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Clinico-cytological Correlation of Palpable Lymphadenopathy Upto 18 Years of Age

DrNivedita Singh[1], Dr Rachana[2], Dr (Prof) O P Dwivedi[3],
[1]Tutor, Department of Pathology, NMCH, Patna,[2] Tutor, Department of Pathology, NMCH, Patna,[3] Professor and Head, Department of Pathology, NMCH, Patna,

Abstract
Introduction*: Palpable lymphadenopathies as the name suggests are quite superficial and easily accessible to fine needle aspiration cytology. A reliable fine needle aspiration if available is an advantage to both the patient and the surgeon as the technique is rapid, safe and cost – effective. The objective of this study wasTo assess the utility of FNAC as an initial diagnostic modality in patients with palpable lymphadenopathy up to 18 years of age and its clinico-cytological correlation*
Material and Methods*: This study was carried out in patients up to 18 years of age, who had palpable lymph node masses at department of pathology, NMCH, Patna. The duration of this study was 1 year from Feb 2019 to Jan 2020. A total number of 150cases were included in the study for cytological examination. Both dry and wet fixed smears were prepared in all cases and were stained by MGG and Papanicolaoustains.*
Results: *Out of 150 cases 141 were inflammatory and 9 cases were malignant. Among inflammatory lymphadenopathy 65.33% cases were of reactive hyperplasia, 22.66% cases were of granulomatous lymphadenitis and 5.33% cases of acute nonspecific lymphadenitis and 0.66% cases were of Rosai-Dorfmann disease. Malignant lesions were seen in 6% of patients. Most common age group was 6-12 years of age (45.2%) comprising palpable lymphadenopathy. Male to female ratio was 1.9:1. Cervical group of lymph node were the commonest site.*
Conclusions*: Fine needle aspiration cytology is a reliable, easy and economical technique in the diagnosis of palpablelymphadenopathy in children.*
Key Words: *Fine needle aspiration cytology, FNAC, children, lymphadenopathy.*

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I. Introduction

Lymphadenopathy is the disease process of lymph nodes that renders them abnormal in size and consistency. It has several etiologies ranging from an inflammatory process to a malignant condition. Infection is the most common trigger for lymph node enlargement in children.[1]Lymphadenopathy especially of cervical lymph nodes is one of the commonest clinical presentations among paediatric patients attending the outdoor department.[2]The important point is to decide whether they are abnormally enlarged if so, whether associated with serious underlying pathology.[3] Enlargement of two or more non-contiguous lymph node regions is known as generalized lymphadenopathy, usually secondary to systemic infections.[4] The differential diagnosis of lymphadenopathy is broad and should be considered a systemic disease process until proven otherwise. History and thorough physical examination provide important clues to the underlying aetiology.

Lymph node is a major anatomic component of immune system. It is a bean shaped organ. The three major regions of lymph nodes are cortex, paracortex and medulla. The cortex is situated beneath the capsule and contains largest number of follicles. Medulla is rich in lymph sinuses, arteries and veins with only minor lymphocytic component.[6,7]FNAC is the study of cellular samples obtained through a fine needle under negative pressure. The technique is relatively painless and inexpensive.[4]Fine-needle aspiration cytology (FNAC) of lymph nodes has proven to be an easy, quick, reliable and cost-effective diagnostic tool for lymphadenopathies. It can be used to differentiate between malignancy and reactive conditions as well as lymphomas and metastases,[8]and therefore directs the next step in patient management.

Aims and Objective

1. To assess the utility of FNAC as an initial diagnostic modality in patients with palpable lymphadenopathy up to 18 years of age.

2. To obtain an analysis of palpable lymph nodes all over the body with regard to:

a. Age & Sexdistribution
b. Site – wisedistribution
c. Cytological findings
d. Neoplastic and non –neoplastic conditions.

II. Material and Method

A total of 150 cases with age group up to 18 years with palpable lymphadenopathy referred to the department of pathology, Nalanda Medical College & Hospital, Patna were included in the study. The cases were referred from the department of paediatrics, medicine, surgery, ENT and other departments of the hospital for investigation by fine needle aspiration cytology during February 2019 to January 2020.

Inclusion criteria:
1. All superficial palpable lymph node present over the body.
2.Patients presenting with palpable lymph node upto 18 years of age.

Exclusion criteria:
1. Patients aged >18 years.
2. All non-lymphoid aspirates from the body.
3. Inadequate aspirate

Proper clinical history was first collected, local and systemic examination was performed and a clinical diagnosis was made. Palpable peripheral lymph nodes were examined noting their size, location, consistency, number, mobility, presence of matting and any local changes like redness, discharge or sinus.The FNAC procedure was explained to the patient in their vernacular language and written consent was taken. FNAC was then performed and few smears were made.Smears were stained for PAP, MGG stain, Hematoxylin& Eosin stains. ZN Stain for AFB was performed wherever necessary.

III. Result

The present study consists of 150 cases (with 98 male patients; 52 female patients) of palpable lymphadenopathy of age group 0 to 18 years presenting in the department of Pathology, Nalanda Medical College & Hospital, Patna. Among the 150 cases 98 cases were non-specific reactive lymphadenitis, 34 cases were of granulomatous lymphadenitis possibly tuberculous, 8 cases were of acute suppurative lymphadenitis, 9 cases were of lymphoma and 1 case was of Rosai-Dorfman disease.A total of 150 patients were studied. Age ranges from 0-18 years. Six age-groups were divided at the interval of 3 years.

Table 1: Age distribution of patients:

Age group (years)	No. of patients	Percentage
0-3	8	5.3
3-6	27	18
6-9	35	23.3
9-12	33	22
12-15	22	14.7
15-18	25	16.7
Total	150	100

Table 2: Sex Distribution

	Male	Female	Total
No. of patients	98	52	150
Percentage	65.33	34.66	100

Table 3: Site of Palpable Lymph-node

Site	No of patients	Percentage
Cervical	114	76
Submandibular	16	10.66
Submental	1	0.66
Supraclavicular	3	2
Axillary	5	3.33
Inguinal	7	4.66
Generalised	4	2.66
Total	150	100

Table 4: Cytological finding

Diagnosis	No of patients	Percentage
Acute suppurative lymphadenitis	8	5.33
Non-specific reactive lymphadenitis	98	65.33
Granulomatous lymphadenitis	34	22.66
Hodgkin's lymphoma	6	4.00
Non-Hodgkin's lymphoma	3	2.00
Rosai-Dorfman disease	1	0.66
Total	150	100

Table 5: Sex-wise distribution of cytological findings

Diagnosis	No of male patients	Percentage	No of female patients	Percentage
Acute suppurative lymphadenitis	6	6.12	2	3.84
Non-specific reactive lymphadenitis	68	69.38	30	57.69
Granulomatous lymphadenitis	16	16.32	18	34.61
Hodgkin's lymphoma	4	4.08	2	3.84
Non-Hodgkin's lymphoma	3	3.06	0	0
Rosai-Dorfman disease	1	1.02	0	0
Total	98	100	52	100

Table 6: Non-neoplastic and Neoplastic lesions

	Number	Percentage
Non-neoplastic	141	94
Neoplastic	9	6
Total	150	100

IV. Discussion

Age

In the present study majority of the patients were in the age group of 6-9 years (23.3%) followed by 9-12 years age group (22%). Mishra SD *et al.*[17] in their study observed 36.5% patients in 4-8 yrs age group and 24.1% in 8-12 years age group. Normal peak lymphatic growth occurs in the age group of 4-8 yrs. This could be the reason for maximum number of cases in this age group.

Sex

In the present study out of 150 patients, 98 were male and 52 were female. The incidence in males (65.33%) was more than that in females (34.66%) with male to female ratio 1.9:1. Moore et al[18] found male preponderance with male to female ratio 3:1. Mishra SD et al[17] observed slightly higher incidence in males with male to female ratio 1.1:1. The male preponderance in the present study was similar to these studies. This could be due to the prevailing custom of providing more attention to male children in Indian society rather than the real increased biological susceptibility in boys.

Site

In the present study 76% cases had palpable cervical lymph node, 10.7% had submandibular, 4.7 % inguinal, 3.33 % axillary, 2% supraclavicular and 0.66% had submental. Generalised palpable lymph node comprised 2.7% of the group.In majority of patients the presenting symptom was swelling in the cervical region (78%), followed inguinal (4.7%) and axillary (3.3%). This was similar to the study by Ellison et al[19] who studied 100 children with lymphadenopathy and observed swelling in neck as most common presenting symptom (52% of cases). Cervical lymphadenopathy is the most common among all the lymph nodes, which is correlated well with the studies conducted by Steel et al[9], Manjunath BS et al[12].

Cytological finding

The cytological diagnosis was made on 150 patients. Overall, inflammatory lymphadenopathy comprised 94% of the total lesions of the lymph nodes; it included 65.3% cases of non-specific reactive lymphadenitis, 22.7% cases of granulomatous lymphadenitis possibly tuberculous, 5.3% cases of acutesuppurative lymphadenitis, and 0.66% cases of Rosai-dorfman disease. Malignant lesions were seen in 6% of the patients. It included 4% cases of Hodgkin's lymphoma and 2% cases of non-Hodgkin's lymphoma. Thesefindings are in agreement of those reported by Locham*et al*[20], who diagnosed reactive hyperplasia in 68% cases, tubercular lymphadenopathy in 29% cases and malignancy in 3% cases. Tripathi*et al*[21]found reactive hyperplasia in 64% cases and tuberculosis and neoplasia in 4% of the patients.Sankaran*etal*[22]also observed

lymphoid hyperplasia as the most common condition in benign lesions, followed by tuberculosis.Jain *et al*[23]reported 1.8% malignant cases in their study.

Sex-wise distribution of cytological findings

All the above cytological findings except granulomatous lymphadenitis were more common in males. Non-specific reactive lymphadenitis,acute suppurative lymphadenitis, Hodgkin's lymphoma, Non-Hodgkin's lymphoma and Rosai-Dorfman disease were found in males in 68,6, 4,3, and 1 cases respectively while in females 30, 2, 2, 0, 0 cases were found respectively.The male preponderance in the present study could be due to the prevailing custom of providing more attention to male children in Indian society than female children. In case of tuberculous lymphadenitis amongst the 34 patients the male: female ratio was 1:1.13. The above findings correlate with study by Lau et.al.[16]and SunartoReksoprawiro et.al. al.[14]who have reported male: female ratio of 1:1.8 and 1:2 respectively.

Neoplastic and Non-neoplastic lesions

Out of 150 cases,non-neoplastic cases were 141 (94%) and neoplastic cases were 9 (6%) of total lymph node aspirated. It correlates well with the study of Young et al (1981)[11],Frable&Frable(1982)[10],El Hag et al (2003)[13] who found 2.93%,2.68%,4% neoplastic lesion respectively.Our findings are correlating with the study done by, Manjunath BSet al[12].

V. Conclusion

Most common cytological finding was non-neoplastic inflammatory conditions in which reactive hyperplasia was commonest. Among neoplastic, Hodgkin's lymphoma was common. Most common site was cervical lymph node. Most common age group was 6-12 years and male : female ratio was 1.9 : 1.Fine needle aspiration cytology is a reliable, easy and economical technique in the diagnosis of palpable lymphadenopathy in children.

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