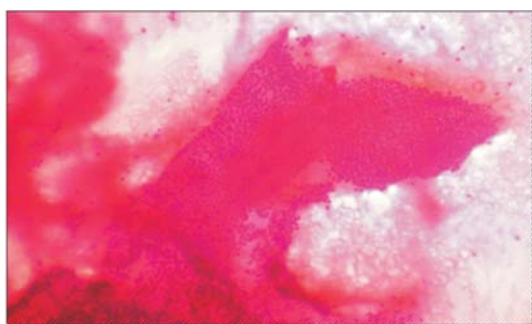


Figure 7: Papillary carcinoma of thyroid; 40x FNAC smear showing nuclear grooving and Intranuclear inclusions

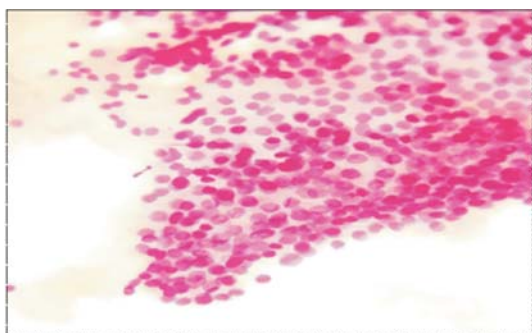


Table 4: Different malignant lesions affecting different tissues.

Tissue	Type of lesion	No.
Lymph node	Metastatic carcinoma	4
	Hodgkin s lymphoma	1
Thyroid gland	Papillary carcinoma	1
Soft tissue	Rhabdomyosarcoma	1
Total	-----	7

Discussion

In the present study of 146 cases of various head and neck swellings, the results achieved were compared with different

studies. Tuberculous lymphadenitis was found to be the most common pathology in our study accounting for 50% of cases followed by non - tuberculous lymphadenitis constituting 29% of cases. El-Hag et al ⁽⁷⁾ carried out a similar study in Saudi Arabia over a period of five years which included 225 patients. This study was published in 2003 and it showed reactive/non-specific Lymphadenitis to be the commonest cause of neck masses accounting for 33% of cases. Tuberculous lymphadenitis was found to be the next most common pathology constituting 21% of cases followed by malignant swellings found in 13% of cases. Out of 146 fine needle aspiration procedures, 73.29% were of lymph node tissue in present study. Also commonest site of malignancy in head and neck region are lymph nodes. Squamous cell carcinoma is one of the commonest tumours in the head and neck region. It usually presents late and with nodal metastasis. Metastatic squamous cell carcinoma is the earliest diagnosis on FNAC. Table 5 shows incidence of lymphadenopathy was slightly higher in female in William study. Same result was seen in our present study.

Non-neoplastic conditions of the salivary gland that simulate tumour are cystic, sialadenitis, granulomatous disease and benign lympho-epithelial lesions. Most of disorders require medical management or minimal surgical intervention, such as cyst aspiration. Diagnosis by FNAC would clearly reduce the amount of surgery. ⁽⁸⁾

Pleomorphic adenoma is the commonest tumour of salivary gland. In present study out of 6 cases of salivary gland lesions, 4 cases are of Pleomorphic adenoma.

Table 5 : Incidence of lymphadenopathy in two different sex groups

Study	No. of cases	
	Male	Female
William study 1973-1977 (9)	135	149
Present study	47	60

Table 6 shows that maximum incidences of thyroid swellings was found during age 20-40 years while in study of Prasad et al, maximum incidence between 30 and 50 years. In study by Prasad et al female: male ratio was 5:1 and in present study female: male ratio was 11:1. Female preponderance in various thyroid lesions is comparatively well observed in present study.

Table 6: Comparison of relationship of thyroid lesions with age and sex

Study	Maximum Incidence (Years)	Female: Male Ratio
Prasad et al (10)	30-50	5:1
Present study	20-40	11:1

Summary and Conclusion :

The present study confirmed that FNAC of lymph nodes is an excellent first line method, for investigating the nature of the lesions. It is an economical and convenient alternative to open biopsy of lymphnodes. The study strongly indicates that the tuberculosis is the most common cause of cervical lymphadenopathy. No complication is recorded during the study with FNAC.

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