

Cervical Lymphadenopathy in Children: A Diagnostic Approach

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ABSTRACT

Objective: To determine the common causes of persistent cervical lymphadenopathy in children and to test a diagnostic approach.

Methods: This study was conducted at King Hussein Medical Center/pediatric clinic over one year period to look for all children between ages of 6 months and 14 years with persistent lymph node enlargement. Persistent enlargement is defined as a lymph node > 1 cm in diameter, and > 2 weeks duration. A management algorithm was proposed and followed in the management.

Results: One hundred and thirty children presented to infectious diseases clinic with persistent lymph nodes enlargement. In 70 children (53%) the nodes regressed in 2 weeks time, in another 30 children (23%) they regressed in 4 weeks time. Fifteen children (12%) had tuberculous lymphadenitis; 10 children (8%) had lymph node abscess; 3 children (2%) had Epstein Barr virus infection and 2 children (1.5%) had Hodgkin's lymphoma on initial presentation.

Conclusion: Reactive lymphadenitis is the commonest cause of cervical lymph node enlargement in children. Majority of lymph nodes regress in 4 weeks time. Persisting lymph nodes more than 4 weeks warrant histological examination. Tuberculosis is a common cause of cervical lymphadenopathy among Jordanian children.

Key words: Lymphadenopathy, Lymph node, Lymphadenitis

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Introduction

Lymphadenopathy refers to any disease process involving lymph nodes that are abnormal in size and consistency. This condition has multiple etiologies, the most common of which are infection, neoplasia, and autoimmune diseases. Lymphadenitis refers to lymphadenopathies that are due to inflammatory processes. It is characterized by nodal swelling, pain, skin changes, fever, edema and/or purulent collection. In the pediatric age group, most lymphadenopathies are attributable to an infectious etiology, often viral in origin. Enlarged, palpable lymph nodes are common due to reactive

hyperplasia of the lymphoid tissue.⁽¹⁾

Cervical lymphadenitis is a common pediatric problem, and most patients with this condition are treated successfully by their primary care physicians. Histological examination and surgical consultation are, however, often required to assist in the diagnosis and treatment of patients who do not respond to initial therapy or in whom there is an index of suspicion for a neoplastic process.⁽²⁾ Despite the frequency of the problem in children, few original studies on the issue are recent. Most of the studies were conducted to define the causative agents.

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The aim of this study was to determine the most common causes of persistent cervical lymphadenopathy and the management strategy based on clinical, laboratory, ultrasonic and histological findings.

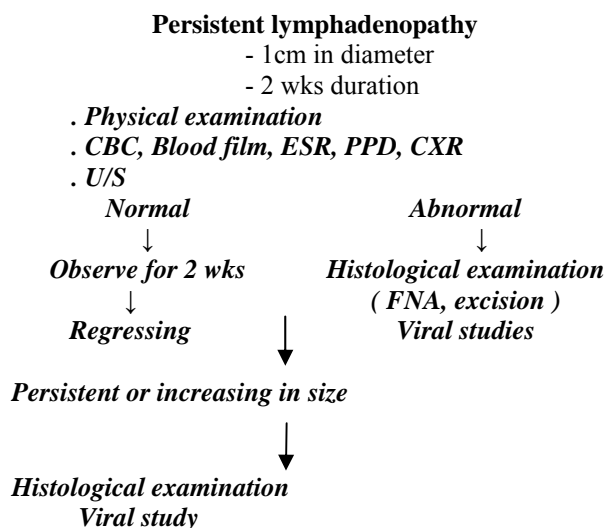
Method

This study was conducted over one year period from January 2008 to December 2008 at King Hussein Medical Center/pediatric clinic to evaluate children with persistent lymphadenopathy.

Persistent lymphadenopathy was defined as enlarged lymph nodes (> 10 mm in diameter) and persisting for more than 2 weeks.

The study included all children who were referred from the general pediatric clinic to the infectious disease clinic with the diagnosis of persistent lymphadenopathy. Age, gender, and accompanying diseases of the patients were assessed.

Initial work up of all patients included: detailed physical exam, complete blood count, blood film, erythrocyte sedimentation rate (ESR), purified protein derivative (PPD), chest X ray (CXR) and ultrasonic examination; viral studies for cytomegalovirus (CMV) and Epstein Barr virus (EBV); and histological testing by fine needle aspirate (FNA) or excision were preserved for cases with abnormal findings (abnormal white blood cells (WBC) count; abnormal blood film; high ESR > 20 ml/hr; PPD > 10 mm) Diagram 1.



CBC: Complete Blood Count; U/S: Ultrasound

Diagram 1. Suggested management algorithm for children with persistent lymphadenopathy

Results

One hundred thirty children between the ages of 6 months and 14 yrs were referred to the infectious disease clinic during the specified period of time. All had persistent lymph node enlargement based on our previous definition. Seventy five children (58%) had unilateral cervical lymph node enlargement, while in 55 children (42%) the pathology was bilateral. There was no sex difference.

The jugulodigastric and the submandibular lymph nodes were the two most common enlarged nodes in 80% of children. Submental and anterior cervical accounted for the rest of the pathology (20%). After following the suggested algorithm in the management, we found that in 70 children (53%) the lymph nodes regressed in size over 2 weeks time and in 30 children (23%) they regressed in 4 weeks time as proved by ultrasonic examination. The FNA showed reactive lymphoid hyperplasia in these 30 children. All of these children had tender, mobile, and soft nodes on clinical examination. In all of them complete blood count, blood film, ESR and CXRs were normal. Ultrasound showed enlarged lymph nodes with homogenous echotexture in all of them Fig.1. Fever was the commonest systemic manifestation in these children (77%). Of the remaining 30 children, 10 children (5%) had lymph node abscess on initial presentation based on clinical and ultrasonic findings, surgical excision was done for them and histological testing confirmed the diagnosis; tuberculous lymphadenitis was diagnosed in 15 children (12%) based on clinical, PPD testing (> 10 mm in diameter) and caseating granuloma on lymph node histology Fig. 2, 3. The ultrasound showed a non-homogenous echotexture with necrotic shadows and areas of calcification Fig. 4. Three children (2%) with bilateral lymph node enlargement and splenomegaly had Epstein Barr virus (EBV) proved by polymerase chain reaction (PCR); and two children (1.5%) who had bilateral firm, nontender lymph node enlargement had Hodgkin's lymphoma on excisional biopsy. These two children had high ESR on initial presentation, and their CxR's showed widened mediastinum with hilar adenopathy Fig. 5. Table I summarizes the results.

Discussion

Cervical lymphadenopathy is a common presentation in children in both the primary care and hospital setting. Park states that 90% of children aged 4-8 yrs have palpable cervical lymph nodes.⁽³⁾

Table I. Diagnosis of persistent lymphadenopathy in 130 children

Diagnosis	Number	%
Reactive hyperplasia regressed in 2 wks time	70	53
Reactive hyperplasia regressed in 4 wks time	30	23
Lymph node abscess	10	5
Tuberculous lymphadenitis	15	12
EBV infection	3	3
Hodgkin's lymphoma	2	1.5
Total	130	



Fig. 1. Homogenous echotexture lymph node

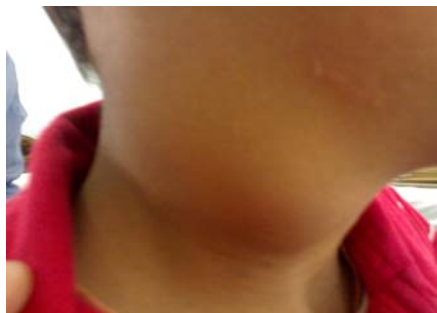


Fig. 2. Tuberculous lymphadenitis in a 7 year old male child



Fig. 3. Tuberculous lymphadenitis in a 5 year old male child

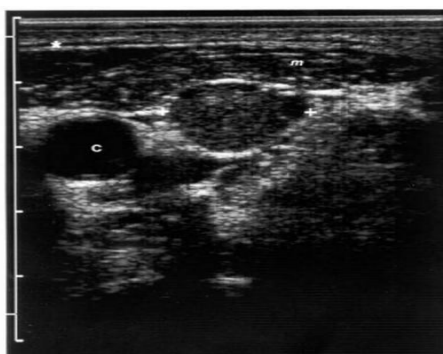


Fig. 4. Tuberculous lymph adenitis showing necrosis and calcification



Fig. 5. CXR showing hilar lymphadenopathy in a child with Hodgkin's lymphoma

According to Larsson *et al* 38- 45% of otherwise healthy children have palpable cervical lymph nodes.⁽⁴⁾

The differential diagnosis of a persistent neck lump in children is different from adults because of increased incidence of congenital anomalies and infectious diseases and rarity of malignant disorder. In our study we excluded congenital anomalies and limited our research to persistently enlarged lymph nodes. It is widely accepted that the absence of clinical signs of inflammatory disease, negative laboratory testing and progressive reduction of size of lymph node indicate reactive hyperplasia.⁽⁵⁾ The study indicates that reactive inflammatory changes

are the commonest pathology in children as confirmed by other studies. Our observation indicates also that most cases of lymphadenopathy are self-limited and require no treatment. Failure of resolution after 4 weeks might be an indication for diagnostic histology. Most researches indicate that bilateral lymphadenopathy is more likely to be reactive in nature but our study cannot confirm that because in 58% of children enlargement was unilateral.⁽⁶⁾

Mobility, softness and tenderness are almost always associated with reactive changes, which is similar to observation by other researchers.⁽⁷⁾ We found that ultrasound is a valuable diagnostic tool

for showing the size, shape and echotexture of lymph nodes. A homogenous echotexture, oval shape, central necrosis, blurred margins were associated with reactive hyperplasia in most cases, while a non-homogenous echotexture suggests other diagnosis. Nevertheless U/S should not be considered as a definitive mean to rule out neoplasia in patients with persistent lymphadenopathy.⁽⁸⁾

Conclusion

Enlargement of cervical lymph nodes is a common problem in children. Reactive hyperplasia secondary to benign infectious causes is usually the commonest pathology. Most of these cases regress in 4 weeks time. Persistent lymph nodes more than 4 weeks warrant histological examination. Tuberculosis is a common cause of cervical lymph adenopathy among Jordanian children, although no previous studies have been done on this issue. A management strategy should be established to diagnose children with persistent lymph node enlargement.

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