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PROFILE OF FINE NEEDLE ASPIRATION CYTOLOGY OF HEAD AND NECK LESIONS IN A TERTIARY HOSPITAL

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ABSTRACT

Background and objective :- Fine Needle aspiration cytology (FNAC) is a simple, minimally invasive screening test and is an essential component of pre-treatment investigation, on which clinical management is based. Although surgical excision of palpable lesions in head and neck lesions is relatively simple, vicinity to other anatomical structures in this region sometimes causes problems. Hence FNAC is a useful diagnostic technique in the management of head and neck lesion. This study is done to evaluate the role of FNAC in palpable head and neck masses and also to study their distribution.

Materials and methods :- Study includes 437 patients presenting with palpable head and neck lesions subjected to FNAC at the Department of Pathology, Victoria hospital BMCRI&RI, Bangalore from January 2011 to March 2011. The age ranged between 1-95 yrs with Male to Female ratio of 1:1.57. Out of these 199 cases (45.5%) were from cervical lymph nodes, 141(32.5%) from thyroid, 28 cases(6.4%) from salivary glands. Granulomatous Lymphadenitis was the commonest diagnosis followed by nodular goitre of thyroid, Hashimotos thyroiditis, reactive hyperplasia, metastatic lymph nodes. Out of these 43 cases (9.83%) malignant and 394 cases (90.16%) benign. FNAC was inconclusive in 7.8% of cases.

Conclusion:- The current study evaluates the role of FNAC as a diagnostic tool in the investigation of head and neck lesions. Tuberculous Lymphadenitis still remains the most common lesion in the head and neck region.

Keywords:- Fine-Needle Aspiration Cytology, Lymph-Nodes, Thyroid, Salivary Glands.

INTRODUCTION

FNAC is a rapid, convenient and accurate method of tissue diagnosis that can be done on an out-patient basis. FNAC offers a simple 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

evidence that the tumor spreads through the skin tract created by the fine hypodermic needle used in this technique.¹ The high degree of diagnostic accuracy, low costs and minimally disruptive nature of the procedure makes FNAC a highly desirable alternative to open biopsy.² 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. All head and neck lesions must undergo FNAC & culture if necessary.³ The

tissues which are most frequently sampled are lymph-nodes, thyroid & major salivary glands.⁴

MATERIALS AND METHODS

A prospective study of 3 months duration, between January 2011 to March 2011 was conducted in the Department of Pathology, Victoria Hospital, Bangalore. A total of 698 cases of FNAC were done out of which 437 cases were of head and neck region. Prior to FNAC, the patients were examined in detail, which included the recording of their pertinent clinical history and significant clinical findings. Relevant investigations were carried out as per requirements.

FNAC was done using 22G needle fitted to a 10ml disposable syringe. Multiple needle passes, continuous aspiratory pressure and release of pressure before withdrawal from lesions was followed during aspiration.

Smears were air-dried and stained by Giemsa Stain. The rest of the slides were fixed in methanol and stained by H&E procedure. The Zeihl Neelsen' stain for AFB was done in those cases with Lymph-node swellings where the clinical suspicions or diagnosis was tuberculosis and/ or in those cases where purulent or cheesy material was aspirated. A cell-block preparation was also done where the aspirated material was adequate. Ultra-sound Guided FNACs were very few .

RESULTS

In this prospective study of 437 cases, adequacy of material was achieved is 92.2%. The age ranged between 1-95 yrs. The lesions were most commonly seen in the age group of 21-30yrs. The number of male patients were 170(39%) and female patients were 267(61%). The male to female ratio was 1:1.57(Figure 1). Lymph-nodes constituted the most common organ with 199 cases(45.5%), followed by Thyroid 141 cases(32.5%), Salivary Glands-28

cases(6.4%) and others 69 cases(15.9%). Among these cases 43 cases(9.83%) were malignant and 394 cases(90.16%) were benign(Figure 2).

In the lymph node granulomatous lymphadenitis was the most common lesion accounting for 95(47.7%) cases followed by reactive lymphadenitis in 46 cases and metastatic lymph node deposits in 30 cases (Table 1).

A total of 141 cases of thyroid FNAC were done among which nodular goitre was the most common diagnosis(41.9%) followed by Hashimotos thyroiditis (Table 2).

In the salivary gland chronic sialadenitis was the commonest with 8 cases followed by pleomorphic adenoma in 7 cases.

The other common lesions encountered during FNAC of head and neck region includes mainly epidermal inclusion cysts 20 cases, lipoma 21 cases, suppurative lesions 16 cases, benign cystic lesions 6 cases and single cases of proliferative squamous lesion lip, Squamous Cell Carcinoma of Jaw, Carotid body tumour, Metastatic deposits in the Eye, Malignant adnexal tumour over forehead and Benign vascular lesion (Table 4).

DISCUSSION

Diagnostic cytology when performed by well trained experienced individual offers high degree of reliability and feasibility, therefore FNAC has gained universal acceptance as in most instances it is inexpensive, safe, quick and accurate.² Head and Neck masses often pose a challenging diagnostic problem to the clinician.⁴ The goal of FNAC in the head and neck area as in other anatomical sites is to provide clinically useful information which exceeds that obtained by palpation or imaging alone. The false negatives and false positives were pointers towards problems and pitfalls in cytological interpretation.⁶

This prospective study was evaluated and the results were compared with other reports.

S.Soni et al¹ Studied 59 cases and found 47.45% were of neck nodes, 23.72% were of thyroid, 22.03% were of salivary glands and 6.77% were of other lesions.

Farzana Shahid et al² have studied 518 FNAC from head and neck lesions, out of which 473 were benign and 45 cases were malignant. Maximum number of cases were from Lymph-nodes (356), followed by Thyroid (124) and Salivary gland (38).

The above 2 studies are almost similar to our analysis. In our study 43(9.83%) cases were malignant and 394 cases (90.16%) were benign.

The frequency of the various lesions in the different organs were as follows Lymph-Nodes - 199cases(45.5%), Thyroid-141cases(32.5%), Salivary Gland-28 cases(6.4%) and others 69 cases(15.9%).

Fernandes H et al⁴ found that the most common site aspirated was Thyroid Gland (71.3%) followed by Lymph-Nodes(22.48%),Salivary gland (3.87%) and soft tissue lesions(2.32%).

Naila Tariq et al⁶ analysed 122 FNACs of Head and Neck lesions, among which 65 cases were from thyroid,53 cases from lymph-nodes and 4 cases from salivary gland.

In our study of lymph-nodes, the spectrum of lesions include granulomatous Lymphadenitis constituting (48%), followed by reactive lymphadenitis which is 23.2%. Metastatic Deposits about 15.1%.Primary malignancies such as Hodgkin'sLymphoma and Non-Hodgkin's Lymphoma constituted about 2.5%.About 2% of cases were suspicious of malignancy. About 19cases(9.6%) were inconclusive for interpretations.

The study conducted by Farzana Shahid et al²,showed almost similar results with Granulomatous Inflammations being most common lesion constituting which 238cases(66.9%) followed by reactive hyperplasia 54 cases(15.2%) and that of primary malignancy were2.8%.

Another study conducted by Tariq Ahmed et al³ on 50 patients found Tuberculous Lymphadenitis to be the commonest(36%), followed by reactive Lymphadenitis(18%).Other malignant lesions constituted(14%). About 8% of cases were inconclusive. In our study of Paediatric lymph-node FNAC, the ratio of Tubercular Lymphadenitis to that of Reactive Lymphadenitis is almost1:2. This ratio indicates that lymphoid hyperplasias are more common in this age group.This analysis has also been done by Amy Rapkiewicz et al⁵ where in they had 36 cases of reactive lymphoid hyperplasia to 3 cases of Tubercular Lymphadenitis.

Fernandes H et al⁴ found reactive Lymphadenopathy was the commonest cause of lymphadenopathy followed by Tuberculosis and Granulomatous, Metastatic Lymphadenopathy.

The study conducted by Muhammad Javaid et al⁷ showed that malignant Lymphadenopathy constitutes a significant portion of findings in aspirates of enlarged lymph nodes(57.15%).The benign lymphadenopathy only constitutes 42.85% of which tuberculous lymphadenitis was the commonest finding(26.19%) followed by reactive hyperplasia(16.66%).

The diagnostic accuracy of material in our study was 92.2%.This value is similar to that of Andleeb Abrari et al⁸, where it is 93.3%.

With regards to thyroid lesions our study showed that Nodular Goitre(41.9%) was the commonest followed by Inflammatory lesions such as Hashimoto's Thyroiditis-37.6%,Hyperplastic Thyroid-2.8%, Lymphocytic Thyroiditis 1.4%.The neoplastic lesions constituted about 6.4%.3 cases of normal thyroid and in 10 cases(7%) the aspirates were inconclusive.

The above figures are similar to that of Farzana Shahid et al² where in their commonest lesion was Benign Nodular Goitre(52.4%);Inflammatory lesions(7.4%) and Neoplastic were 3.2%.Another study conducted

by Fernandes H et al⁴ found that Thyroid Gland(71.31%) was the commonest site aspirated in the head and neck region. Even in their study the commonest lesion encountered in the Thyroid Gland was Nodular Goitre, followed by Hashimotos Thyroiditis and Papillary Carcinoma was the commonest malignant lesion. 1 case of Thyroglossal Cyst was diagnosed. Even in our study there was 1 case of Thyroglossal Cyst.

The study conducted by Naila Tariq et al⁶ Showed 37 cases of Multinodular Goitre(56.9%); followed by inflammatory and neoplastic lesions. A study conducted in a tertiary health care centre by G.G. Swamy et al¹⁰ also revealed that the most common organ aspirated was the Thyroid Gland(60%) with 52% Nodular Goitre followed by 16% of follicular neoplasm; 12% as papillary carcinoma & 4% cases as suspicious of malignancy

Finally with regards to salivary glands in our study there were 28 cases(6.4%). The commonest lesion being inflammatory-Chronic Sialadenitis- 8cases(28.6%), 9cases(32.2%) benign neoplasms and 3 cases of (10.7%) mucoepidermoid carcinoma and 8 cases were inconclusive(28.6%). A study by G.G Swamy et al⁹ showed out of 20 cases-8cases(40%) were benign neoplasms, 3 cases(15%) were malignant neoplasms, 1 case(5%) was non-neoplastic and 8cases(40%) were inflammatory lesions.

Another study by El Hag et al¹⁰ also showed that inflammatory lesions such as sialadenitis was most commonest with 12cases(57%) followed by benign lesions 8 cases(38%) and mucoepidermoid carcinoma 1 case(5%).

The remaining other lesions were Epidermal Inclusion Cyst 20 cases(4.6%), suppurative lesions 16 cases(3.7%), Lipoma 21 cases(4.8%), Cystic Lesion 6 cases(1.4%), proliferative squamous lesion lip -1 case, squamous cell carcinoma -jaw -1 case, carotid body tumour -1 case, metastatic deposits eye-1case, malignant

adnexal tumour -fore head -1 case and benign vascular lesion 1 case.

The high rate of inconclusive samples can be explained by some factors that have been described previously in the literature. These are as follows

- Inexperience in the collection of cells
- difficulty in interpreting the smears.
- poor or inadequate smears for interpretation.
- artifacts, such as necrosis and high content of blood in some samples.¹¹

On comparing the results of the present series with other workers, it can be said that the results of this study are favourable with those published in literature and are fairly accurate.

CONCLUSION

FNAC is a simple and rapid procedure which can be carried out as an out-patient procedure with minimal problems. Owing to its accurate diagnostic potential it is proved useful in separating inflammatory, benign and malignant lesions with good certainty. Moreover, the procedure is simple and cost-effective. Hence, FNAC is recommended as the first-line investigation in diagnosing head and neck lesions. In a developing country like India even today Tuberculosis Lymphadenitis remains the most common lesion.

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Figure 1: Age and sex distribution chart

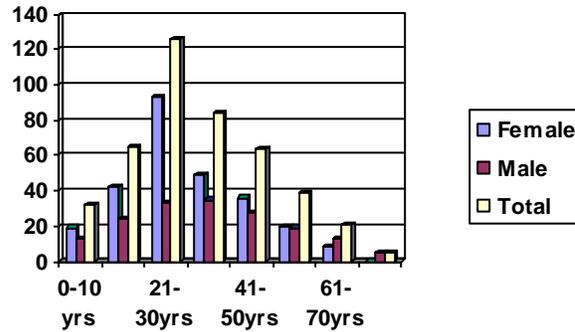


Figure 2: Organ distribution chart

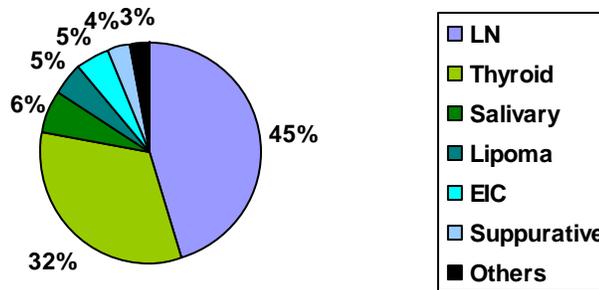


Table 1:- Diagnoses of the Lesions made on Lymph-Nodes

Serial number	Lesion	Number of cases	Percentage(%)
1.	Granulomatous lymphadenitis-TB	95	47.7
2.	Reactive Lymphadenitis	46	23.1
3.	Metastatic Deposits	30	15.1
4.	Lymphoma	05	2.5
	a)Non-H0dgin's Lymphoma	04	
	b)Hodgkin's Lymphoma	01	
5.	Suspicious of malignancy	04	2
6.	Inconclusive	19	9.6
	TOTAL	199	100%

Table 2:-Diagnoses of the lesions made on Thyroid Glands

Serial number	Lesion	Number of cases	Percentage (%)
1.	Nodular Goitre	59	41.9
2.	Hashimotos thyroiditis	53	37.6
3.	Lymphocytic thyroiditis	02	1.4
4.	Hyperplastic Thyroid	04	2.8
5.	Thyroglossal cyst	01	0.7
6.	Neoplasm a) Papillary Carcinoma b) Follicular Neoplasm c) Anaplastic Carcinoma d) Hurtle Cell Neoplasm	09 01 06 01 01	6.4
7.	Normal thyroid	03	2.1
8.	Inconclusive	10	7.1
	TOTAL	141	100%

Table 3 :-Diagnoses of lesions made on salivary Glands and Others

Serial number	Lesion	Number of cases	Percentage (%)
1.	Chronic Sialadenitis	08	28.6
2.	Pleomorphic Adenoma	07	25
3.	Basal Cell Adenoma	01	3.6
4.	Monomrphic Adenoma	01	3.6
5.	Mucoepidermoid Carcinoma	03	10.7
6.	Inconclusive	08	28.6
	TOTAL	28	100%

Table 4:- Other lesions encountered in the head and neck region

Serial number	Lesion	Percentage (%)
1.	Epidermal inclusion cyst	20
2.	Suppurative Lesion	16
3.	Lipoma	21
4.	Cystic Lesion	06
5.	Proliferative Squamous Lesion Lip	01
6.	Squamous Cell Carcinoma –Jaw	01
7.	Carotid body Tumour	01
8.	Metastatic Deposits - Eye	01
9.	Malignant Adnexal Tumour-fore-head	01
10.	Benign Vascular Lesion	01
	TOTAL	69