

Lymphadenopathy in Children and Young People

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Abstract

Enlargement of the lymph nodes is part of the normal immune response of children. Nonetheless, as a sign or symptom it frequently causes concern to parents. Although many serious conditions can present with significant lymph node enlargement, most children will present with a more benign pathology. Attempting to distinguish between the two is the challenge for paediatricians and the value and extent of investigating needs careful consideration. This article offers practical advice in how to approach a child presenting with an enlarged lymph node.

Keywords assessment; investigation; Kawasaki disease; lymphadenitis; lymphadenopathy; lymphoma

Introduction

Lymphadenopathy in children is common. Actually, it is so common that it should be considered as normal in most cases – a normal response to ‘the slings and arrows’ of exposure to environmental pathogens. Every paediatrician will meet children with obvious lymphadenopathy and be asked to decide whether it is indicative of some underlying serious pathology. The persistence of palpable lymph nodes often is a worry to parents and may present either as the principal concern or as part of an incidental discussion in children with other health problems.

History

Was there a likely trigger?

The history of the problem will reveal important information and can often give clues to the underlying pathological process. An overall impression of the patient is important and clarifies whether the patient is acutely unwell, with systemic symptoms, or whether the nodes are simply an incidental finding. There may be specific features in the history that identifies a causative agent such as chickenpox.

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Is the lymphadenopathy localized or generalized?

Specific information about the particular lymph nodes involved will guide the history and examination. The location, duration and any observed size fluctuation of the nodes are important points to establish. The nodal enlargement may either be localized or generalized. Localized lymphadenopathy will raise questions about pathology in the adjacent areas or draining sites whereas widespread involvement will require enquiries about symptoms that may be found in more systemic illness.

How long and how big?

The length of time that the nodes have been present is important and this is often a cause of concern for patients, parents and referring clinicians. Unfortunately there is no data to indicate the normal acceptable duration of lymph node enlargement following a reactive episode. Persistence as an isolated finding is not predictive of underlying severe pathology although progressive enlargement over that time does warrant further evaluation. Young children can have cervical, occipital and post-auricular lymph nodes that have been present for several months – possibly over a year and it is that persistence that causes the anxiety within the parents. These nodes may fluctuate in size and increase when the child is unwell and then decrease thereafter. Perversely these two findings of a long history of obvious lymphadenopathy together with size fluctuation are usually a reassuring combination. Certainly nodes that are decreasing in size without intervention are unlikely to represent a significant pathology.

Enquiring specifically about the size of the nodes is important. Unfortunately, our understanding of lymphadenopathy is blighted by a lack of definition for ‘normal’ in children. Most authors advise careful consideration of a child with nodes larger than 2 cm or where it is clear that the nodes are enlarging over time.

Where are the nodes, what do they drain?

Localized cervical lymph node enlargement should lead to questions about a history of recurrent tonsillitis or other head and neck infections. Similarly oral, and in particular dental, problems will also lead to nodal enlargement. Isolated axillary or inguinal enlargement requires enquiry about problems in the distal limb such as eczematous lesions or periungual infections.

Possible red flags

An exploration of systemic illness is important for both localized and widespread lymph node enlargement. Episodic or persistent temperatures are an important feature and demand a more detailed assessment whilst more subtle symptoms such as lethargy, anorexia, sweating or possible weight loss need clarification. Respiratory symptoms such as cough, stridor or a difficulty in lying flat may suggest significant airways compromise due to mediastinal node enlargement. Enquiry about features such as joint pains and swelling, a rash and possible ophthalmic symptoms will draw the diagnosis towards an auto-immune condition.

Has anyone else in the family had problems?

Questions about the health of other family members are important. Many infectious illnesses may affect more than one family member. Respiratory symptoms in families at risk of tuberculosis will raise this diagnosis whilst glandular fever, producing fever,

lethargy and lymphadenopathy may also be evident in the family and “close” friends.

A history of foreign travel or close contact with family pets (at home or with relatives) such as cats, birds and pet fish are important as the latter may be a source of infecting organisms.

Examination

A thorough general examination is essential as this may identify features that were not evident in the history. An immediate assessment of whether the child is well, unwell or even toxic will direct the further management. Examination of the chest for signs of cardiac or respiratory signs is necessary. Significant mediastinal disease will not only give the symptoms already mentioned but can also lead to features of superior vena caval obstruction – facial swelling, ashen grey skin and venous congestion in the area of superior vena cava (SVC) distribution. Abdominal examination will look for the presence of hepato-splenomegaly, specific masses (neuroblastoma or B-cell non-Hodgkin lymphoma) and ascites.

Examination of the lymph nodes

Carefully examining the lymph nodes can give many clues as to the possible cause and the risk of significant pathology. The complex drainage of the lymphatic system can mean that enlarged nodes in one area suggest malignancy in another and some sites rarely have infective causes for their enlargement. Localized lymphadenopathy should direct the clinician to the lymphatic drainage area served by that nodal group.

“Size matters” – but not always! Lymph nodes greater than 2 cm requires careful consideration for exclusion of sinister pathology – but can still be ‘benign reactive’.

Occipital and post-auricular nodes

Small nodes in these sites are common in infants, but not in older children and, in the absence of other features, these can be considered to be a normal finding. Examination of the scalp is important as eczema, folliculitis and infestations can all produce large nodes in this area.

Cervical and inguinal nodes

These nodes are more commonly found after two years of age. Cervical lymphadenopathy is extremely common and understandably reflects the prevalence of intercurrent upper respiratory infections in the younger age group. Consequently a full examination of ears, oral cavity and teeth for any signs of infection or inflammation is necessary. As with the occipital lymph nodes, cervical lymphadenopathy can also be caused by eczema, infection or infestation. This location, however, is also a common site for lymphoma.

Supraclavicular nodes

These are highly suggestive of malignancy (occurring in up to 75% of nodes at this site). Enlargement of the left sided supraclavicular lymph node (Virchow’s node) is commonly associated with abdominal malignancy, particularly neuroblastoma. Right-sided supraclavicular adenopathy can be seen with malignancy of the mediastinum or thyroid.

Axillary nodes

Small axillary nodes are relatively common and usually caused by infection or dermatitis within the upper limb. Lymphoma, however, does present with initial disease at this site and further assessment is advised.

Inguinal nodes

These do not usually have a specific aetiology unless the node is greater than 3 cm but, again, lymphoma can present with isolated adenopathy at this site. Local infections such as infected trauma or paronychia could also lead to inguinal nodal enlargement.

Lymph nodes that are fixed to underlying structures or tissues can be caused by inflammatory, infective or malignant disease and such nodes always require further assessment. The feel of the nodes on palpation is often thought to be distinctive in certain conditions. Nodes in Hodgkin lymphoma are described as ‘rubbery’. This is, however, a very subtle distinction and other conditions such as granulomatous disease can provide a similar finding. Hard nodes, often associated with cancer in adults, are a less frequent finding in children.

Tenderness suggests that recent, rapid enlargement has caused tension in the pain receptors in the capsule. It typically occurs with inflammatory processes, but can also be due to haemorrhage into a node, immunologic stimulation and malignancy. Consequently it is not particularly helpful in discriminating between infectious and non-infectious causes of lymphadenopathy but does require a more detailed assessment.

Systemic features such as joint pains and swelling, a rash and possible ophthalmic symptoms will draw the diagnosis towards a rheumatological condition.

It is important to remember, however, that although significant pathology can develop in any node location, most sites other than the supraclavicular area, rarely harbour significant disease and, in the absence of other red flag features, merit a ‘watch and wait approach’.

Investigation

Laboratory investigation

Full blood count: this may help in children with unexplained lymphadenopathy. Leukaemia will often present with an associated lymphadenopathy and can usually be identified on FBC but lymphoma will not. A normal FBC, therefore does not rule out lymphoma or leukaemia although it does make the latter unlikely. Both CRP and ESR are non-specific and do not provide a direction for diagnosis.

Blood culture: an acute presentation with pyrexia and lymphadenopathy will raise the likelihood of an infective cause and blood cultures need to be sent in such children. *Staphylococcus aureus* and Group A beta haemolytic streptococci are the two most common infectious bacterial agents resulting in suppurative adenitis.

Throat swab: pharyngeal symptoms and signs should indicate the need for bacterial throat swab looking for evidence of streptococcal disease.

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