International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

Fine Needle Aspiration Cytology Findings in Lymphadenopathy of Pediatric Age Group in a Tertiary Care Teaching Hospital

Dr. P. Parvathy[1], Dr. Hansa Goswami[2], Dr. Urvi Parikh[3]

[1] Post Graduate resident, Department of Pathology, B.J Medical College, Ahmedabad, Gujarat, India
[2]Professor and Head, Department of Pathology, B.J Medical College, Ahmedabad, Gujarat, India
[3]Assistant Professor, Department of Pathology, B.J Medical College, Ahmedabad, Gujarat, India

Abstract: ***Introduction: Lymph nodes are normal structures, and certain lymph nodes may be palpable in a healthy patient, particularly in a young child. Conversely, the presence of abnormally enlarged lymph nodes ("lymphadenopathy") can be a clue to a serious underlying systemic disease, and the differential diagnosis of lymphadenopathy can be broad. Fine needle aspiration cytology (FNAC) is particularly helpful workup in cases of lymphadenopathy. Objective: To study various pathological lesions of lymph node in pediatric age group. Material & Methods: This was an observational study over a period of 3 years, i.e from September 1, 2018 to August 31,2021 in the Department of Pathology. Total number of cases during study period was 258. Patients of age < 18 years presenting with lymphadenopathy to cytopathology section of tertiary care teaching hospital, Ahmedabad were included in the study. Sample with inadequate material aren't included in the study. Result: Most common age group who underwent FNAC was between age group of 14-17 years of age. Most common pathological finding was Chronic Nonspecific Lymphadenitis in 41.9% of cases and TB Lymphadenitis (35.3%) being second most common finding. Conclusion: FNAC is an expeditious diagnostic tool for lymphadenopathy in pediatric age group which is less painful and inexpensive. In developing country like India, it is of great value to differentiate benign causes of lymphadenopathy like TB lymphadenitis from malignant causes of lymphadenopathy and of help to clinician for early management of patients.***

Keywords: Lymphadenopathy, Pediatric, FNAC

1. Introduction

Lymph nodes are normal structures, and certain lymph nodes may be palpable in a healthy patient, particularly in a young child. Lymphadenopathy may involve single or multiple lymph nodes adjacent to each other, or may also be extensive lymphadenopathy wherein more than two lymph nodes are affected which are not adjacent to each other. Lymphadenopathy can be a clue to a serious underlying systemic disease, and the causes can be many.[1]Infections are first in order of etiology of lymphadenopathy in childhood.[2]Fine needle aspiration cytology (FNAC) is particularly helpful in the workup as biopsy should be avoided unless all other diagnostic modalities have failed.[3] FNAC is now increasingly being recognized as a rapid diagnostic technique in pediatric lesions because it is relatively painless, gives a speedy result and is inexpensive.[4]Imaging modalities like USG, CT guided FNAC are of help when indicated. In this study, we have evaluated 258 children who presented with lymphadenopathy to our outpatient clinic.

2. Material & Methods

This was an observational study over a period of 3 years, i.e from September 1, 2018 to August 31,2021 in the Department of Pathology. Total number of cases during study period was 258. Patients of age < 18 years presenting with lymphadenopathy to cytopathology section of tertiary care teaching hospital, Ahmedabad were included in the study. Sample with inadequate material aren't included in the study. Relevant clinical history, clinical examination and radiological investigation were done before FNAC procedure. Lymph nodes were aspirated by using a 22G-24G needle attached to a 10 ml disposable syringe. Squash smear is made from aspirated material. In all cases, alcohol fixed smears are stained with Papanicolaou stain (PAP) & Hematoxylin and eosin (H&E) stains and air dried smears were stained with May-Grunwald Giemsa (MGG) stain. In necessary cases, Modified ZN stain was done for acid fast bacilli. In case of deep-seated lesions, Ultrasonography (USG) guided FNAC was performed.

3. Result

The age of patients ranged from 6 months to 17 years. Maximum number of cases where between the age group of 14-17 years (32.2%) followed by 5-9 years (25.2%) and 10-13 years (25.2%) with mean age being 10.12 years.

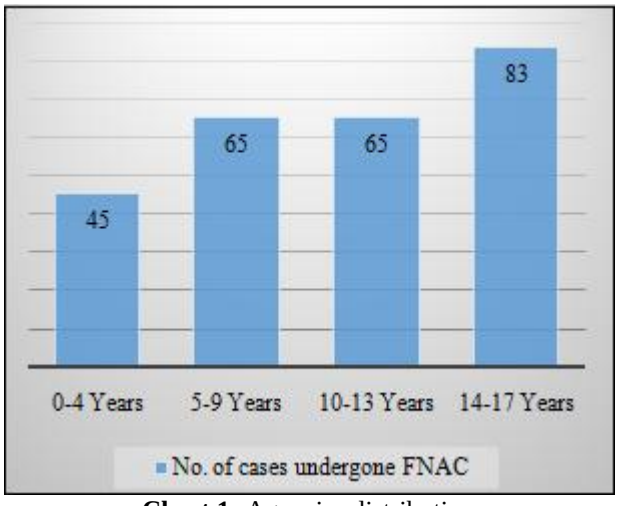

Chart 1: Age wise distribution

Out of 258 cases, 145 cases (56.2%) were that of Males and 113 (43.8%) of the cases were female. There is slight male predominance with male: female ratio being 1.3:1.

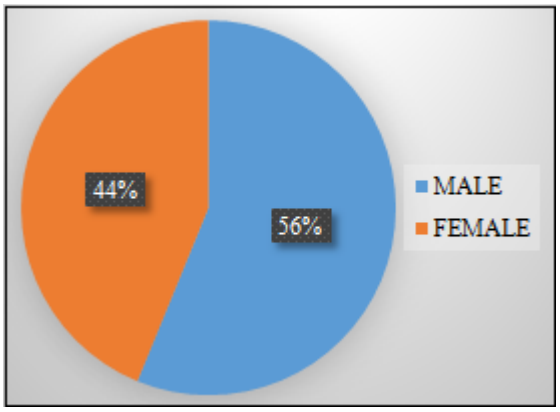

Chart 2: Sex wise distribution

Cervical group of lymph nodes were the most common group of lymph nodes involved in which Posterior group of cervical lymph nodes (44.9%) were involved the most. Second most common involved lymph node was submandibular lymph nodes (16.3%). Multiple groups were affected in 11.6% of the cases.

Table 1: Distribution of Lymph nodes involved

Lymph Node Group	No. of cases	Percentage (%)
Posterior Cervical	116	44.9
Anterior Cervical	21	8.1
Submandibular	42	16.3
Inguinal	6	2.3
Supraclavicular	7	2.7
Axillary	11	4.3
Pre/Post Auricular	17	6.7
Submental	7	2.7
Suprasternal	1	0.4
More than 1 group	30	11.6
TOTAL	**258**	**100**

Out of 258 cases, maximum cases were of Chronic Non Specific Lymphadenitis with 108 cases (41.9%) and Tuberculous Lymphadenitis being the second most common lesion with 91 cases (35.3%).

Table 2: Spectrum of Lesions

Cytodiagnosis	No. of cases	Percentage (%)
NON NEOPLASTIC LESIONS(94.3)		
Chronic nonspecific Lymphadenitis(CNSL)	108	41.9
Tuberculous Lymphadenitis	91	35.3
Reactive Lymphadenitis	43	16.7
Necrotizing Lymphadenitis	1	0.4
NEOPLASTIC LESIONS(5.7)		
Lymphoproliferative Disorders(LPD)	13	5
Metastatic	2	0.7
TOTAL	**258**	**100**

Table 3: Spectrum of lesions involving various groups of lymph nodes

	CNSL	Reactive	TB	LPD	Necrotizing	Metastasis	**TOTAL**
Posterior cervical	60	25	28	2	0	1	116
Anterior cervical	9	2	9	1	0	0	21
Submandibular	16	5	21	0	0	0	42
Submental	3	2	2	0	0	0	7
Axillary	4	1	6	0	0	0	11
Inguinal	4	1	1	0	0	0	6
Post/Pre auricular	9	5	3	0	0	0	17
Suprasternal	0	1	0	0	0	0	1
Supraclavicular	1	0	5	0	0	1	7
Multiple groups	2	1	16	10	1	0	30
TOTAL	108	43	91	13	1	2	**258**

4. Discussion

In study by S. Prathima et al[5], the maximum number of patients were in between age group of 11-18 years(55%), while in the present study, maximum number of patients were between age group of 14-17 years (32.2%). In the present study, patients between age group of 10- 17 years constituted 57.4% of the study population. According to Knight et al[6], age is not a factor affecting development of lymphadenopathy.

The male to female ratio of lymph node lesion in studies by Sunil Kumar Agarwalla et al[7] and S.Prathimaet al[5] were 1.4:1 and 1.15:1 respectively, which is similar to the present study.

In studies by Neha Singh et al[8] (96.79%)and Shilpa G et al [9](65.05%)also, cervical group were the most common involved lymph node. The most common lymph node involved in the present study was found to be cervical group of lymph nodes (75.1%) followed by multiple non continuous lymphadenopathy (11.6%). According to Connolly AA et al [10] 24% of children with head and neck masses who had undergone excisional biopsy had complications related to procedure compared to fine needle aspiration which was relatively safe.

Infectious and inflammatory causes constitute 94.3% of the cases of which 41.9% of the cases are of chronic nonspecific lymphadenitis followed by tuberculous lymphadenitis (35.3%).As of 2013, 30.8 per 100000 populations in India has Tuberculous lymphadenitis[11].Out of the 13cases (5%)of Lymphoproliferative Disorders, 7 cases (2.7%) were of Non-Hodgkin's Lymphoma, 4 cases (1.6%) were of Hodgkin's Lymphoma and 2 cases(0.7%) were unspecified.

Table 4: Comparison of various causes of lymphadenopathy

Cytological Diagnosis	U Handa et al[12]	Shilpa G et al[9]	Dhingra V et al[13]	Present Study
Reactive + CNSL	62.2%	53.22%	55.35%	58.6%
Tuberculous	25.2%	30.2%	28.1%	35.3%
LPD	1.1%	1.8%	10%	5%
Metastatic	0.3%	0.2%	-	0.7%

5. Conclusion

FNAC is an expeditious diagnostic tool for lymphadenopathy in pediatric age group which is less painful and inexpensive. In developing country like India, it is of great value to differentiate TB lymphadenitis from other causes of lymphadenopathy and of help to clinician for proper early management of patients.

Source of funding: Self

Ethical clearance: All procedures performed were in accordance with ethical standards of institution.

Conflict of interest: Nil

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