

Surgical approach to cervical lymphadenopathy

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Cervical lymphadenopathy

mostly in the lateral neck



mostly viral infections in children in adults it can be malignancy (primary or metastasized) 38–45% of otherwise healthy children have palpable lymph nodes. Larsson et al



Magnitude of the cervical lymphadenopathy

lymph nodes in person 400-700 (600) mostly in head and neck region (300) 150 on the reight and 150 on the left



Ferrer R. Lymphadenopathy: differential diagnosis and evaluation. Am Fam Physician. 1998 Oct 15;58(6):1313-20



Risk of malignancy in lymphadenopathy

- In a series of 213 adults with lymphadenopathy
 - 0% cancer in lymph node smaller than 1 cm² benign
 - 8 % risk of cancer in nodes from 1 cm² to 2.25 cm² (1 cm × 1 cm to 1.5 cm × 1.5 cm)
 - 38% of those with nodes larger than 2.25
 cm² (1.5 cm × 1.5 cm)

the larger lymph nodes >2 cm the more risk of malignancy

Pangalis GA, Vassilakopoulos TP, Boussiotis VA, Fessas P. Clinical approach to lymphadenopathy. Semin Oncol. 1993;20:570-82.

Why do lymph nodes enlarge?

- Increase in the # of benign lymphocytes and macrophages in response to Antigens immune reaction antigen antibody reaction
- Infiltration of inflammatory cells in infection
- Malignant proliferation of lymphocytes or macrophages

الحارجة الأرهني

- Infiltration by malignant cells
- Infiltration by **metabolite laden** macrophages (lipid storage disease) rare



Swollen lymph node



Normal lymph node



- Lymph nodes that are
 abnormal in size >1 cm, the size the loc of LNs the loc of LNs the ing
 - Localized: one area involvement
 - Generalized: 2-or more noncontiguous areas
- Cervical lymphadenitis: due to inflamma formation or necessary formation or necessary and tender
 Inflamed and tender
 Iymph node(s) of the neck



due to inflammation due to bacterial infection and complicated by pus formation or necrotizing infection (painful)

Acute cervical lymphadenitis

< 2 weeks in duration/infection

<2 acute 2-6 weeks subacute >6 weeks chronic

Viral , Bacterial

لحامهة الأرجار

- Commonly from tonsillitis or a dental abscess
- +ve constitutional symptoms (fever, anorexia and malaise
- Treatment of primary focus like sore throat or tonsilitis
- Incision and drainage if abscess develops
- Immunologic (less common)
 - Kawasaki disease
 - Kikuchi-Fujimoto disease
- Adverse drug reaction
- Histocytosis

Suspected organisms **First-line therapy** Alternative therapy (if penicillin allergy) Duration 10-14 days total Group A streptococci. Oral Augmentin 50 mg/kg/day Q12H Oral clindamycin 30 mg/kg/day Q8H duration (until symptom Staphylococcus aureus, OR oral cephalexin 50 mg/kg/day Q8H Haemophilus influenzae OR oral cloxacillin 50 mg/kg/day Q6H resolution) Anaerobic bacteria Oral Augmentin 50 mg/kg/day Q12H Oral clindamycin 30 mg/kg/day Q8H

Q6H: every six hours; Q8H: every eight hours; Q12H: every 12 hours

abnormal proliferation and accumulation of histiocytes, which are a type of immune cell that includes macrophages and dendritic cells.



Subacute cervical lymphadenitis

2-6 weeks in duration

Infections

الحامعة الأرجنيا

- CMV, EBV,HIV
- Non TB
- **—** TB
- Toxo, Fungal
- Immunologic
 - SLE
 - JIA juvenile immune arthritis
 - Dermatomyositis



Bilateral, arthralgia, arthritis, rash

Chronic cervical lymphadenopathy

>6weeks

enlargement / tenderness / hotness

Malignancies

لحامعة الأرجني

- Hodgkin's
- Acute leukemia
- Rhabdomyosarcoma
- Neuroblastoma
- Metastatic from oropharynx / upper esophagus / epiglottis / trachea / thyroid
- Immunologic
 - Immunodeficiency
 - Chronic granulomatous disease
 - Hyperimmunoglobulin E syndrome
- Miscellaneous (less common)
 - Sarcoidosis
 - TB
 - Storage disease



Risk factors for malignancy

Age

تحامهة الأرجني

- less than 30 years are clinically benign in 80% of cases
- Over the age of 50 years only 40% benign
- Characteristics of the nodule malignant inflammation / infection Hard-firm vs soft and fluctuant
- Location of the node
 - Supraclavicular lymph nodes are most worrisome like in cancer in
 - Known primary CA to know if there is metastasis Associated clinical setting
- - B-symptoms itching / fever / sweating
 - wt. loss, night sweats

LNs in upper neck mostly benign LNs in below in the neck / supraclavicular / posterior triangle



Box 1. Red flags in cases of cervical lymphadenopathy:

- Lymphadenopathy > 2 cm
- Steady increase in size over 2–3 weeks
- No improvement or decrease in size after 4–6 weeks
- Supraclavicular lymphadenopathy
- Hard, fixed, matted, non-tender lymphadenopathy
- Persistent fever lasting more than one week
- Signs and symptoms suggestive of malignancy: weight loss,
- petechiae, pallor, night sweats, hepatosplenomegaly
- Signs and symptoms suggestive of autoimmune disease: rash,
- arthralgia, arthritis, generalised lymphadenopathy
- Features suggestive of Kawasaki disease
- Abnormalities in full blood count or chest radiography



Anatomical consideration

 The neck comprises of more than 300 lymph nodes

 They can be classified as the superficial group and the deep

group.

along the sternocleidomastoid / supraclavicular / posterior triangle





Anatomical Considerations







Neck mets

Summary of drainage areas for cervical lymph node groups.

Region	Drainage areas		
Submental	Bottom lip, floor of mouth, skin of cheeks		
Submandibular	Mouth, lips, tongue, submandibular gland, cheek		
Preauricular	Anterior and temporal scalp, anterior ear canal and pinna, conjunctiva, parotids		
Postauricular	Temporal and parietal scalp		
Occipital	Posterior scalp		
Upper, middle and Iower cervical	Tongue, tonsils, larynx, oropharynx, anterior neck, scalp, lower ear canal, parotid		
Posterior cervical	Scalp and neck		
Supraclavicular	Mediastinum, lungs, abdomen		

Preauricular nodes: Drain scalp, skin Differential diagnosis: Scalp infections, mycobacterial infection Malignancies: Skin neoplasm, lymphomas, head and neck squamous

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Posterior cervical nodes: Drain scalp, neck, upper thoracic skin

cell carcinomas

Differential diagnosis: Same as preauricular nodes

Supraclavicular nodes: Drain gastrointestinal tract, genitourinary tract, pulmonary Differential diagnosis: Thyroid/laryngeal disease, mycobacterial/fungal infections Malignancies: Abdominal/thoracic Submandibular nodes: Drain oral cavity Differential diagnosis: Mononucleosis, upper respiratory infection, mycobacterial infection, toxoplasma, cytomegalovirus, dental disease, rubella Malignancies:

Squamous cell carcinoma of the head and neck, lymphomas, leukemias

Anterior cervical nodes: Drain larynx, tongue, oropharynx, anterior neck

Differential diagnosis: Same as submandibular nodes

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Clinical approach to CLA/History

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- Site and duration to know if it is acute / subacute / chronic
- Fever, systemic symptoms
- head and neck **H&N** complaints
- Dental complaints
- Infectious risk

Clinical approach to CLA<mark>/Examination</mark>



الحامعة الأردنية





Site and size Number Tenderness + hotness --> adenitis Consistency soft /hard / firm / fluctuant Fixity Examine h&N, scalp, teeth



Clinical Approach to CLA/Investigation

ROUTINE LABORATORY INVESTIGATIONS

 COMPLETE HEMOGRAM AND PERIPHERAL SMEAR CANNOT BE OVEREMPHASIZED TO DIAGNOSE CLINICAL CONDITIONS LIKE MONONUCLEOSIS OR HEMATOLOGICAL MALIGNANCIES.

IMAGING

- NECK ULTRASOUND
 to know if there is any enlargement if the LNs and if it is benign or malignant
 enlargement
- CONTRAST ENHANCED COMPUTED TOMOGRAM

TISSUE DIAGNOSIS

- FINE NEEDLE ASPIRATION CYTOLOGY.
- LYMPH NODE BIOPSY

true cut biopsy

Biopsy needle inserted into lymph node and sample removed

if US not specific

ESR /CRP)

*ADAM

to know the location and if it is

(CBC / WBC / Infectious markers /

Causes of lymph nodes MIAMI

الحامعة الأرجني

Malignant

Infectious

autoimmune

miscellaneous

iatrogenic (due to medications).



Management

- Identify the underlying cause and treat as appropriate
- Localized adenopathy
 - 3-6 weeks observation period for resolution not less than 2 months
 - Refer to specialist for further studies and management



if we have patient with dental caries / lymphadenopathy in the upper part of the neck / sore throat / tonsilitis --> don't do any thing just treat the underlying cause symptoms and observe the patient

When to refer to specialist?

لحامهة الأرجنا



When to obtain lymph node biopsy?

- LN biopsy is a clinical decision made by the treating physician
 - High risk group patients (age, hard, persistent, B-symptoms
 - Suspected TB or CGD granulomatous disease
 - Persistent CL with no obvious cause and not responding to conservative Rx
 - Presence of gross splenomegaly

FNAB vs Node biopsy

fine needle aspiration biopsy

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FNAB/True Cut B

excision the whole lymphnode

Node Biopsy

- Advantages
 - Quick and reliable
 - High sensitivity and specificity
 - No need for anesthesia
 - Low cost
- Disadvantage
 - Limited histological evaluation
 - Subtyping of lymphomas currently difficult

- Advantages
 - Gold standard
 - Can be done under local anesthesia
 - Indicated for immunohistochemistry and subtyping of lymphomas
- Disadvantage
 - cost
 - Interference with the surgical planes

الحامعة الأرحنية

FNAB vs Node biopsy

Biopsy needle inserted into lymph node and sample removed





الجامعة الأردنية



Aspiration Biopsy by Fine Needle of Cervical Adenopathy Guided by Ultrasonography

Table 1. cytopathologic diagnosis of the cervical adenopathies.

Cytopathologic diagnosis	Number of cases	Confirmation	Discrepancy
Metastatic epidermoid carcinoma	28	28	0
Metastatic thyroid tumor	17	16	1
Metastatic small cells carcinoma	3	3	0
Hodgkin's lymphoma	5	5	0
Non-Hodgkinlymphoma	I	1	0
Granulomatous disease	5	5	0
Unspecific chronic lymphadenitis	127	112	15
Total	186	170	16

Dedivitis RA, Pfuetzenreiter Jr EG, Castro MAF. Aspiration Biopsy by Fine Needle of Cervical Adenopathy Guided by Ultrasonography . Int. Arch. Otorhinolaryngol. 2009;13(4):417-420



الحامعة الأردنيا

(a) Algorithm of a diagnostic procedure for a suspicious lymph node in the neck, emphasizing the pivotal role of (Ultrasound) Fine Needle Aspiration Cytology [(US)FNAC]. (b) Algorithm of a diagnostic procedure for a suspicious lymph node in the neck with emphasis on further steps to be taken after positive FNAC results. EGA: examination under general anaesthesia; LCUC: large cell undifferentiated carcinoma; MDT: multidisciplinary team; SCC: squamous cell carcinoma; *CT scan can serve as an acceptable alternative; **Excision indicated if FACS (Fluorescence activated cell sorting by Flow Cytometry) reveals monoclonal lymphoid proliferation.

Good node biopsy

to be excellent biopsy and help us in diagnosis we try to take it according to this

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- right supraclavicular / posterior triangle Lower cervical is better than upper nonspecific LNs
- Large nodes better than accessible nodes
- Intact lymph nodes better than piecemeal
- Fresh and frozen samples in addition to formalin fixed samples
- No exposure to strong light

- What to do with node biopsy:
 - **Histologic examination**
 - Immunohistochemical staining
 - Flow cytometry
 - **Genetic investigation** Culture /CGD,TB

 - Viral studies