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Clinical and Cytological Assessment of Peripheral Lymphadenopathy Among Children: A Cross Sectional Study

[1]Dr. Vikas Pandey, [2]Sandeep Kumar Parihar, [3]Rimjhim Raina and [4]Dr. Pankaj Kumar Jain

[1,3]Department of Pathology, Government Medical College, Satna, Madhya Pradesh, India

[2]Department of Respiratory Medicine, N.S.C, Government Medical College, Khandwa, Madhya Pradesh, India

[4]Department of General Medicine, N.S.C., Government Medical College, Khandwa, Madhya Pradesh, India

ABSTRACT

Peripheral lymphadenopathy is a common clinical entity in pediatric practice. The critical task in approaching patients with lymphadenopathy is to diagnose nodes likely to be related to benign, self-limited conditions and which nodes indicate malignancy or other serious condition requiring specific treatment. To evaluate the clinico pathological picture of peripheral Lymphadenopathy among children in a tertiary care hospital. This research was carried out at the Department Pathology in a tertiary care hospital for a period of one year. Total 100 children (<16 years) with significant peripheral lymphadenopathy were studied with FNAC and subsequent biopsy wherever available. Relevant clinical data and FNAC findings were analyzed. Most of the participants (40%) were 5-10 years age group, predominantly male (66%). Most common presenting complaint was neck swelling alone (89%), fever (86%) and cough (73%). Cervical (70%) was commonest lymph node group involved. Tuberculosis, tonsillitis, lymphadenitis and otitis media were the common etiology. FNAC in categorizing different types of lymphadenopathy in children revealed were reactive lymphadenitis was the commonest (66%) followed by tubercular lymphadenitis (16%). Reactive hyperplasia followed by tuberculosis was the most frequent cause for lymphadenopathy in pediatric population. FNAC alone can be useful in establishing diagnosis in large number of cases in proper clinical setting and obviates the need for invasive procedures like biopsy or surgery.

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Key Words
Children, peripheral lymphadenopathy, clinical profile, FNAC

Corresponding Author
Dr. Pankaj Kumar Jain,
Department of General Medicine, N.S.C., Government Medical College, Khandwa, Madhya Pradesh, India
drpankajjain07@gmail.com

Author Designation
[1,4]Associate Professor
[2,3]Senior Resident

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INTRODUCTION

Peripheral lymphadenopathy is a common clinical finding in children[1]. Lymphadenopathy (LAP) is defined as an alteration in the size or character of a lymph node (LN) produced by the invasion or spread of inflammatory or neoplastic cells into the nodes[2]. LNs are not considered considerably enlarged unless their diameter surpasses 1cm for cervical and axillary nodes and 1.5cm for inguinal nodes. However, palpable Supra clavicular nodes are always treated as abnormal[3]. Eighty to ninety percent of children have palpable cervical nodes. Infant lymph nodes can be palpated as early as in the neonatal period[4]. In wealthy countries, cancer has been the most common cause of lymphadenopathy, whereas in underdeveloped countries such as India, acute respiratory tract infections, suppurative skin infections and tuberculosis are the leading causes[5]. The prevalence can reach 250 per 1,000,000 people[6]. Lymph node enlargement can be caused by a variety of factors, including an immunological response to infective agents (e.g., bacteria, viruses, or fungi). (ii) Inflammatory cells associated with lymph node infections. (iii) Neoplastic cells infiltrate the node via lymphatic or blood circulation (metastasis). (iv) Lymphocyte or macrophage neoplastic growth on a localized scale. (v) Infiltration of macrophage containing metabolic deposits (e.g., storage diseases)[7,8]. The pattern of lymph node enlargement varies by age group. In children, the most prevalent location is cervical (54%), followed by mesenteric (22%), axillary (13%) and inguinal (10%)[9]. Fine needle aspiration cytology (FNAC) is the first line of treatment for anyone with lymphadenopathy. It has been shown to be a quick, minimally invasive, cost-effective and dependable diagnostic method. However, FNAC has several limitations in the diagnosis of cancer because aspirated material is insufficient for marker investigations and cytogenetic analysis. In such circumstances, confirmation is obtained with an open biopsy and histological examination (HPE)[10,11].

Aims: The goal of this research was to determine the causes of severe peripheral lymphadenopathy in children and assess the correlation between clinical and pathological results.

MATERIALS AND METHODS

The study was carried out at the Department of Pathology in a tertiary care hospital for a period of one year. The research comprised children with peripheral lymphadenopathy who attended Pediatric OPD and were admitted to the Pediatric Department and send for FNAC to Pathology throughout the study period. Written inform consent was obtained from the parents or guardians for the participation of the study.

Inclusion Criteria:

- Children age group between 1-16 years.
- Clinically palpable peripheral lymphadenopathy.
- Those parents or guardians provide consent for the study.

Exclusion Criteria:

- Children <1 and >16 years of age.
- Insignificant palpable lymphnodes i.e., lymphadenopathy of < 1cms in cervical axillary and <1.5 cm in inguinal region.
- Those parents or guardians not provide consent for the study.

The following data were retrieved from the charts: age, sex, chief complaint, location of the lymph node, duration of the lymph node enlargement, size of the lymphadenopathy, type of biopsy done, final diagnosis, and management of the patient. The Mantoux test was performed on all patients as part of their usual work up. Fine needle aspiration cytolology (FNAC) was performed on all patients in the study group after a swab was collected from the most prominent node in patients with the source of infection for culture and sensitivity. Relevant tests were performed on individuals with suspected systemic illnesses or malignancies.

Statistical Analysis: The data was analyzed using Statistical Package for the Social Sciences. Software version 18.0 (SPSS Inc, Chicago). Obtained parameters were evaluated using descriptive statistical analysis and presented in terms of percentage.

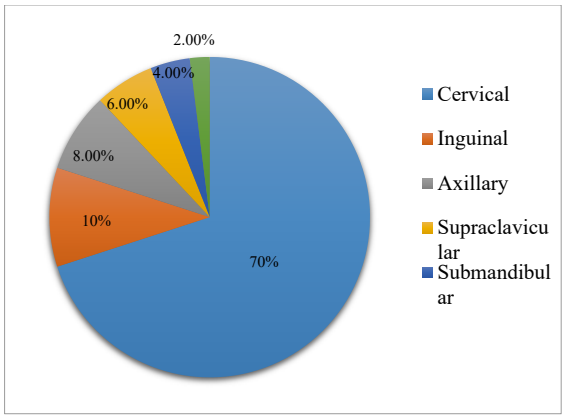
RESULTS AND DISCUSSIONS

A total of 100 children with peripheral lymphadenopathy were enrolled and analyzed in this study. Majority of the patients were 5-10-years of age group (40%), followed by the 11-15-years of age group (31%), with slightly male predominant (66%). Most of them (61%) resided in rural area and 44% belong to lower socio-economic class (Table 1).

Table 1: Socio-Demographic Profile of Study Participants

Socio-demographic profile		Frequency	Percentage
Age group	1-5 years	20	20%
	6-10 years	40	40%
	11-15 years	31	31%
	>15 years	9	9%
Gender	Male	66	66%
	Female	34	34%
Residence	Rural	61	61%
	Urban	39	39%
Socio-economic class	Lower	44	44%
	Middle	38	38%
	Upper	18	18%

Cervical lymphadenopathy was the most common (70%) followed by inguinal (10%), Axillary (8%), Supra clavicular (6%), Submandibular (4%) and pre auricular (2%). (Graph 1)



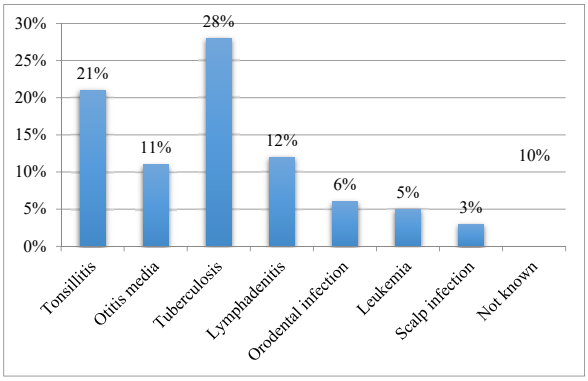
Graph 1: Site of Peripheral Lymphadenopathy in Study Patients

Most common clinical manifestation was swelling alone (89%). Other manifestations included fever, cough, cold, weight loss, sore throat, rash and discharge from the swelling in various combinations. (Table 2).

Table 2: Presenting Symptoms in Children with Lymphadenopathy

Clinical profile	Frequency	Percentage
Neck swelling	89	89%
Fever	86	86%
Cough	73	73%
Decreased appetite	47	47%
Weight loss	43	43%
Sore throat	32	32%
Ear discharge	9	9%
>1 symptoms	79	79%

Tuberculosis (28%), Tonsillitis (21%), lymphadenitis (12%), otitis media (11%), orodental infection (6%) and 12%associated with unknown etiology among pediatric lymphadenopathy (Fig. 2).



Graph 2: Suspected Clinical Etiology of Peripheral Lymphadenopathy in Children

On FNAC finding revealed reactive hyperplasia was the most common (66%) followed by tuberculosis cytology (16%) (Table 3).

Table 3: Fine Needle Aspiration Cytology Findings

Cytology		Number	Percentage
Benign lymphadenopathy	Reactive hyperplasia	66	66%
	Tuberculosis	16	16%
	Suppurative	9	7%
	Non specific	2	2%
Malignancy Lymphoma	Hodgkin lymphoma	3	3%
	Non-Hodgkin lymphoma	2	2%
Inadequate material for opinion/ unsatisfactory		4	4%

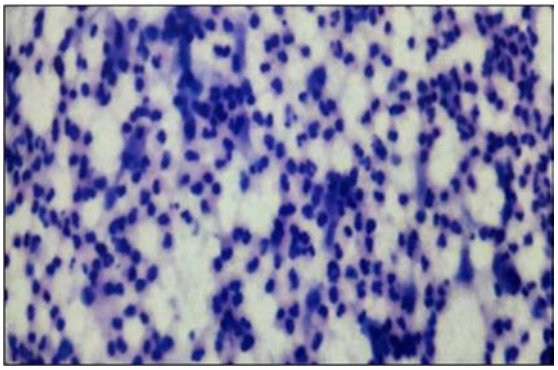


Fig 1: Acute Suppurative Lymphadenitis (10xH and E)

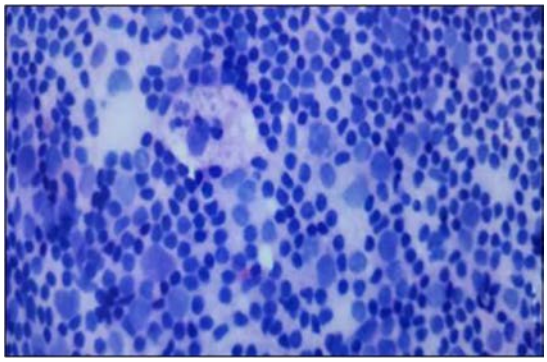


Fig 2: Nonspecific Lymphadenitis (40xH and E)

During the current study an attempt was made to study the etiology of children presenting with peripheral lymph node enlargement after correlating the clinical and FNAC findings with those of the laboratory abnormalities. In the present study majority of the patients were in the age group of 5-10 years,. Our results were similar with M Sunil[12] and Singh[13]. Normal peak lymphatic growth occurs in the age group of 5-10 years. Our study showed male preponderance, in agreement to other studies like Mitra[14] and Berce[15] also reported that peripheral lymphadenopathy was more in male children. The reason for the increased incidence in male children has to be studied in detail to know the exact reason, but 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. In current research majority of patients the presenting symptom was swelling in the region of neck, followed by fever and cough, our findings were comparable with the Tanteo[16] and Handralmath[17]. In the present study, cervical group of lymphnodes was most commonly

involved, followed by Axillary and inguinal on the analysis of the distribution of lymphnodes in various areas of the body, concordance with the Mohan[18] and Rao[19]. Current study found, Tuberculosis, Tonsillitis /Pharyngitis, lymphadenitis and ear infection, were the common etiology associated with the peripheral lymphadenopathy, Accordance to Maria[20]. Bedside FNAC was done in all the cases as a primary diagnostic tool in the evaluation of children with cervical lymphadenopathy. In our study majority of the cases in present study cytological picture was of reactive hyperplasia, concordance to Annam[21]. The second most common diagnosis was tubercular lymphadenitis. In India lymphadenopathy is the common presentation of extra pulmonary tuberculosis with massive economical implication on the health care system. It is also resurging due to the increasing incidence of Human Immunodeficiency[22,23].

CONCLUSION

Lymphadenopathy in pediatric population is always a diagnostic challenge. In a resource limited facility it can be an important diagnostic tool available for initial assessment and to plan the further course of management. The most prevalent cause of lymphadenopathy in children is reactive lymphadenitis, followed by TB. FNAC is a simple with minimum complications with good diagnostic accuracy. It can be used as a primary diagnostic test in children with peripheral lymphadenopathy.

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