



ROLE OF FNAC AND ULTRASOUND SCAN IN DIAGNOSIS OF CERVICAL LYMPHADENITIS IN CHILDREN: A HOSPITAL-BASED STUDY

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ABSTRACT

Background: Cervical lymphadenopathy in children is one of the most prevalent diagnostic dilemmas to ascertain. Management of cervical lymphadenopathy is weighted on myriad of etiological causes and the diagnosis. Investigations span across invasive procedures and non-invasive procedures. Ultrasonography is one of the most common readily available, non-invasive procedure for evaluation of cervical lymph nodes. FNAC being a simple, inexpensive diagnostic procedure to sample extraneous masses aids in diagnosis. **Methods:** A prospective cohort study was conducted with 150 children as test subjects in SVS Medical College Hospital, Mahabubnagar between January 2017 and January 2020. Ultrasonography and FNAC of neck lymph nodes was done on all subjects. Microsoft office excel software was used for the data analysis. Sample size was calculated with 85% confidence interval and 5% margin of error. **Results:** Out of the 150 test subjects, 79 were diagnosed with non-specific reactive lymphadenitis. 54 were diagnosed with granulomatous lymphadenitis. 15 were diagnosed with lymphoma. 2 were diagnosed with malignancy. **Conclusions:** Both ultrasonography and FNAC are consequential tools aiding in diagnosis and evaluation of cervical lymphadenopathy in children.

KEYWORDS

Cervical lymphadenopathy, Ultrasonography, FNAC, Children

INTRODUCTION

Lymph nodes are kidney shaped secondary lymphoid organs of lymphatic system that play a major role in adaptive immunity. Cervical lymphadenopathy is abnormal enlargement of lymph nodes of head and neck usually >1cm. Lymph node involvement is seen in myriad of etiologies such as those of infective origin, Autoimmune origin, metabolic origin, malignancy. Out of the 800 lymph nodes distributed throughout the body, 300 of them are present in neck.

Cervical lymph nodes are the first drainage stations for key points of contact with the outside world (mouth/nose/eyes/ears/throat/respiratory tract). An enlarged cervical lymph node can represent an early clinical sign to an underlying etiology. The abnormally enlarged lymph nodes being readily palpable in the child's slim neck, it amounts to significant anxiety in the parents. The work up for underlying etiology is foremost in the management of the condition and to relieve the anxiety of the guardians.

Ultrasonography is a safe non-invasive tool for lymph nodal evaluation in children. It aids in differentiating the possible etiologies that lead up to cervical lymphadenopathy. Fine-needle aspiration cytology is a safe, accurate, and valuable tool for the evaluation of cervical lymphadenopathy¹. The various possible etiologies for cervical lymphadenopathy encountered in children can be reactive (often) either due to bacterial cause or viral agents or from dental infections or following surgeries of head and neck. When lymphadenopathy is the only clinical finding deducible in an otherwise healthy child, it becomes foremost to exclude the various etiologies and arrive at the diagnosis for felicitous management. It is of utmost necessity to rule out the presence of a spectrum of grave illnesses such as lymphomas, AIDS, malignancy involving any other part of the body². Tuberculous lymphadenitis is the most common extrapulmonary manifestation of Tuberculosis. 22% of children with tenacious cervical lymphadenopathy with no local cause may suffer with tuberculous lymphadenitis³. Tubercular lymphadenitis is one of the most prevalent causes of enlarged cervical lymph nodes in India. Pasteurization of milk has substantially eliminated this source of human infection. However, risk continues with the consumption of unpasteurized milk⁴. The objective of this study was to determine the spectrum of etiologies that cause cervical lymphadenopathy in

children and use of ultrasonography and FNAC in aiding the diagnosis.

MATERIAL AND METHODS

Study type:

This study was a prospective cohort study conducted on 150 children as test subjects.

Place of study:

The study was carried out at SVS Medical College Hospital, Mahabubnagar, India.

Study Period:

The study period was from January 2017 to January 2020.

Statistical methods like Cross tabs procedure, descriptive statistics were used. Microsoft Office excel software used for the data analysis. Sample size was calculated with 85% confidence level and 5% margin of error.

Ethical committee (appointed by our medical college) approval was taken for this study.

Selection Criteria:

Children with complaints of persistent enlarged cervical lymph nodes for more than 2 months were selected as test subjects.

Ultrasound examination of neck followed by FNAC of the lymph node were done in all test subjects to assess the lymphadenopathy.

Inclusion Criteria:

Test subjects between 1 to 15 years with palpable cervical lymph node for more than 2 months and measuring greater than 1cm on ultrasonography.

Exclusion Criteria:

Children with acute symptoms like high grade fever/pyogenic abscess were excluded.

FNAC of the neck mass was done in all test subjects with cervical lymph nodes measuring more than 1 cm on USG and were included in the study.

RESULTS

This study was conducted on 150 test subjects aged between 1 to 15 years. Age, gender, ultrasound findings and FNAC results were assessed. Ultrasound examination of neck followed by FNAC was done in all the test subjects.

It was discerned that male children were more affected than female children with male to female ratio of 2:1.

Ultrasonography is a functional imaging tool in the assessment of cervical lymph nodes. Gray-scale sonography is conventionally used in the evaluation of the number, size, site, shape, borders, matting, adjacent soft-tissue oedema, and internal architectures of cervical lymph nodes⁵. Out of the 150 test subjects that were taken for study, 40 cases showed matting of cervical lymph nodes and in the rest 110, the lymph nodes were discrete.

In this study 52.6% of the cases showed reactive lymphadenitis which has no conclusive treatment. 36% of the cases showed granulomatous lymphadenitis which needs further assessment and anti-tuberculosis treatment if confirmed as tuberculosis. 10% of the cases were lymphomas which need further evaluation and management. 1.3% of the cases were malignant lymph nodes which need excision biopsy for further management.

Table 1: Age And Sex Distribution.

Age in years	1-5	6-10	11-15	Total
Male	24	38	40	102
Female	18	12	18	48
Total	42	50	58	150

Table 2: Ultrasound Scanning Results.

Ultra sound Neck finding	number	percentage
Unilateral discrete	16	10.6%
Unilateral With matting	6	4%
Bilateral discrete	94	62%
Bilateral with matting	34	22.6%
Total	150	100%

Table 3: Fine Needle Aspiration Cytology Results

Cytological diagnosis	Number	Percentage
Reactive lymphadenitis	79	52.6%
Granulomatous Lymphadenitis	54	36%
Lymphoma	15	10%
Malignancy	2	1.3
Total	150	100%

DISCUSSION

Cervical lymphadenitis in children though prevalent is one arduous task to assess and manage. The principal confinement to managing this condition is the existence of abounding potential etiologies. Most cases of lymphadenitis being benign, it is imperative to exclude the likelihood of existence of malignancy in each case. Benign nonspecific lymphadenitis and tuberculosis remain one of the most common causes of cervical lymphadenopathy in children. Lymphomas and metastatic nodes though less prevalent accounting to 11.3% require further evaluation by excision and biopsy. It is crucial to identify the cause of lymphadenopathy for prognostication and further management. Ultrasonography is a relatively safe, non-invasive tool for lymph nodal assessment in children. It succors to differentiate the myriad of etiologies that lead up to cervical lymphadenopathy in children. With clinical correlation, the possibility of a biopsy can be circumvented. The characteristic feature of tuberculous lymphadenitis is matting due to peri adenitis, it is a useful feature in distinguishing tuberculosis from other diseases⁶. In this study matting was noticed on ultrasound examination of neck in 26.6% of cases (40 out of 150 cases). FNAC results proved 36% as granulomatous lymphadenitis.

FNAC is a simple, quick, inexpensive, and minimally invasive OPD technique used for establishing the etiology of cervical lymphadenopathy. It is an convenient and unerring adjunct for the evaluation of pediatric cervical lymphadenopathy. FNAC should be included as a integral part of initial evaluation of pediatric patients with cervical lymphadenopathy before determining the treatment plan⁷. In this study 52.6% of the cases showed reactive non-specific lymphadenitis, 36% of the cases showed granulomatous lymphadenitis, 10% of the cases were lymphomas and 1.3% of the cases were metastatic nodes. A study done by Moore et al shows

47.8% of the cases were observed to have nonspecific reactive lymphoid hyperplasia and 36.3 of the cases were observed to have chronic granulomatous changes⁸. In another study Park reported that 90% of all children aged 4-8 years have palpable lymphadenopathy⁹. In a systematic review of paediatric cervical lymphadenopathy involving 2,687 patients, two thirds of the cases were due to non-specific benign aetiology with no definitive diagnosis, and 4.7% were secondary to malignancy¹⁰.

Limitation:

The test subjects chosen for the study all belonged to low socio economic class which is not representative of the general population since most of the people visiting our hospital belong to similar status.

CONCLUSION:

Ultrasonography and FNAC are instrumental in the evaluation of cervical lymphadenopathy in children. From the conducted study, it can be concluded that the use of ultrasonography and FNAC are feasible tools for nodal assessment in children, may be used to delineate the myriad of etiologies that lead up to cervical lymphadenopathy.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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