



ORIGINAL RESEARCH PAPER

Paediatrics

PROFILE OF “CLINICO PATHOLOGICAL SIGNIFICANT CERVICAL LYMPHADENOPATHY IN CHILDREN”

KEY WORDS: Cervical lymphadenopathy, FNAC, Reactive hyperplasia, Reactive lymphadenitis

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ABSTRACT

Introduction: Lymph node enlargement is normal age related physiological change, may also herald chronic infections and serious conditions like autoimmune disorders. **Aims:** To study the clinicopathological profile of significant Cervical lymphadenopathy in paediatric age group (1 month -12 years) and to arrive at an etiological diagnosis. **Materials and Methods:** Prospective study in our Chalmeda Anand Rao Institute Of Medical Sciences. Seventy consecutive children reporting to the Department of Paediatrics from 1 December 2020 to 30 June 2022 were studied. FNAC, Mantoux test and hematological parameters were performed in all the cases. Additional investigations like culture pus, serological test and x-ray were done wherever required. **Results:** Among 70 cases the common age group was 4year to 8 years in 41.4% children .The etiology was confirmed in 84.3% cases and could not be ascertained in 15.7% cases even after relevant investigations. Cytological examination revealed reactive lymphadenitis in 74.3% cases, tubercular lymphadenitis in 14.3% cases and Suppurative lymphadenitis in 7.1% cases. Also 4.3% cases yielded inadequate aspirate. Commonest etiology diagnosed after detailed investigation was due to infections in areas of drainage like tonsils, ear and scalp, oral cavity in 48.6% cases followed by tuberculosis in 25.3% cases **Conclusion:** Reactive lymphadenitis due to underlying infection caused by streptococcal and staphylococcal infections were the commonest treatable entity of significant paediatric cervical lymphadenopathy.

INTRODUCTION:

Lymph node enlargement is a common problem in children and evaluation of a child with lymphadenopathy is a common clinical scenario for the paediatricians. Palpable nodes in the cervical region are found in about 80-90% of children^{1,2}. The important point is to decide whether they are abnormally enlarged or whether associated with serious underlying disease process, which is the worrying point for the parents and the doctors caring for the children. Lymphadenopathy is defined as an abnormality in the size or character of lymph nodes³.

A lymph node is considered as abnormally enlarged if it measures more than 10mm in its longest diameter in cervical region is considered abnormal. Palpable supraclavicular nodes are always considered abnormal⁴. Enlargement of two or more non-contiguous lymph node regions is known as generalized lymphadenopathy⁵. Causes include systemic infections (viral, bacterial, fungal or protozoal), malignancies, autoimmune diseases, benign hyperplasia, drug reactions, histiocytosis and storage diseases. Systemic infections are the most common causes, majority being systemic viral infections. Regional lymphadenopathy is defined as the enlargement of lymph nodes within contiguous anatomic regions⁶.

Fine needle aspiration cytology is a simple, rapid, reliable, safe, cost effective technique with good diagnostic accuracy. It can obviate the need for surgical biopsy⁷.

The dilemma to approach a child with lymphadenopathy, its evaluation and management, considering various differential diagnoses stimulated us to take up this study.

MATERIALS AND METHODS

Study design- Prospective observational study.

Study centre-Department of Paediatrics, Chalmeda Anand Rao Institute of Medical Sciences, karimnagar.

Duration of study- December 2020 to June 2022

Total Sample size- seventy.

Inclusion criteria:

Patients between the age group of 1 month to 12years Patients with cervical lymphadenopathy with

- Lymph node size of > 1 cm in cervical and axillary region
- > 1.5 cm in inguinal region
- > 0.5 cm in other peripheral region

Lymph nodes which were hard, rubbery or matted.

Lymph nodes with discharging sinus

Exclusion Criteria:

Patients between the age group of less than 1month and more than 12years and without lymphadenopathy

Sampling Method: simple random sampling

Methodology -

Informed consent was taken from the parent or guardian for inclusion into the study. The clinical and laboratory data of these patients were recorded on a structured proforma Thorough general physical examination was carried out. Palpable peripheral lymphnodes were examined noting their size, location, consistency number, mobility,

presence of matting and presence of any local changes like redness, discharge or sinus formation. The area drained by enlarged lymphnodes was examined for presence of features of infection or inflammation like tonsillitis, pharyngitis, ear infection, dental infection, and wound or pyoderma lesions over the skin. Systemic examination was done including respiratory, cardiovascular, abdominal and central nervous system. Significant findings were recorded. For all patients in the study group blood examination for hemoglobin level, total and differential count and Erythrocyte sedimentation rate were done by standard hematological techniques. As the

prevalence of tuberculosis was high in karimnagar, mantoux test was done in the patients as a part of routine workup.

Fine Needle aspiration cytology (FNAC) was done for all the patients in study group after selecting the most prominent node. In patients with source of infection, swab was taken for culture and sensitivity. In patients with suspected systemic infection or malignancy following tests were done - Chest X-ray, Serological tests for HIV, Brucella, bone marrow examination, Acid fast bacilli staining and lymph node biopsy

Ethical Clearance:

Ethical clearance was obtained from the institutional ethical committee.

Statistic Analysis:

The statistical analysis was done by using chi-square test wherever applicable.

All the statistical calculations were done through SPSS for windows (version 25)

RESULTS

A total of seventy patients were studied between 1st December 2020 to 30th june 2022. Out of 70 cases studied 19 (27.1%) were in-patients admitted in the paediatric ward and 51 (72.9%) were out patients, attending paediatric outpatient department of Chalmeda Anand Rao Institute of Medical Sciences,

Age distribution:

Majority of the patients with cervical lymphadenopathy were in the age group of 4-8 years (41.4%), followed closely by 8 years to 12 years age group (37.1%) and least in 1 month to 4years age group. Youngest patient in our study was of 1 year age.

Sex distribution:

Occurrence of cervical lymphadenopathy was observed commonly in male children (70%) than in female children (30%). The male to female ratio was 2.3:1.

Symptoms:

Fever and cough were the presenting symptoms in 90% and 52.9% of children respectively. History of sore throat was present in 18.6% of children. History of contact with a case of tuberculosis was present in 5 children

Sites of lymphadenopathy in cervical region:

Out of 70 cases, upper anterior cervical nodes were commonly involved (44.3%) followed by posterior cervical lymph nodes (31.4%). Submandibular lymph nodes were palpable in 10% of cases, Occipital and Posterior auricular in 7.1% of the cases each. Supraclavicular lymph node enlargement was not found during study.

Characteristics of enlarged lymph node:

In 51.4% of patients the lymph nodes were below 2cm in size and between 2-4cm in 48.6% cases Majority of the lymph nodes (90%) were firm in consistency. Consistency of the nodes was soft in 10% cases. In 81.4% patients enlarged nodes were discrete and mobile. Matting was noted in 18.6% patients, out of which 1 patient had discharging sinus formation Lymph nodes were painless and non-tender in 88.6% of the cases, tenderness being noted in 11.4% cases.

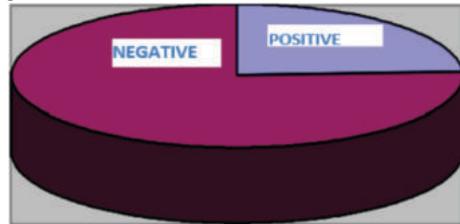
Investigations:

Blood counts were done in all cases. 37.1% of children had leucocytosis. Neutrophilia was found in 42.9%, lymphocytosis in 24.3%. 36% of children had anemia. ESR was raised in 58.6% of cases. Cultures: Out of 70 cases 34 had features of infection in the local area of drainage of enlarged lymph nodes and 18 swabs were taken for culture and sensitivity from the following areas throat (11), Ear infection (5) and

Scalp lesions (2) .Out of 11 throat cultures 8 were culture positive (72.7%), while in 3 cases (27.3%) normal commensals were isolated. Commonest organism isolated in the throat cultures was Streptococcus in 54.5% cases and staphylococcus in 18.2%. Swabs were taken from the patients who had ear discharge (5 cases). Pseudomonas was isolated in 40% of cases, Citrobacter in 40% cases and staphylococci in 20% of cases .Seven patients presented with pyoderma or impetigous lesions over the scalp. in 2 cases staphylococcus aureus was isolated and all other cases were healed without any discharge **Fine needle aspiration cytology:** FNAC was done in all 70 cases. The material was adequate for reporting in 95.7% of cases and in other 4.3% cases it was inadequate. In majority of the cases(74.3%) cytology showed reactive hyperplasia. Cytological features of tuberculosis were seen in 10cases (14.3%)-caseous necrosis in 8 and granulomatous changes in 2cases. In 5 cases purulent material was aspirated and was reported as suppurative lymphadenitis.

Mantoux test:

mantoux test was done in 70 cases. Positive reaction was seen in 17 cases (24.3%). All of these were diagnosed as Tuberculosis after considering other clinical findings and investigations.



Graph 1 mantoux test

Chest X-ray:

was done in 38 patients and showed abnormal findings in 12 cases, thus it was useful in evaluation of lymphadenopathy in 31.6% of the cases

Table No. 1 : Chest X-ray (n=38)

Findings	No of cases	%
Normal	26	68.4
Abnormal	12	31.6
Total	38	100

DISCUSSION

Age:

In the present study maximum number of patients were having lymphadenopathy between 4-8 years age comprising of 41%. The present study was in correlation with study of other authors like Pradeep Reddy M et al, and Siva Prasath et al, where the reported incidence was 55% and 47% respectively.^{8,9}

Sex:

In the study the incidence of lymphadenopathy was more in male children than in females were the sex ratio was 2.3:1.

Site:

In the present study, Out of 70 cases, upper anterior cervical nodes were commonly involved (44.3%) followed by posterior cervical lymph nodes (31.4%). Submandibular lymph nodes were palpable in 10% of cases, Occipital and Posterior auricular in 7.1% of the cases each. Supraclavicular lymph node enlargement was not found during study symptoms: In this study neck swelling was the presenting symptom in 63 children (90%).

Symptoms:

Fever and cough were the presenting symptoms in 90% and 52.9% of children respectively. History of failure to gain weight and loss of appetite were seen in 31.4% of children. History of sore throat was present in 18.6% of children.

Swelling was painless in majority of cases (92.9%) and pain in swelling was seen in 7.1%. In 49 (70%) of children there were more than one presenting symptoms. History of ear discharge and history of orodental pain was present in 8.6% of children each. History of contact with a case of tuberculosis was present in 5 children. **Consistency, tenderness and mobility:** On palpation of lymphnodes in present study, firm consistency was observed in 90% and soft consistency in 10% cases. out of which 81.4% are discrete and mobile and matting noted in 18.6%.of the patients, **Culture:** Culture of the ear swab specimen, it was observed that the following culture of the organisms from the specimens of throat, ear, scalp and aspirate from the lymphnodes revealed the isolation of the predominant organisms like Streptococci, Pseudomonas Citrobacter and Staphylococci. Out of 5 cases 3(60%) cases were culture positive for staphylococcal aureus These patients had single group of lymph node enlargement. The lymph nodes were painful, tender, soft fluctuant. Remaining 2(40%) cases had sterile culture.

Four(80%)cases among them had features of tonsillopharyngitis in 1 case normal commensals was obtained on throat culture and in remaining 3 cases culture was not done as they were already on antibiotics. 1(20%) case had orodental infections .

FNAC:

FNAC was done in all 70 cases in the evaluation of children with lymphadenopathy for proper establishment of diagnosis and institution of appropriate treatment. Histopathological examination revealed reactive hyperplasia in 74.3%, tuberculosis in 14.3%% and suppurative lymphadenitis in 7.1%. In 3 cases FNAC was done but inadequate material. The cytological evaluation in the present study was comparable to the studies

observed by Singh et al¹⁰. **Sensitivity of FNAC:** The sensitivity of FNAC in the present study was 74.3%. when it is compared with the studies of other authors the sensitivity was low where the reported sensitivity observed by other authors was as follows such as Pradeep Reddy M et all, El Hag et al, Ramzy et al, Buchino et al, and Usha R singh et al, where the reported sensitivity was 94%, 97%, 96% and 94% respectively^{11,12,13,7,10}. Thus, FNAC as a primary diagnostic test is of value in diagnosing 71.3% of tuberculosis cases. It is helpful in those with benign conditions like reactive hyperplasia to rule out underlying serious systemic disease and reassuring patients. It is helpful in pyogenic cases to obtain material for culture and sensitivity there by instituting antibiotic treatment.

Table No. 2 : Fine needle aspiration cytology

Cytology	No. of cases	Percentage
Tuberculosis	10	14.3
Suppurative	5	7.1
Reactive hyperplasia	52	74.3
Inadequate material	3	4.3
Total	70	100

Cause of lymphadenopathy:

Analysis of the causes of lymphadenopathy, it was reported that tonsillitis, otitis media, scalp infection, orodental infection, tuberculosis ,rash, were the major etiological factors for causing lymphadenopathy comprising of 21%, 7.1%, 11.4%, 8.6%, 25.7%, and 2.9% respectively. Tuberculosis, tonsillitis, otitis media and unknown cause were the major etiological factors causing lymphadenopathy comprising of 74%. Among, all the etiological factors tuberculosis was the major cause of concern for causing lymphadenopathy which is totally preventable by giving BCG vaccination and appropriate treatment to the patients who are having open tuberculosis. The present incidence of various etiological factors causing lymphadenopathy with other authors from various places like, Annam et al, the incidence was comparable with their study with minor variation¹⁴



Positive montoux test



enlarged lymph node

CONCLUSION

Reactive lymphadenitis due to underlying infection caused by streptococcal and staphylococcal infections were the commonest treatable entity of significant paediatric cervical lymphadenopathy .Further studies and longer follow- up involving detection of antigen and antibodies against lesser known viruses, parasites and rarer causes of lymphadenopathy may decrease the fraction of undiagnosed reactive conditions

Conflict of Interest: nil

Financial Support And Sponsorship: nil

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