The Enlarged Lymph Node

Kevin P. Hubbard, DO, HMDC, MACOI

Saint Luke's Health System
Greater Kansas City

Disclosures

I have no financial relationships to disclose with respect to the information discussed in this presentation

Learning Objectives

- Develop a differential diagnosis of lymphadenopathy.
- Identify effective tools to assist in the diagnosis of lymphadenopathy.
- Explain general management strategies for patients with lymphadenopathy.

Lecture Outline

- Introduction
- Anatomy
- Localized Lymphadenopathy
- Generalized Lymphadenopathy
- Diagnostic Approach
- Clinical Vignettes
- Conclusion

Introduction

- Clinical challenge in adults…
  - Countless causes
  - Occult disorders
  - Cancer???
  - Is biopsy indicated???

Anatomy

- Cervical, supraclavicular, axillary, epitrochlear, inguinal/femoral, popliteal regions
- Normal lymph node < 1cm in size and non-tender
- Normally palpable in cervical and inguinal regions (may be affected by adiposity)
- Definitions…
  - **Localized lymphadenopathy**: one region
  - **Generalized lymphadenopathy**: more than one region

Localized Lymphadenopathy

- Anterior Cervical
  - Infection: EBV, CMV, toxoplasma
  - Malignancy: lymphoma, head/neck cancer
- Posterior Cervical
  - Infection: EBV, TB
  - Malignancy: lymphoma, head/neck cancer
  - Oddballs: Kikuchi’s disease

Localized Lymphadenopathy

- Supraclavicular
  - High risk area for malignancy!!
    - 34-50% incidence based on two separate studies
    - Risk ↑ in those > 40 years of age
  - Right side: cancer in mediastinum, lung, esophagus
  - Left side (Virchow's node): abdominal malignancy

Localized Lymphadenopathy

- Axillary
  - Infection: cat scratch disease, others
  - Malignancy: cancer of skin, breast
  - Inflammation: silicone breast implants

Localized Lymphadenopathy

- Epitrochlear
  - Palpable nodes always pathologic!
  - Infection: forearm/hand, tularemia, streptococcal infections, cat-scratch disease, 2º syphilis
  - Inflammation: sarcoid
  - Malignancy: lymphoma

Localized Lymphadenopathy

- Inguinal
  - Infection: lower extremity, STD
  - Malignancy: lymphoma, melanoma, non-melanoma skin cancer, GU, anus/rectum

Generalized Lymphadenopathy

- HIV
- Rickettesial
- Mycobacterial
- Viral (infectious mononucleosis)
- Inflammatory
  - SLE

Generalized Lymphadenopathy

- Oddballs *…biopsy usually required to differentiate from malignancy!*
  - Castleman's disease
  - Kikuchi's disease
  - Kawasaki disease
  - Angioimmunoblastic T cell lymphoma
  - Inflammatory pseudotumor
  - Amyloidosis
  - Kimura disease
  - Progressive transformation of germinal centers
  - Rosai-Dorfman disease

Diagnostic Approach

- Detailed history
  - Localizing signs or symptoms suggesting infection or malignancy
  - Exposures likely to be associated with infection, undercooked meat (toxoplasmosis), tick bite, travel to areas with high rates of endemic infection, high risk behavior
  - Constitutional symptoms (fever, night sweats, weight loss) suggesting tuberculosis, lymphoma, or other malignancy
    - Fever typically accompanies lymphadenopathy for the majority of the infectious etiologies

Diagnostic Approach

- Detailed history
  - Use of medications that can cause lymphadenopathy
  - Foreign travel, which should extend the differential diagnosis to diseases that do not otherwise occur locally

Drugs that cause lymphadenopathy	
Allopurinol	Penicillin
Atenolol	Phenytoin
Captopril	Primidone
Carbamazepine	Pyrimethamine
Cephalosporins	Quinidine
Gold	Sulfonamides
Hydralazine	Sulindac

Diagnostic Approach

- Physical exam
  - A complete physical examination should be performed to look for signs of systemic disease. Associated splenomegaly suggests lymphoma, chronic lymphocytic leukemia, acute leukemia, or infectious mononucleosis

Diagnostic Approach

Things to keep in mind…

- Location
  - Localized lymphadenopathy suggests local causes
  - Generalized adenopathy is usually a manifestation of systemic disease
- Size
  - Abnormal nodes are generally greater than 1 cm in diameter
  - The term "shotty" is sometimes used to describe multiple, small nodes, but has no particular diagnostic significance

Diagnostic Approach

Things to keep in mind…

- Consistency
  - Hard nodes are found in cancers that induce fibrosis and when previous inflammation has left fibrosis
  - Firm, rubbery nodes are found in lymphomas and chronic leukemia; nodes in acute leukemia tend to be softer

Diagnostic Approach

Things to keep in mind…

- Fixation
  - Normal lymph nodes are freely movable in the subcutaneous space
  - Abnormal nodes can become fixed to adjacent tissues by invading cancers or inflammation in tissue surrounding the nodes
- Tenderness
  - Suggests recent, rapid enlargement that has put pain receptors in the capsule under tension
  - Typically occurs with inflammatory processes, but can also result from hemorrhage into a node, immunologic stimulation, and malignancy

Diagnostic Approach

- Laboratory testing
  - Generalized lymphadenopathy - complete blood count and chest x-ray
    - If normal, consider
      - PPD
      - HIV
      - RPR
      - ANA
      - Heterophile test

Diagnostic Approach

- Lymph node biopsy
  - Appropriate if an abnormal node has not resolved after four weeks
  - Should be performed promptly in patients with other findings suggesting malignancy (eg, rapid increase in size of the node; systemic complaints of fever, night sweats, weight loss)

Diagnostic Approach

- Lymph node biopsy modalities…
  - Open biopsy - best diagnostic test; provides information about both the presence of abnormal cells (carcinoma, microorganisms) and abnormal node architecture, which is useful for the diagnosis of lymphomas
  - Fine needle aspirate (FNA) for cytology
    - Useful when searching for recurrence of cancer. False-positive results are uncommon, but substantial false-negative rate because of sampling error
    - In HIV - for evaluating lymph nodes believed to have other disease (TB, KS, etc.)

Diagnostic Approach

- Lymph node biopsy modalities…
  - Core needle biopsy - provides tissue for special studies and some information on nodal architecture
    - Relatively low-morbidity, inexpensive alternative to open biopsy in patients with suspected lymphoma in whom an intact node is not easily accessible

Diagnostic Approach

- Imaging
  - Increases appreciation of extent of lymphadenopathy, but adds little to diagnosis
- Observation
  - Localized adenopathy - may observe 3-4 weeks if no signs suggestive of malignancy; biopsy if increasing symptoms/size, or if persistent

Diagnostic Approach

- Empiric antibiotics
  - Generally not recommended
    - Possible exception - anterior cervical adenitis (fairly high incidence of occult bacterial URI)

Case #1

- 55 year-old man presents with 3-4 day hx of progressive left jaw pain and tender adenopathy, fever to 100.6º, marked fatigue/lethargy, and loss of appetite, wt. ↓ 6# in 1 week
- PMH: HTN, OA
- PSH: Laminectomy for spinal stenosis, TKA for arthritis
- Meds: Tylenol, NSAIDs, Lisinopril, Omega-3 FA
- SocHx: No EtOH, non-smoker, exercises 1-2º daily

Case #1

- PE
  - WNWD, mod distress, VSS, temp as documented
  - HEENT: pain at angle of left mandible; Lt. ant. cervical nodes swollen/tender, mild swelling/tenderness of Rt. ant. cervical nodes
  - Chest: neg
  - Abd: normal; ō HSM
  - Ext: ō CCE; ō petechiae/ecchymoses

Case #1

- Lab
  - WBC 4.2, normal diff; H/H 13/41; plt 120 K
  - CMP normal

Case #1

Based on the history and clinical findings, what is the most likely diagnosis?

A. Malignancy.

B. Toxoplasma.

C. Viral infection.

* D. Inflammation.

Case #2

- 67 y/o woman presents with posterior cervical adenopathy associated with an ulcerative lesion to the posterior scalp on the right, temp ↑ 104ºF, along with malaise and headache; recent travel to Germany to visit family
- PMHx: OA
- PSHx: ø
- Meds: NSAIDs
- SocHx: non-smoker; non-drinker; walks her two dogs in neighborhood wooded park; married; retired

Case #2

- PE
  - Gen: WNWD; mild distress; temp 101.3ºF
  - HEENT: NCAT; scalp lesion noted with painful post. cervical adenopathy
  - Chest: normal
  - Abdomen/Ext: normal

Case #2

- Lab:
  - WBC 8.3, CRP 112
  - CMP: ALT 133, AST 99, LDH 314

Case #2

Based on the history and clinical findings, what is the most likely diagnosis?

A. Malignancy.

* B. Rickettsial infection.

C. Viral infection.

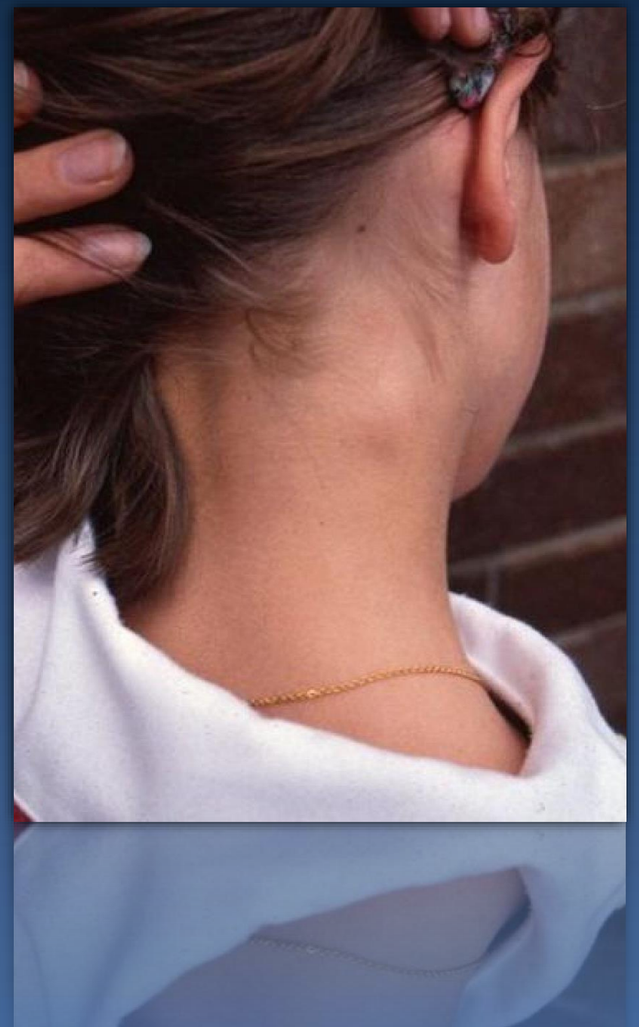
D. Toxoplasma.

Case #3

- 18 y/o woman presents with painless right posterior cervical lymph node; denies fever, chills, malaise/fatigue, weight loss
- PMH: ø
- PSH:ø
- Meds: ø
- SocHx: college student; non-smoker, occasional EtOH (notes lymph node was tender when drinking beer last weekend)

Case #3

- PE
  - Gen: WNWD, NAD, afebrile
  - HEENT: painless palpable LN in posterior chain Rt. cervical region; otherwise neg
  - Chest/Abd/Ext: normal
- Lab: CBC/CMP normal



Case #3

Based on the history and clinical findings, what is the most likely diagnosis?

* A. Malignancy.

B. Rickettsial infection.

C. Viral infection.

D. Toxoplasma.

Learning Objectives

- Develop a differential diagnosis of lymphadenopathy.
  - Determine whether lymphadenopathy is localized or generalized.
  - Consider the general differential with each presentation, utilizing history and clinical evaluation to guide you.
  - Proceed to directed evaluation based on the differential.

Learning Objectives

- Identify effective tools to assist in the diagnosis of lymphadenopathy.
  - History/physical.
  - Appropriate laboratory and radiographic information.
  - Biopsy as indicated.

Learning Objectives

- Explain general management strategies for patients with lymphadenopathy.
  - Treatment of underlying cause, if possible (infection, inflammation).
  - Monitor when appropriate, with follow-up.

Conclusion

- Lymphadenopathy can be a diagnostic challenge
- Concern over diversity of disorders and possible malignancy exists
- A thoughtful process of history and physical examination, along with a directed approach leads to a diagnosis in most cases
  - Localized vs generalized adenopathy
  - Additional findings and other physical manifestations
  - Clinical course


Questions?