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Role of fine needle aspiration cytology in assessment of cervical lymphadenopathy in variable age groups: A retrospective study.

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ABSTRACT

Cervical lymphadenopathy is a common clinical problem that confronts us in daily clinical practice. The causes vary from simple treatable infections to malignancies that require highly specialized institutional management. It therefore needs to be speedily investigated. FNAC helps to diagnose multiple lesions avoiding biopsy. To assess the age specific distribution of various cytomorphological patterns of cervical lymphadenopathy. A retrospective study was conducted at Saraswathi Institute of Medical Sciences and Hospital, Hapur on 214 clinically diagnosed cases of cervical lymphadenopathy over a period of two years (January 2012 to December 2014). In this study 300 patients were subjected to FNAC for cervical lymphadenopathy. Among these patients, in 15 cases, the aspirate was inadequate despite repeated endeavours and in 7 cases the opinion offered was equivocal. Hence, these 35 cases were excluded from the study. There were 134 males and 144 females in the study. The M:F in this study was 1:1.07, with a slight female preponderance. The age at presentation ranged from 1- 80 years. Maximum number of patients were in the 21 – 40 years age group (107 cases, 40.37%) followed by the age group 0 – 20 years (94 cases, 35.47%) age group. Our study concluded that FNAC is simple, quick, minimally invasive, and inexpensive technique to diagnose cervical lymphadenopathy. It can differentiate a neoplastic from a no neoplastic process and therefore influence patient management preventing patient from being subjected to unnecessary surgery.

Keywords: Cervical lymphadenopathy, fine needle aspiration cytology (FNA), granulomatous lymphadenitis

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INTRODUCTION

Lymph nodes are most widely distributed and easily accessible component of lymphoid tissue. [1,2] Aspiration of lymph nodes for diagnostic purpose was first reported in 1904 by Grieg and Gray in the diagnosis of Trypanosomiasis. In 1921, Guthrie attempted to correlate lymph node aspiration cytology with various disease processes.[3,4] Fine needle aspiration cytology (FNAC) is particularly helpful in the workup of cervical masses because biopsy of cervical adenopathy should be avoided unless all other diagnostic modalities have failed.[5] Enlarged palpable Cervical Lymph nodes are common and worrying presentation in adults as well as children.[6,7] Cervical Lymphadenopathy is defined as cervical lymph nodal tissue measuring more than 1 cm. in diameter.[8] Based on the duration, cervical lymphadenopathy is further classified into acute lymphadenopathy (2 weeks duration), subacute lymphadenopathy (26 weeks duration), and chronic lymphadenopathy is considered in any lymphadenopathy that does not resolve by 6 weeks.[9] Cervical lymph nodes are involved most often in all types of lymphadenopathy. Lymph nodes are among the commonest aspirated organ for diagnostic purpose. FNAC is a reliable and least expensive method for developing countries for the investigation of lymphadenopathy.[10,11] FNAC has become an acceptable and widely practised minimally invasive technique which is safe, simple, rapid and relatively pain free. FNAC is highly cost effective and accurate as a first line investigates technique. The few cells that are obtained from the lesion are often found sufficient, and offer immediate preliminary diagnosis in the investigation of lymphadenopathy with minimal trauma to the patient.[12] The study done by Haque and Talukder

concludes that before resorting to surgical intervention FNAC is a helpful procedure in the diagnosis of both neoplastic and non-neoplastic lesions.[13]

MATERIALS AND METHODS

This retrospective study was conducted from 2 years (January 2012 to December 2014) in Cytopathology section of Department of Pathology, Saraswathi Institute of Medical Science and Hospital, Hapur. After obtaining ethical clearance, all patients presenting with enlarged cervical lymph nodes were included in the study. Brief History including age, sex, site, side and thorough clinical examination was carried out. The FNAC was done in 300 consecutive patients with clinically significant cervical lymphadenopathy by trained and experienced faculty using 20-24 G needle without local anaesthesia. Needle was inserted up to the desired depth into the lymph node and firm suction was applied to create negative pressure in the syringe. When an adequate quantity of cellular material was withdrawn, suction was gently released to equalise pressure to prevent sucking of aspirated material into barrel of syringe against walls. A minimum of two well labelled glass smears were prepared. The smears were air dried and stained with MGG stain according to standard procedure. Review of all cytological reports were done according to standard guidelines and the diagnosis was classified and correlated with patient age and sex to explore the pattern and association.

RESULTS

In this study 300 patients were subjected to FNAC for cervical lymphadenopathy. Among these patients, in 15 cases, the aspirate was inadequate despite repeated endeavours and in 7 cases the opinion offered was equivocal. Hence, these 26 cases were excluded from the study. There were 134 males and 144 females in the study.

M:F was 1:1.07, with a slight female preponderance.
The age at presentation ranged from 1 year to 80 years. Maximum number of patients were in the 21 – 40 years age group (107 cases, 40.37%) followed by the age group 0 – 20 years (94 cases, 35.47%) age group.

Reactive lymphoid hyperplasia was noted in 94 patients (35.47%). Among these patients 43 patients were in 0 – 20 age group and 42 patients in 21 – 40 age group.

Suppurative lymphadenitis was noted in 26 cases with majority (10) of cases in 21 – 40 age groups.

Tuberculous lymphadenitis accounted for a total of 124 cases (44.60%). This was the most common presentation of cervical lymphadenopathy in the current study. (Figure 1)

Granulomatous inflammation with coexistent caseous necrosis was the dominant sub category in this group accounting for (64.2 % /72 cases).

Cold abscess, a delayed presentation of tuberculosis was noted in 14 cases (12.5%). Metastatic malignancy was observed in 30 cases (11.32%) with squamous cell carcinoma topping the incidence (23 cases/76.66%).

Only a single case (0.38 %) of Hodgkin's lymphoma was noted along with 2 cases of Non Hodgkin's lymphoma (0.75%). (Figure 2)

The two cases were follicular lymphomas.
No other cases of lymph node afflictions such as Rosai Dorfman or Kikuchi's disease were noted in the study.

Table 1: Clinical Distribution of FNAC of cervical lymphadenopathy

Age Years (n=278)	Sex	Reactive lymphadenitis	Suppurative lymphadenitis	TB			Metastasis	Lymphoma	
				G‡	**NG**§	**C**‖		**HL****	NHL††
0-20	M*	15	4	5	17	1	0	0	0
0-20	F†	28	4	4	14	2	0	0	0
21-40	M	22	3	9	8	5	5	0	0
21-40	F	20	7	5	12	2	8	1	0
41-60	M	5	1	6	6	0	5	0	0
41-60	F	2	1	4	9	2	3	0	1
61-80	M	1	4	3	3	1	5	0	0
61-80	F	1	2	2	3	1	4	0	1
Total		94	26	38	72	14	30	1	2

**: Male,†:Female, ‡:Granulomatous, § : Necrotizing Granulomatous, ||,: Cold abscess (Only caseous necrosis) **: Hodgkin's Lymphoma, †† : Non Hodgkin's Lymphoma*

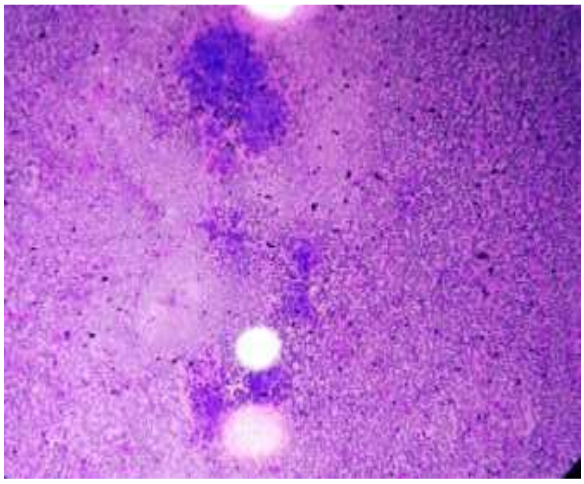

Figure 1: FNAC smear showing epithelioid cell granuloma

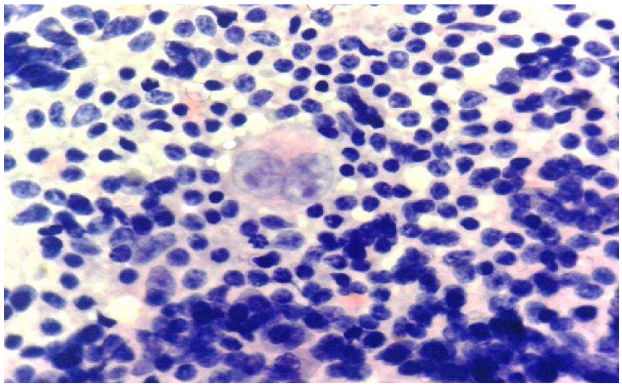

Figure 2: Reed-Sternberg (R-S) cell in Hodgkin's lymphoma

DISCUSSION

Localized or regional lympadenopathy is defined as the enlargement of lymph nodes within contiguous anatomic regions. Enlarged cervical lymph nodes are always accessible for FNAC and therefore, this procedure is of great importance in the diagnosis of these disorders. It plays a significant role in developing countries like India, as it is relatively a cheap procedure, simple to perform and practically has almost no complications. [14, 15, 16] A round, firm, well defined lymph node that is present for more than 8 weeks, or a lymph node that is fixed to the skin, deep anatomic planes, or other lymph nodes should be considered for FNA regardless of location, patient age, or symptoms. Viral, bacterial, or mycobacterial infections, depending on the world region, are the most common causes of benign regional lymphadenopathy. The well defined role of FNAC in the investigation of lymphadenopathy has previously been studied.[17]

In the current study, 278 out of (258 cases/92.80%) were benign in nature whereas (30 cases / 10.79%) had a malignant Pathology. Among the benign causes of lymphadenopathy, the most common was tuberculosis accounting for (124 cases/44.60%) followed by reactive lymphadenitis (94 cases/35.47%). The high incidence of TB in the study may be due to the endemicity of the disease in India. Moreover the most common form of extrapulmonary tuberculosis is tuberculous lymphadenitis with cervical lymph nodes being the most commonly involved group.

In a study of 1396 cases of FNAC of cervical lymphadenopathy, Kumar et al established the most common benign lesion to be tuberculosis (54%).[18] Bezabih et al found FNAC reliable in helping to avert more invasive surgical procedures undertaken in the diagnosis of tuberculous adenitis. They suggested adding Ziehl Neelsen stain for identification of acid-fast bacilli as an adjunct to increase the diagnostic accuracy of tuberculous lymphadenitis.[19]
In the study of Tariq et al in 2008 tuberculous lymphadenitis was found to be the most common pathology of cervical lymph node lesions.[20] AFB positivity is maximum in cases showing caseous necrosis with occasional epithelioid cells. The presence of acid fast bacilli in smears is directly proportional to the necrosis and inversely to the granulomas. Sometimes in absence of AFB positivity the diagnosis of highly suspicious of tuberculosis was given in these lesions with strong clinical suspicion, high ESR and chest X-ray findings. The second most common

cause of cervical lymphadenopathy in the study was due to reactive hyperplasia. This was found to be common in younger age groups i.e less than 40 years. Since infections from oral cavity, ears, nose, and para nasal sinuses drain into these nodes; reactive lymphoid hyperplasia is a common finding. [21] Etiology is diverse and more often affects children rather than the elderly.

The study also documents higher incidence of malignancies particularly metastases in the higher age groups i.e. 21-40 years. FNAC has a documented higher sensitivity in the diagnostic workup of metastatic malignancies which may be due to the fact that metastatic carcinoma cells are usually abundant and their cytological features are dissimilar to that of the cells of normal or hyperplastic lymph nodes.[22,23]

Metastatic squamous cell carcinoma was found in majority of the cases (23 out of 30 cases, 76.67%). Hirachand et al also noted that the commonest type of metastatic carcinoma to lymph node was of squamous cell variety.[15] Cervical lymph nodes, particularly high jugular and posterior cervical nodes, drain the head and neck and may harbour metastatic carcinomas originating in the nasopharynx, tonsillar fossa, tongue, floor of the mouth, thyroid, extrinsic larynx, facial skin, and scalp. The findings of the study support the established fact that metastatic squamous cell carcinoma of the head and neck is frequent after the age of 40. In cases of squamous cell carcinoma in an upper cervical lymph node, pan endoscopy is indicated, including biopsy of all suspected areas and blind biopsies of the common primary sites-nasopharynx, tonsil, base of the tongue, supraglottic larynx, and piriform sinus [24] Carcinomas of the nasopharynx and oropharynx are notorious for presenting with metastases in the cervical lymph nodes while the primary neoplasm remains unnoticeable.[25] In our institution clinical workup after FNAC diagnosis of metastatic deposits showed that majority of the cases had a primary origin in nasopharynx. FNAC is a useful prognostic tool in stage III cancers wherein metastasis to regional lymph nodes is usually found. It also aids in the diagnostic workup of a metastatic tumour of unknown origin. In our study only 3 primary lymphomas (1 Hodgkin's and 2 Non Hodgkin's) were diagnosed on cervical node FNAC.

CONCLUSION

FNAC of lymph nodes is a very useful and simple tool in the diagnosis of cervical lymphadenopathies. A myriad of lesions causing cervical lymphadenopathy can be successfully identified on FNAC. In the current study, the most common causes were tuberculosis, reactive hyperplasia and metastatic malignancies particularly squamous cell carcinoma deposits. FNAC combined with clinical correlation can be used as a first line investigation in work up of lymph node lesions. Further management depending upon the cause

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