

Study of Cervical Neck Masses and Role of Fine Needle Aspiration Cytology in Central India.

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ABSTRACT

Background: Palpable neck swellings include various non-neoplastic and neoplastic lesions of lymph node, salivary glands, thyroid and soft tissue. Fine needle aspiration cytology (FNAC) is the most cost-effective invasive pre-operative investigation, whose simplicity and safety justify its use for “selective” surgery in diagnosing different types of masses. The aim of this study is to evaluate the effectiveness of FNAC as a primary investigation tool in neck masses. The primary objective of the study was to assess the spectrum of head and neck masses and to determine the accuracy of FNAC in detection of various lesions in index medical college hospital and research Centre. **Methods:** The study included 510 patients presenting with palpable neck swelling in a tertiary care hospital from September 2015 to December 2016. **Results:** The most frequent cause of neck swelling is lymphadenopathy 58.94%, followed by thyroid swelling 27.36%, soft tissue lesion 10.95% and salivary gland lesions 2.73%. The most common lesion in these patients was non-neoplastic followed by malignant neoplasm. FNAC is an important tool for preoperative clinical diagnosis of non-cystic neck masses with history of more than 3 months. Thus, it helps in planning the surgical management of neck masses and can be confirmed with HPE which is a “gold standard” for diagnosis. **Conclusion:** Fine needle aspiration cytology is a safe, simple and rapid method that can be done in diagnosing wide range of neck masses.

Keywords: FNAC, neck masses, cervical lymphadenopathy, neck swelling.

INTRODUCTION

In our clinical practice we encounter various types of neck swelling, the evaluation of neck mass is common clinical dilemma and condition to which an ENT clinician routinely encounters in practice. The cause of neck masses can range from an innocuous reactive lesion to tuberculosis and malignancy. The management of these various lesions is very different and hence the determination of the etiology is of paramount importance. A quick, inexpensive, and reliable investigative tool is therefore required. For many decades, pathologists have employed needles to obtain cell and tissue fragments to diagnose an underlying pathology. FNAC has emerged as a sensitive, specific, and cost-effective tool to diagnose cervical lymphadenitis.^[1] Evaluation of a patient with neck mass should always begin with a thorough history, followed by a complete head and neck examination. If the physical examination does not explain the neck mass, a fine-needle aspiration (FNA) of the mass may be performed. The role of FNAC in the investigation of lymphadenopathy has previously been established

by a number of studies.^[2-6] The most common cause of peripheral lymphadenopathy in our setting is an inflammatory reaction to a microbial challenge, followed by malignant metastatic deposits and lymphomas. The etiological factors for these lesions make a large list. Broadly speaking, they tend to be considered as reactive, tuberculous, or malignant metastases. Overall, infective conditions (reactive and tuberculous) are responsible for the majority of lesions. M. tuberculosis is the most common cause of granulomatous lymphadenitis in India.^[7-9]

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Lymph nodes clinically suspected of lymphomas or malignant metastasis are one of the most common indications for FNAC in the elderly. FNAC allows the pathologist to assess the cells aspirated from the lesion. However it does not allow evaluation of the morphology. As a result, false-negative and false-positive results can occur. As FNAC is a simple test,

associated with minimal trauma and complication, and results can be rapidly available, it remain a valuable diagnostic tool and is a recommended first line investigations of suspected malignancy cases. The biopsy of the palpable neck masses is always the gold standard. However, it is more resource intensive than FNAC, requires anaesthesia, strict asepsis, theatre time and often leaves a scar. In contrast, FNAC in such cases is relatively simpler and offers quick and reliable results. There is no evidence that the tumour spreads through the skin track created by the fine hypodermic needle used in this technique.

MATERIALS AND METHODS

This is a retrospective study carried out at Department of Otorhinolaryngology (ORL), Index Medical College Hospital and research centre in which data of patients who had FNAC between september 2015 and december 2016 were identified and reviewed. A total of 510 patients with palpable neck masses were evaluated. The detailed clinical findings were recorded before performing FNAC. Other relevant radiological findings were also noted for correlation. An informed consent from the patient was taken before performing the procedure. Aspirates were procured by using 21 or 23 gauge needle attached to a 10 ml syringe. The aspirated material was smeared into glass slides with preparation of both air dried smears for May-Grunwald Giemsa stain and 95% alcohol fixed smears for Papanicolaou stain. Ziehl-Neelsen stain was performed whenever required. Cytological evaluation was performed and diagnosis from each case was based on cytomorphology and clinical findings. A lymph node biopsy was done in all cases diagnosed as lymphoma by FNAC.

RESULTS & DISCUSSION

The study included 510 patients with neck mass either single/ multiple, unilateral/bilateral and midline. The age of the patients ranged from 5 to 70 years and including both male and female, the median age of occurrence being 39 years. Majority of the cases were in the age group 21-30 years with overall female preponderance 54.31%. Male cases (45.68%) showed a rising trend in the age 50 and above. In total 510 cases, 35(6.86%) were excluded from the study as they were unsatisfactory or had equivocal diagnosis.

There were 233 (49.05%) male and 242 (50.95%) female patients. Incidence of thyroid lesions was significantly higher in females (90.76%) than in male (9.23%), while incidence of lymph node, salivary gland, soft tissue and miscellaneous lesions were slightly higher in male [Table 1]. Maximum number of patients were in the age group of 21 to 30

years (22.3%) followed by 31 to 40 years (20.4%) and 11 to 20 years (17.6%). Least number of patients was seen in the age group above 70 years.

Distribution of head and neck FNAC result shows lymph nodes lesion (58.94%) as the predominant site of FNAC followed by thyroid lesions (27.36%), soft tissue & miscellaneous (10.95%) and salivary glands (2.73%). Out of 475 cases, 266 cases (56%) were inflammatory in nature while remaining 209 (44%) cases were of neoplastic nature.

Among 280 cases of lymph node lesions, reactive lymphoid hyperplasia (28.57%) was the predominant cause of lymphadenopathy followed by granulomatous lymphadenitis (25%), malignant (30.35%) and nonspecific/suppurative inflammatory lesions (16.07%). In malignant lesions, metastatic epithelial malignancy was the predominant finding (21.43%). 8.93% (25) cases of primary malignancy i.e. lymphoma were found [Table 3]. Amongst 25 cases 22 were Non Hodgkin Lymphoma and 3 were Hodgkin's lymphoma. Histopathological examination was advised for final diagnosis in all cases of lymphoma.

Table 1: Sex, site wise distribution of Neck masses.

Site	Male		Female		Total
	No. of cases	%	No. of cases	%	
Lymph node	164	58.57	116	42.85	280
Thyroid gland	12	9.23	118	90.76	130
Salivary gland	8	61.53	5	38.46	13
Soft tissue & miscellaneous	33	63.46	19	36.53	52
Total	217	45.68	258	54.31	475

Table 2: Spectrum of inflammatory/reactive and neoplastic neck masses.

Site	Inflammatory / Reactive (%)	Neoplastic		
		Benign (%)	Primary /Metastatic Malignant (%)	Total neoplastic
Lymph node	195 (69.64)	-	85 (30.35)	85 (30.35)
Thyroid gland	28 (21.53)	82 (63.07)	20 (15.38)	102 (78.46)
Salivary gland	8 (61.53)	4 (30.76)	1 (7.69)	5 (38.46)
Soft tissue & miscellaneous	35 (67.30)	13 (25)	4 (7.69)	17 (32.69)
Total	266 (56)	99 (20.84)	110 (23.16)	209 (44)

Table 3: Spectrum of various lymph node neck masses (N=280).

Lesions		No. of cases	%
Reactive lymphoid hyperplasia		80	28.57
Inflammatory	Nonspecific /suppurative	45	16.07
	Granulomatous	70	25
Malignant	Lymphoma	25	8.93
	Metastasis	60	21.43
Total		280	100

Table 4: Spectrum of various thyroid masses (N=130).

Lesion	No. of cases	%
Benign nodular goitre(colloid goitre)	93	71.54
Lymphocytic thyroiditis (including Hashimoto's and Grave's)	16	12.31
Follicular neoplasm	10	7.69
Cystic lesion	6	4.62
Malignant	4	3.08
Miscellaneous	1	0.77
Total	130	100

Table 5: Spectrum of various Salivary gland Lesions (N=13).

Lesion	No. of cases	%
Sialadenitis	7	53.84
Cystic lesion	1	7.69
Sialadenosis	-	-
Pleomorphic adenoma	2	15.38
Monomorphic adenoma	1	7.69
Warthin's tumour	1	7.69
Malignant	1	7.69
Total	13	100

Table 6: Spectrum of various Soft tissue and Miscellaneous neck masses (N=52).

Lesion	No. of cases	%
Benign cystic	26	50
Benign soft tissue	15	28.85
Inflammatory	4	7.69
Benign skin adnexal tumour	3	5.77
Malignant	4	7.69
Total	52	100

DISCUSSION

This study was carried out to determine the cytomorphology and assess the role of FNAC in palpable neck masses. The results achieved in the present study were compared with different national and international studies. In this study, non-neoplastic lesions comprised the majority of the cases accounting for 56% whereas primary malignant and metastatic lesions comprised 23.16% and benign neoplastic lesions 20.84% of the cases. In most of the national studies inflammatory and non-neoplastic lesions were the predominant cause of head and neck masses (Kishore et al).^[10]

In the study by Jasani et al, 54% were male and 46% were female.^[11] Maximum incidences observed in the age group of 25 to 35 years. In contrast our study constituted 45.68% of male cases and 54.31% of female cases. Maximum incidence observed in our

study was in the age group of 21 to 30 years. Our study is similar to the study by Rathod GB et al which showed female preponderance and similar age group.^[12]

Out of the lymphadenopathies, reactive hyperplasia constituted the majority of the cases (28.57%) and granulomatous lesions (25%). Results by Lawrence et al 2003 showed 59% of cases with reactive hyperplasia followed by granulomatous lesion (41%).^[14] Hag et al carried out a similar study in Saudi Arabia over a period of 5 years which included 225 patients which showed reactive/nonspecific lymphadenitis to be the commonest cause of neck masses accounting for 33% of cases.^[15] In our study, tuberculous lymphadenitis comprised 13.4% of the cases with female preponderance (75%) and similar to the study by Saira Fatima et al done in a tertiary hospital at Pakistan.^[16] This may be because of poor nutrition and overall health of females in developing countries. Metastatic lymph nodes constituted 21.43% of the cases with male preponderance and majority were diagnosed as squamous cell carcinoma. In the study by Jasani et al, metastatic lymph node comprised of 11.3% of cases.^[7] Primary lymphoid malignancies comprised only 8.93% of the cases with male preponderance. Only in three cases of Hodgkin's lymphoma in a male patient whereas twenty five cases of Non-Hodgkin's lymphoma were diagnosed in twenty two male and three female patients.

Out of the thyroid lesions, colloid goitre was the commonest comprising 71.54% of cases and follicular neoplasm comprising 7.69% of cases. In the study by Jasani et al, he reported similar studies by Antonello et al 2005^[17] and Klemi et al 1991 which showed 57% of multinodular goiter and 29% of follicular neoplasm.^[18] A study in Pakistan conducted by Tariq N et al 2007 which showed 56.9% of nodular goiter and 23.08% of follicular neoplasm.^[19] In all these studies the most common thyroid lesion was colloid goitre as in our study, though the percentage in our study is significantly high. This may be due to the increased number of female patients in our study. On the other hand, histopathological findings of all the surgically treated cases of papillary carcinoma and colloid goiter were consistent with FNAC reports.

Out of the salivary gland lesions, sialadenitis was the commonest in our study comprising (53.84%) followed by pleomorphic adenoma (15.38%) and cystic lesion, warthin's tumor, monomorphic adenoma and malignant lesions (7.69%). Ten cases of sialadenitis (17.54%) were encountered and four cases were inconclusive (7.02%). This is comparable to most of the other studies and pleomorphic adenoma constitutes the majority of salivary gland tumours.^[20] One case of mucoepidermoid carcinoma, was diagnosed on FNAC which was later on confirmed by histopathology.

CONCLUSION

Fine needle aspiration cytology is a safe, simple and rapid method that can be done in diagnosing wide range of neck masses.

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