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Research Article

Cervical Lymphadenopathy and Its Clinico Pathological Profile in Children

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Abstract: Paediatric cervical lymphadenopathy is a challenging medical condition for the patient, the parent, and the physician. Various etiology's ranging from infectious to autoimmune may cause lymphadenopathy. However few studies have emphasized on clinico-pathological significance. The aim of the present study was to know the clinico pathological corelation of cervical lymphadenopathy in children (1 month -12 years) and to arrive at an etiological diagnosis. Results from the present study shows that, among 130 cases the common age group was 4 - 8 yrs. The etiology was confirmed in 83.9% and could not be confirmed in 16.1%. Cytological examination revealed reactive lymphadenitis in 76.2%, tubercular lymphadenitis in 14.6% and suppurative lymphadenitis in 6.9% cases, 2.3% cases yielded inadequate aspirate. Commonest etiology diagnosed after detailed investigation was due to infections in area of drainage like tonsils, ear, head, in 48.5% followed by tuberculosis in 23.8% cases. In addition, there were 6.9% cases of HIV, 3% cases of measles and 1.6% of case of Brucellosis. Sensitivity of FNAC in TB was 61.2%. To conclude, Reactive lymphadenitis due to underlying infection was the commonest treatable causes of significant cervical lymphadenopathy. Further studies and longer follow - up involving detection of antigen and antibodies against other known viruses , parasites and rarer causes of lymphadenopathy may reduce the fraction of undiagnosed reactive conditions .
Keywords: Cervical lymphadenopathy, FNAC, Reactive hyperplasia

INTRODUCTION

Lymphadenopathy is a common problem in children with incidence varying from 38-45% [1]. Most of the normal children have palpable cervical lymph nodes [2]. The important point is to decide whether they are abnormally enlarged if so, whether associated with serious underlying pathology. Palpable supraclavicular nodes are always considered abnormal [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 through physical examination provide important clues to the underlying aetiology. FNAC is adjunct diagnostic technique which is simple, rapid, reliable, safe, cost effective technique with good diagnostic accuracy. The aims and objectives were to study clinical and pathological correlation in pediatric cases with significant cervical lymphadenopathy and to assess the etiological factors in paediatric significant cervical lymphadenopathy.

MATERIALS AND METHODS

Inclusion criteria

- Patients between the age group of 1 month to 12 years
- Patients with cervical lymphadenopathy with Lymph node size of
  - 1cm in cervical and axillary region
  - 1.5 cm in inguinal region
  - 0.5 cm in other peripheral region
- Lymph nodes with discharging sinus and which were hard, rubbery or matted.

A detailed history was taken, History of contact with pets Immunization status, socioeconomic history, antibiotic therapy received were recorded. Thorough general physical and systemic examinationwere 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,

As the prevalence of tuberculosis is high in khammam, 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. Chest X-ray, Serological tests for HIV, Brucella, bone marrow

examination, Acid fast bacilli staining and lymph node biopsy were done in appropriate cases.

RESULTS

Out of 130 cases, majority were in the age group of 4-8 years (40.7%), youngest patient in our study was of 1 year age. Occurrence of cervical lymphadenopathy was observed commonly in male children (71.5%) than in female children (28.4%). Neck swelling was intial symptom in 126 children (90%). Fever and cough in 90% and 52.9% of children respectively and FTT in 31.4%. H/O sore throat was present in 18.6% of children in 98 (70%) of children there was more than one presenting symptoms. H/O of Ear discharge orodental pain 8.6% of children each. History of contact with a case of tuberculosis was present in 10 children. Duration of swelling is <1mol in 50.8% and 1mo to 6 mo in 41.3% of cases. 10 cases (7.9%) had neck swelling for more than 6months (Figure 1).

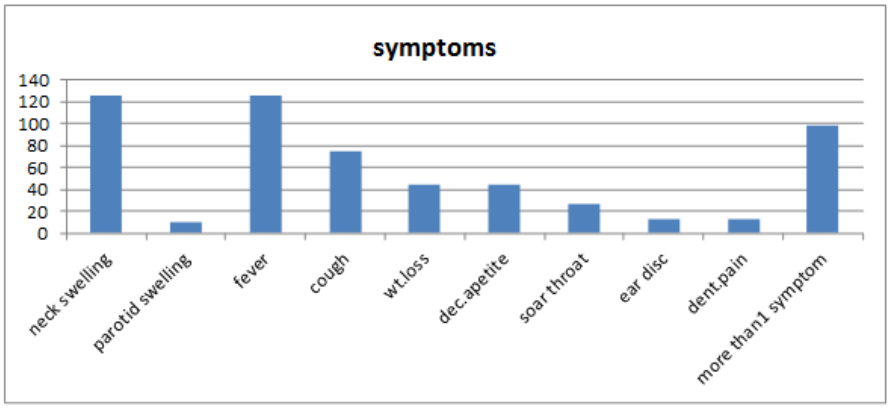

Fig. 1: Presenting symptoms in children with lymphadenopathy

Upper anterior cervical nodes were commonly involved (47.6%). Supraclavicular lymph node enlargement was not found during study . In many patients More than one site of involvement was seen. In 83.8% patients nodes were discrete and mobile. Matted in 16.2%, out of which 2 had discharging sinus formation.

On examination, organomegaly was present in 26.9 % Tonsillitis and/or pharyngitis in 21.5% skin lesions over scalp in 11.5%, orodental infections in 8.4% cases and ear infection in 6.9% cases. 2.3% cases with measles had rash (Figure 2).

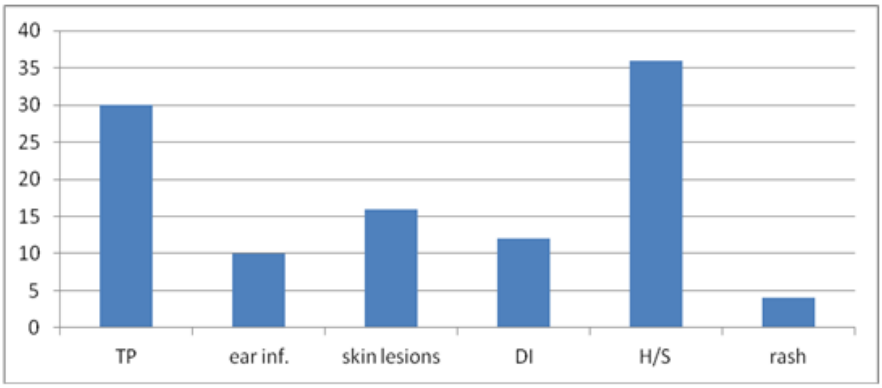

Fig. 2: Associated findings in children presenting with lymphadenopathy

Out of 20 throat cultures 14 were culture positive, commonest organism isolated in the throat cultures was *Streptococcus* in 55% cases and *Staphylococcus* in 15%.

FNAC was done in all 130 cases. The material was adequate for reporting in 97.7% of cases and in other 2.3% cases it was inadequate. In majority of the cases (74.3%) cytology showed reactive hyperplasia. Cytological features of tuberculosis were seen in 19 cases, caseous necrosis in 15 and granulomatous changes in 4 cases. In 9 cases purulent material was aspirated and was reported as suppurative lymphadenitis (Figure 3).

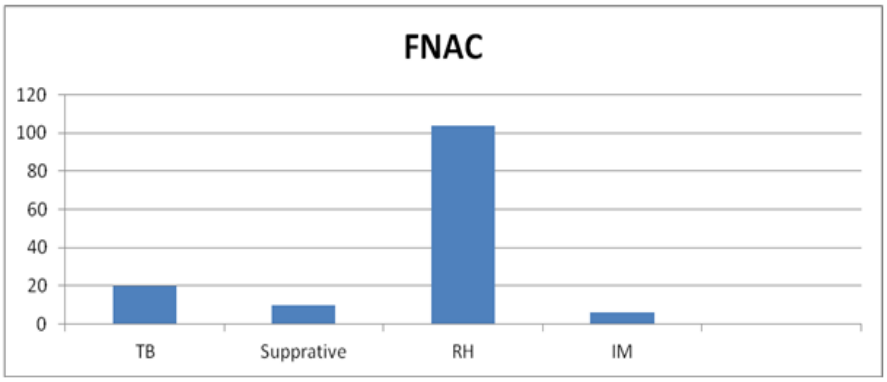

Fig. 3: FNAC findings in children presenting with lymphadenopathy

Mantoux test was positive in 31 cases (24.8%). All of these were diagnosed as Tuberculosis. HIV-ELISA was Positive in 9 cases and Brucella antigen in 2 cases.

Commonest causes of lymphadenopaty were infection in the local area of drainage of the enlarged lymph nodes. Tonsillitis in 28 cases, Otitis media in 9, Scalp infection in 15 and orodental infection in 11 cases. Tuberculosis was responsible for lymphadenopathy in 31 cases (23.8%) and HIV infection in 9 cases (6.9 %). Measles and Brucellosis were responsible for lymphadenopathy in 4 and 2 cases respectively.

In 21 cases (16.2%) aetiology could not be found. These were considered as non-diagnostic hyperplasia. 50.8% chronic lymphadenopathy (> 1 month) cases are due to tuberculosis. Out of 99 cases with reactive lymphadenitis, tonsillopharyngitis was seen in 25(25.2%), ear infection in 8, orodental infection in 9, TB in 15, HIV in 8, 17 case were undiagnosed even after relevant investigations. Majority of cases with local infection had enlargement of upper anterior nodes. Most of the TB patients has posterior cervical node enlargement followed by occipital nodes.

DISCUSSION

During the current study an attempt was made to study the etiology of children presenting with cervical lymph node enlargement after correlating the historical information and clinical findings with those of the laboratory abnormalities.

In the present study majority of the patients were in the age group of 4-8 years (40.7%) followed by 8 years to 12 years age group (37.6%) . Mishra SD *et al.* [5] 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

In the present study incidence in males (71.5%) was more than that in females (28.5%) with male to female ratio 2.3:1. Moore et al [6] found male preponderance with male to female ratio 3:1 .Mishra SD et al [5] 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.

In majority of patients the presenting symptom was swelling in the region of neck (90%), followed by fever (90%) and cough (52.9%). This was similar to the study by Ellison et al [7] who studied 100 children with generalized lymphadenopathy observed swelling in neck as most common presenting symptom (52% of cases).

In the present study, on clinical examination 21.5% cases had Tonsillitis and / or Pharyngitis; ear infection like Otitis media was found in 6.9% of cases; 11.5% had skin lesions over scalp like impetigo and 8.4% had evidence of orodental infection . Systemic examination revealed organomegaly (Hepatomegaly and/or splenomegaly) in 26.9% of the cases and rash in 2.3% of cases.

Dajani S et al [8] found streptococci to be the common organism in their study of 34 cases of cervical lymphadenitis in children. Chylak J [9] studied bacterial throat flora in acute successive pharyngitis and tonsillitis in children and found that *Staphylococcus aureus* was isolated most commonly followed by H. influenza and β-hemolytic *Streptococci*.

Thus in the above studies and in the present study the most common organisms isolated in tonsillitis/pharyngitis cases were *Streptococci* and *Staphylococci*. In 9 cases in present study the nodes were soft, fluctuant with overlying erythema and needed incision and drainage. Culture of the aspirates of 3 cases (60%) from these nodes grew *Staphylococcus* aureus. Simultaneous culture of commensals from throat was seen in 1 of the 5 cases (20%) and in others culture were not done as they were already on antibiotics. Ear swab cultures in the present study grew pseudomonas in 44.4%, *Citrobacter* in 33.4% of cases and staphylococcus in 22.2% cases. Ojala KS et al [10]

isolated *Staphylococcus aureus* in 22% pseudomonas in 19%, and proteus in 5% of cases in chronic suppurative otitis media. Anemia was present in 53.8% of children in the present study. It correlates with the present national incidence of anemia [11] in pediatric population.

Bedside FNAC was done in all the cases as a primary diagnostic tool in the evaluation of children with cervical lymphadenopathy. In the present study cytological material in 97.7% cases was deemed adequate for diagnosis. In 2.3% the material was inadequate for giving any opinion. This was similar to the observation by Sarda AK et al [12] who reported adequate aspirate of 97.5% in their study group. No complications in any form were noted in present study. In majority of the cases in present study cytological picture was of reactive hyperplasia (76.2%) followed by granulomatous lesion in 14.6% and pus was aspirated (suppurative) in 5 cases (6.9%).

Mantoux test was done in all cases, positive reaction was observed in 31 cases in the present study .Chest X-ray findings were abnormal in 30.6% of the cases when it was done for indicated cases (38 cases) and was useful in evaluation of 22.8% of the total cases in our study. In the present study we could do serological for HIV and Brucella antigens only as there was non-availability of other tests like serology for EBV, CMV, Toxoplasmosis. HIV serology done in suspected cases was positive in 9 cases, and in 2 cases Brucella antigen was positive.

Tubercular lymphadenitis was seen in 25% of cases, malignancies in 11.6%, HIV infection in 5(0.4%) cases and in 47.8% cases non-specific reactive lymphoid hyperplasia. Other causes found were syphilis, toxoplasmosis, and sinus histiocytosis. When compared to this study tuberculosis cases were more in our study. This could be due to high tuberculosis infection in this region. We didn't come across any malignancy case.

In present study lymphadenopathy due to HIV infection was more when compared to other studies. This could be due to high number of HIV cases in this region and increased availability of diagnostic tests. In a majority (34.4%) of the cases with chronic lymphadenopathy in the present study, the etiology could not be ascertained even after hematological, radiological, cytological and serological investigations. This observation was higher in study by Moore SW *et al.* [6] (47.8%).

Studies involving detection of antigen and antibodies against lesser known viruses, parasites would have decreased the number of undiagnosed cases. Long-term follow-up may uncover the etiology in those undiagnosed cases. Yaris et al. performed a retrospective review of 126 patients; they went on to say that biopsy helped identify the diagnosis in an additional 38.8% of cases. Of the 126 patients 22.2% were found to have disease other than lymphadenopathy. Of those with lymphadenopathy, 76.6% had benign disease and 23.4% had malignancies [13].

Of the 31 cases of tuberculosis, FNAC was of value in diagnosing 19 cases. Thus the sensitivity of FNAC in diagnosing tuberculosis was 61.2%. Various studies have reported the sensitivity of FNAC in diagnosing tubercular lymphadenitis as 16.5%, 77%, 80.7%, 84.4%, 95% and 100%. Thus diagnostic accuracy of FNAC tubercular lymphadenitis varied from 16.5% to 100% in various studies. By using FNAC 19 out of 31 cases of tuberculosis cases were correctly diagnosed and early, on the same day of visit by the patient. The report was available on the same day.

Thus in the present study, FNAC as primary diagnostic test was of value in diagnosing 61.2% of tuberculosis cases. In those with benign conditions like reactive hyperplasia to rule out underlying serious systemic disease and reassurance of parents. In pyogenic cases to obtain material for culture and antibiotic sensitivity thereby directing antibiotic treatment.

CONCLUSION

Cervical lymphadenopathy is a common problem in children. A detailed history and physical examination is the initial approach to these children. Cervical lymphadenopathy is predominantly associated with infections in the draining area of lymph node like throat, ear, scalp, that will be evident on the clinical examination. Treatment with appropriate antibiotics in these patients will suffice.

Cervical lymphadenopathy can be associated with local causes to serious systemic diseases like tuberculosis ,HIV infection and brucellosis, although benign reactive hyperplasia is also common in children. Presence of enlarged lymph nodes associated with symptoms or signs of serious systemic diseases should be looked for in every child where obvious source of infection is not apparent. Such children need detailed evaluation with investigations like chest X-ray, Mantoux test, FNAC and Serology. FNAC is a simple with minimum complications with good diagnostic accuracy. It can be used as a primary diagnostic test in children with cervical lymphadenopathy. It is a reliable test in diagnosis of tubercular lymphadenitis especially when used in combination with other tests. Further studies and a longer follow up involving detection of antigen antibodies against lesser known viruses, parasites and investigations for rarer causes of cervical lymphadenopathy may decrease the fraction of many of these undiagnosed reactive hyperplastic conditions.

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