

Original Research Article

Clinico-pathological study of cervical lymph nodes in children using ultrasound scan and FNAC: a hospital-based study

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ABSTRACT

Background: Cervical lymphadenopathy is one of the commonest clinical diagnostic dilemmas in children. The diagnosis plays key role in the management of cervical lymphadenopathy. Various methods of diagnosis include non-invasive and invasive procedures. Ultrasonography is a non-invasive readily available investigation for evaluation of cervical lymph nodes. One of the most reliable, less expensive diagnostic procedure is fine needle aspiration cytology (FNAC).

Methods: A prospective study was conducted on 150 children in SVS Medical College Hospital, Mahabubnagar between January 2017 and January 2020. Ultrasonography followed by FNAC of lymph node was done in all children. Microsoft office excel software used for the data analysis. Sample size was calculated with 85% confidence level and 5% margin of error.

Results: Out of 150 patients 79 were non-specific reactive lymphadenitis. 54 were granulomatous lymphadenitis. 15 were lymphomas. 2 were malignant.

Conclusions: Both ultrasonography and FNAC are very useful tools in the evaluation of cervical lymphadenopathy in children.

Keywords: Cervical lymphadenopathy, Ultrasonography, FNAC, Children

INTRODUCTION

Lymph nodes are part of body's immune system. They are affected in many conditions like infections, autoimmune diseases, metabolic diseases, and malignancies. Approximately 800 lymph nodes are there in human body out of which 300 are present in the neck.

Cervical lymph nodes are the first drainage stations for key points of contact with the outside world (mouth/nose/eyes/ears/throat/respiratory system). An enlarged cervical lymph node can represent an early clinical sign. As they are easily palpable in children's slim neck parents often experiences significant amount of anxiety. Hence the cause of cervical lymphadenopathy

should be identified to relieve the anxiety of parents and to treat the condition.

Ultrasonography is a non-invasive tool for lymph nodal evaluation in children. It may be used to differentiate cervical lymphadenopathy with different etiologies in children. Fine-needle aspiration is a safe, accurate, and valuable tool for the evaluation of cervical adenopathy.¹ In children cervical lymph node enlargement is often reactive and usually due to bacterial, viral infections, dental infections and surgical procedures in the head and neck region. When lymphadenopathy is the only clinical finding in an otherwise healthy child difficulty arises in diagnosis. A spectrum of serious illness then come to act as differential diagnosis such as lymphomas, AIDS, and

malignancy in any other part of the body.² TB lymphadenitis is the most common extra-pulmonary manifestation of TB, and up to 22% of children with persistent cervical lymphadenopathy and no local cause may have tuberculous adenitis.³ Tubercular lymphadenitis is one of the most common 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 milk.⁴ The objective of this study was to determine the spectrum of diseases that cause cervical lymphadenopathy in children using ultrasonography and FNAC.

METHODS

Study type

This study was a prospective study conducted on 150 children.

Place of study

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

Ultrasound examination of neck and FNAC was done in all cases to assess the lymphadenopathy.

Inclusion criteria

Children 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 was done for all children with cervical lymph nodes measuring more than 1 cm on USG and were included in the study.

RESULTS

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

Male children are more affected than female children with male to female ratio of 2:1.

Sonography is a useful imaging tool in the assessment of cervical lymph nodes. Gray-scale sonography is widely used in the evaluation of the number, size, site, shape, borders, matting, adjacent soft-tissue edema, and internal architectures of cervical lymph nodes.⁵ In this study out of 150 cases matting was seen in 40 cases and lymph nodes were discrete in 110 cases.

In this study 52.6% were reactive lymphadenitis for which no definitive treatment is defined. 36% were granulomatous lymphadenitis which needs further evaluation and anti-tuberculosis treatment if confirmed as tuberculosis. 10% were lymphomas which need further evaluation and management. 1.3% were malignant lymph nodes which needs excision biopsy for further management.

Table 1: Age and sex distribution.

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

Table 2: Ultrasound scanning results.

Ultrasound neck finding	N	%
Unilateral discrete	16	10.6
Unilateral with matting	6	4
Bilateral discrete	94	62.6
Bilateral with matting	34	22.6
Total	150	100

Table 3: Fine needle aspiration cytology results.

Cytological diagnosis	N	%
Reactive lymphadenitis	79	52.6
Granulomatous lymphadenitis	54	36
Lymphoma	15	10
Malignant	2	1.3
Total	150	100

DISCUSSION

Cervical lymphadenitis in children can be difficult to manage for physicians. The challenge is the many potential etiologies. Also, most cases of lymphadenitis are

benign, but malignancy remains a rare possibility.⁶ It is very important to identify the cause of lymphadenopathy for prognostication and further management.

Ultrasonography is a non-invasive tool for lymph nodal evaluation in children. It may be used to differentiate cervical lymphadenopathy with different etiologies in children. When correlated clinically, it may avoid biopsy in a patient.⁷ The characteristic feature of tuberculous lymphadenitis is matting due to peri adenitis, it is a useful feature in distinguishing tuberculosis from other diseases.⁸ 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 a useful and accurate adjunct for the evaluation of pediatric cervical lymphadenopathy. FNAC should be part of initial evaluation of pediatric patients with cervical lymphadenopathy before determining the treatment plan.⁹ In this study 52.6% were reactive non-specific lymphadenitis, 36% were granulomatous lymphadenitis, 10% were lymphomas and 1.3% were metastatic nodes. A study done by Moore et al shows 47.8% were with non-specific reactive lymphoid hyperplasia and 36.3 with chronic granulomatous changes.¹⁰ In another study Park reported that 90% of all children aged 4-8 years have palpable lymphadenopathy.¹¹ 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 malignancy.¹²

Limitation

The study sample selected was not representative of the general population because only low socio economic class people come to our hospital.

CONCLUSION

Ultrasonography and FNAC are very useful tools in the evaluation of cervical lymphadenopathy in children. From this study it can be concluded that use of ultrasonography and FNAC are feasible tools for nodal evaluation in children, may be used to differentiate cervical lymphadenopathy with different etiologies in children. Most common cause of cervical lymphadenopathy in children is benign nonspecific lymphadenitis and tuberculosis. Lymphomas and metastatic nodes are 11.3% which requires further evaluation by excision biopsy.

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Conflict of interest: None declared

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

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