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CYTOMORPHOLOGICAL STUDY OF LYMPHADENOPATHY ON FINE NEEDLE ASPIRATION CYTOLOGY IN A TERTIARY CARE HOSPITAL OF WESTERN MAHARASHTRA

Pathology

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ABSTRACT

Introduction: Lymph nodes are the most widely distributed and easily accessible component of lymphoid tissue. A large spectrum of diseases including reactive processes,infections, lymphomas and metastatic tumors can cause lymphdeopathy. FNAC is used as a triage to distinguish between cases of lymphadenopathy with high or low level of level suspicion of significant disease and thus an immediate decision can be made wheather to simply observe the node,to recommend a course of antibiotics,or to refer the patient to a specialist for further investigation.

Objective: The present study has been undertaken to study the different cytomorphological patterns associated with various lymphadenopathies and the role of FNAC in detecting lymph node lesions.

Materials and Methods: A retrospective study of 117 cases of lymphadenopathy was carried out in the department of pathology. FNAC smears were carefully studied and categorized into non neoplastic and neoplastic lesions.

Result: Our of 117 cases,98 cases(83.76%)were non-neoplastic and 12 cases(10.25%) were neoplastic. 7(5.98%) were inconclusive for opinion.Out of the non neoplastic lesions, reactive lymphadenitis was the most common diagnosis(56/98,57.14%).Among the neoplastic lesions, metastatis was the most common diagnosis (9/12,75%).

Sensitivity, specificity and diagnostic accuracy was 83.33%,100% and 83.33% respectively.

Conclusion: Fine needle aspiration cytology plays a important role in the diagnosis and management of the various lymphadenopathies.

KEYWORDS

Lymphadenopathy, FNAC.

INTRODUCTION-

Lymph nodes are the most widely distributed and easily accessible component of lymphoid tissue. A large spectrum of diseases including reactive processes,infections, lymphomas and metastatic tumors can cause lymphdeopathy.[1]Lymphadenopathy may be an incidental finding and/or primary or secondary manifestation of underlying diseases which may be neoplastic or non neoplastic[2]. In FNAC technique, cells are obtained through a thin needle attached with disposable syringe for the diagnosis of masses.[3]

Lymph node cytology is useful tool for segregating various causes of lymphadenopathy.[4]

Although histopathological examination is gold standard ,surgical excision of peripheral node may cause problems to anatomical structures in vicinity of lymph node. The procedure does require anesthesia,strict sterility and theatre time and it may leave a scar. FNAC offers the alternative of immediate and preliminary diagnostic test[4]. Furthermore aspirated sample can be utilized for ancillary studies such as immunomarker and histochemical studies.[4]

The present study has been undertaken to study the different cytomorphological patterns associated with various lymphadenopathies .The cytological diagnosis were compared with histopathology wherever available for verification of the accuracy of FNAC in detecting lymph node lesions.

MATERIAL AND METHODS-

A retrospective study of 117 cases of lymphadenopathy was carried out in the department of pathology for 1 year from april 2018 to April 2019.All the patients coming to tertiary care hospital with lymphadenopathy were included in the present study.

Detailed history was taken and complete clinical examination of patient was carried out including general, systemic and local examination with reference to lymph node lesions. Relevant past,family history was taken. Procedure and importance of FNAC was explained to the patient. Written informed consent was taken. FNAC was performed under all aseptic precautions as OPD procedure with the help of 23gauge needle and disposable 5ml/10ml syringes.Smears were prepared, fixed in 95% ethyl alcohol and then stained with H&E and Leishman stains. One smear was kept unstained for for 20% Ziehl–Neelsen (ZN) staining whenever a cytological diagnosis of granulomatous disease was made and also in cases with abundant necrosis and suppuration.

FNAC smears were carefully studied and categorized into nonneoplastic and neoplastic lesions.The smears which were hemorrhagic or with scant cellularity not sufficient to make any diagnosis were lebelled as inadequate for opinion.

RESULTS :

Out of 117 cases, 60 (51.28%) were female and 57(48.71%) were male. The ratio of male and female was found to be 1.05:1.

The average age of the patients with lymphadenopathy was 32.

Cervical lymph nodes were involved in maximum number of cases(61/117cases,52.13%)(**Table.1**).The FNAC results showed 98/117 cases(83.76%)as non-neoplastic and 12/117 cases (10.25%) as neoplastic.(**Table.2).** 7/117(5.98%) were inconclusive for opinion either due to scant cellularity or hemorrahge.Out of the non neoplastic lesions, reactive lymphadenitis was the most common diagnosis(56/98,57.14%) followed by tuberculous lymphadenitis(16/98,16.32%). (**Table No-3)** Granulomatous lymphadenitis constituted

15 /98,(5.30%) cases.5(5.10%)cases were of caseating granulomatous lymphadenitis.

The diagnosis of tuberculous lymphadenitis was given in the presence of epithelioid cell granuloma with or without caseous necrosis (figure.1) and presence of Acid-Fast bacilli on Zeihl-Neelsen staining and these were correlated with clinical features, Chest X-ray and sputum examination.In cases where granulomas were seen with negative Zeihl-Neelsen stain,diagnosis of granulomatous lymphadenitis was given.In cases with caseous necrosis and granulomas with negative 20%Z-N staining ,TB-PCR was advised to confirm the diagnosis of Tuberculosis.

Among the neoplastic lesions, metastatis was the most common diagnosis (9/12,75%).**Table No.4.**

Out of the of metastatic lesion, squamous cell carcinoma was the most

common malignancy found(4/9,44.44%). **Table no 5**

We made diagnosis of Non –Hodgkins lymphoma on cytology in 3 cases. In cases of Non-Hodgkins lymphoma,smears showed monotonous lymphoid cells with nuclear atypia and paucity of tangible body macrophages.

We found 2 cases of leprosy,one in axillary and other in inguinal lymph nodes. Smears showed macrophages and lymphocytes.On 5%Z-N staining , numerous lepra bacilli were seen(figure.2).

2 cases were of suppurative granulomatous inflammation smears of which showed epithelioid granulamas admixed with numerous neutrophils.20% Z-N staining was negative.(figure.3)

Table no 6 depicts site wise diagnosis of of lymphadenopathy.It shows that cervical group of lymph node is involved in almost all lesions. .

Biopsy was suggested in 17 cases,out of which histopathological correlation is obtained in 6 cases. **Table no 8**

Sensitivity, specificity and diagnostic accuracy was 83.33%,100% and 83.33% respectively. While calculating these values,neoplastic lesions having cytohisto correlation were consider as true positive,while those without correlation were consider as false negative or false positive.

DISCUSSION

FNAC is used as a triage to distinguish between cases of lymphadenopathy with high or low level of level suspicion of significant disease by the simplest,least invasive and least costly Method.Depending on the result,an immediate decision can be made wheather to simply observe the node,to recommend a course of antibiotics,or to refer the patient to a specialist for further investigation.[5]

This study was carried out to find out the relative frequencies of various pathologies presenting as lymph node enlargement.

In our study, cervical lymph node was most commonly involved node(61/117,52.13%) comparable with the study of Shrivastav et al[6] and Badge et al [2]Non neoplastic causes constituted 83.76% (98/117) of the total cases, comparable with the study of Bhide et al[4],Bhatta et al [3]and Khajuria et al [7].

Reactive lymphadenitis was the most common diagnosis offered in our study (56/117, 47.86), the finding concordant with the other studies (ref-1,7,8),followed by tubercular (13.67%) and granulomatous lymphadenitis (12.82%). Smears of reactive lymphadenitis showed mixed lymphoid population along with tingible body macrophages. (figure 4) Granulomatous lymphadenitis can be noninfectious and infectious. Noninfectious causes include sarcoidosis Infectious causes can be classified as suppurative and nonsuppurative. Suppurative granulomatous disorders include tularemia, cat scratch disease, and Yersinia. Nonsuppurative granulomatous disorders include tuberculosis, , toxoplasma, lepra Bacilli, brucellosis, and syphilis. In a region where tuberculous infection is common and other granulomatous diseases are rare, the presence of a granulomatous feature in FNAC is highly suggestive of tuberculosis.[2]

Metastasis was the most common lesion amongst the neoplasm (9/12,75%) the finding which is comparable with the study of Bhide et al [4]and Khajuria et al[7].

Out of the of metastatic lesion, squamous cell carcinoma was the most common malignancy(4/9,44.44%) as observed by Shrivastav et al [6]and Badge et al[2] .Primaries were in oral cavity and upper respiratory tract.Smears showed round to polygonal cells with pleomorphic and hyperchromatic nuclei and keratinous material in the background.(figure.5)

Lymphomas constituted 25% of the total neoplastic lesions(3/12),all of them were Non-Hodgkin lymphoma,one of them was turned out to be Anaplastic large cell lymphoma on histopathological examination.Cytology smears showed dispersed, highly pleomorphic lymphoid cells along with multinucleated tumor giant cells.(figure.6) One case of ractive lymphadenitis turned out to be Hodgkins lymphoma on histopathological examination.This might be due to Paucity of classical Reed-Sternberg cells and abundance of polymorphic cell population of the inflammatory cells.Inadequate sample and fibrosed node in advanced disease may be the cause of lack of Reed-Sternberg cells.[2]

Sensitivity, specificity and diagnostic accuracy was 83.33%,100% and 83.33% respectively, while bhide et al[4] found 78.57% sensitivity,100% specificity and 96.77% diagnostic accuracy.

CONCLUSION-

It is concluded that,Fine needle aspiration cytology is a easy,less time consuming and simple diagnostic tool for lymphadeno pathies. Following cy to diagnosis, decision regarding biopsy if necessary ,and other relevant investigations can be done.

Tables

Table 1-sites Of Lymphadenopathy

Site	Number of cases	%
Cervical	61	52.13
Submandibular	11	9.40
Inguinal	13	11.11
Supraclavicular	9	7.69
Submental	5	4.27
Axillary	4	3.41
Infraauricular	1	0.85
Jugulodiagastric	2	1.70
Occipital	2	1.70
Parotid	3	2.56
Postauricular	2	1.70
Pre-Auricular	3	2.56
Suboccipital	1	0.85
Total	117	100

Table 2-the Basic Distribution Of Lymph Node Lesions

Type of lesions	Number of cases	%
Non neoplastic	98	83.76
Neoplastic	12	10.25
Inadequate	7	5.98
Total	117	100

Table 3-distribution Of Non Neoplastic Lesions Of The Lymph Node

Type of lesion	Number of cases	Percentage
Reactive lymphadenitis	56	57.14
Tubercular	16	16.32
Granulomatous lymphadenitis	15	15.30
Caseating granulomatous lymphadenitis	5	5.10
Leprosy	2	2.04
suppurative lymphadenitis	1	1.02
Suppurative granulomatous lymphadenitis	2	2.04
acute on chronic lymphadenitis	1	1.02
Total	98	100

Table 4- Distribution Of Neoplastic Lesions Of Lymph Node On Cytology

Type of neoplastic lesion	Number of cases	Percentage
Metastasis	9	75
Non Hodgkins Lymphoma(NHL)	3	25
Total	12	100

Table 5- Distribution Of Metastatic Lesions Of Lymph Node On Cytology

Cytological diagnosis	Number of cases
Squamous cell carcinoma	4
Adenocarcinoma	1
Mucinous Adenocarcinoma	1
Poorly differentiated carcinoma	1
Infiltrating duct carcinoma	1
Unknown	1
Total	9

Table 6 -lymph Node Groups Involved In Various Types Of Lymphadenopathy

Site	Reactive	Granulomatous	Caseating granulomatous	Tubercular	Metastatic	leprosy	NHL	Suppurative granulomatous
Cervical	30	11	4	9	2		-	2
Inguinal	7	-	1	-	1	1	1	-
Axillary	1	-	-	-	1	1	1	-
Supraclavicular	3	-	-	3	1	-	-	-
Submandibular	3	2	-	2	2	-	1	-
Submental	3	1	-	-	1	-	-	-
Parotid	2	1	-	-	-	-	-	-
Occipital	2	-	-	-	-	-	-	-
Jugulodiagastric	-	-	-	1	1	-	-	-
Postauricular	2	-	-	-	-	-	-	-

Table 7-distribution Of Fine Needle Cytology Diagnosis Of 117 Cases Of Lymphadenopathy

Cytological diagnosis	Number of case	Percentage
Reactive lymphadenitis	56	47.86
Tubercular	16	13.67
Granulomatous lymphadenitis	15	12.82
acute on chronic lymphadenitis	1	0.85
Caseating granulomatous lymphadenitis	5	4.27
Inconclusive	7	5.98
Leprosy	2	1.70
Metastasis	9	7.69
Non Hodgkins Lymphoma	3	2.56
suppurative lymphadenitis	1	0.85
Suppurative granulomatous lymphadenitis	2	1.70
Total	117	100

Table No 8-cyto Histo Correlation

Site	Cytology diagnosis	Histopathology diagnosis
Intra Parotid	Reactive lymphadenitis	Lymphoepithelial sialedenitis
Inguinal	Non-Hodgkins lymphoma	Non-Hodgkins lymphoma
Axillary	Metastasis	Infiiltrating duct carcinoma
Inguinal	Reactive	Hodgkins lymphoma
Submandibular	Metastasis	Squamous cell carcinoma
Axillary	Non-Hodgkins lymphoma	Anaplastic large cell lmphoma

Images

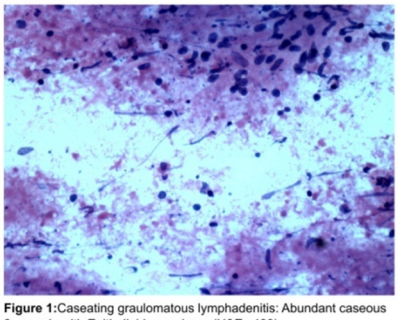

Figure 1: Caseating graulomatous lymphadenitis: Abundant caseous 0necrosis with Epithelioid granuloma (H&E,x400)

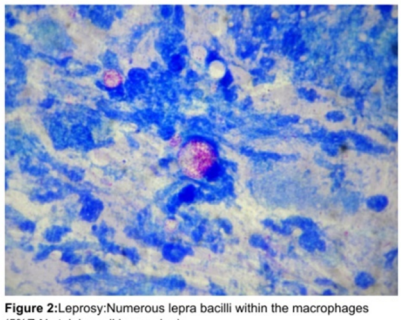

Figure 2: Leprosy:Numerous lepra bacilli within the macrophages (5%Z-N staining, oil immersion)

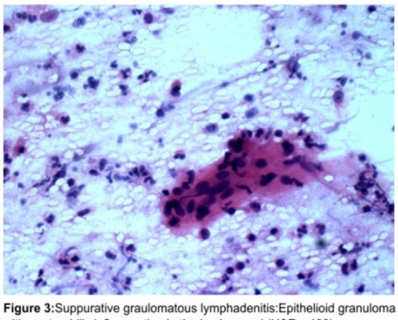

Figure 3: Suppurative graulomatous lymphadenitis:Epithelioid granuloma with neutrophilic inflammation in the background (H&E, x400)

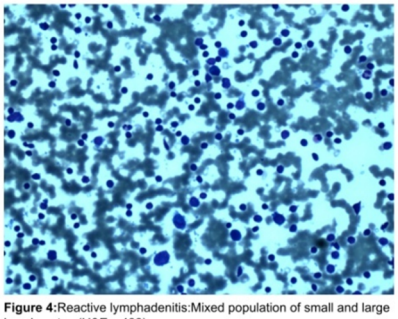

Figure 4: Reactive lymphadenitis:Mixed population of small and large lymphocytes (H&E, x400)

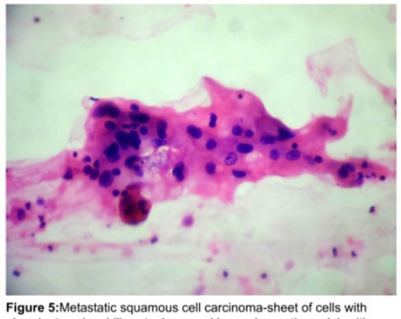

Figure 5: Metastatic squamous cell carcinoma-sheet of cells with abundant eosinophilic cytoplasm and hyperchromatic nuclei with keratinous material in the background (H&E, x400)

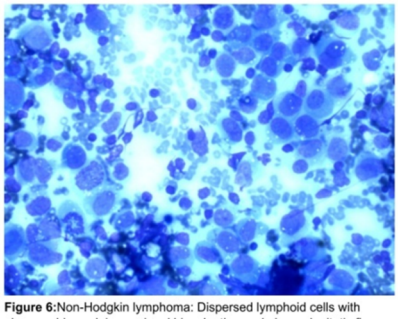

Figure 6: Non-Hodgkin lymphoma: Dispersed lymphoid cells with pleomorphic nuclei,occasional binucleation and abormal mitotic figures. (Leishman, x400)

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