Approach to Masses of the Head and Neck

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Objectives

• Recognize when practitioners should worry about head and neck adenopathy
• Identify what are common serious causes of cervical lymphadenopathy and neck masses
• Understand how location of a neck mass guides differential dx
• Identify indications warranting a biopsy of a neck mass
Neck masses

15 yr old male presents with a 3 cm neck mass for 3 weeks

67 yr old female presents with a 3 cm neck mass for 5 weeks

Why are these patients different?
What information do you need to obtain?
Neck Mass - History

What is the AGE of patient?
Etiology of a neck mass is most closely linked to age
Neck mass etiologies by age

**Pediatric (0-15 y)**
- Congenital
- Inflammatory
- Neoplastic

**Adolescent (16-40 y)**
- Congenital
- Inflammatory
- Neoplastic

**Adult >40 y**
- Congenital
- Inflammatory
- Neoplastic

- Adult ~ 80% neoplastic (except thyroid masses)
- 80% of those are malignant (except thyroid and parotid masses)

- Peds ~ 80-90% benign
AGE of patient? : etiology most closely linked to age

What is the LOCATION of mass? :
Location is a key factor in developing differential diagnosis

Any new lateral neck mass in an adult > 40 yrs old is likely to be malignant

Many upper aerodigestive tract cancers present with the chief concern of a painless neck mass
Neck anatomy

Neck triangles

Cervical lymph nodes

**Figure 8-2.** Triangles of the neck. The anterior triangle is divided from the posterior triangle by the sternocleidomastoid muscle.

Cummings et al. Otolaryngology-HNS, 5th ed
Predictive Factors for Neoplasia and Malignancy in a Neck Mass

Final diagnoses for cervical masses

Distribution of neoplastic and malignant masses by location

Neck Mass - History

AGE of patient?
Location of mass?

Duration?: > 2-4 wks
Growth pattern?: worrisome if growing
Pain?: most metastatic nodes are painless
Recent infection?: cervical lymphadenitis more likely
Other similar masses?
Exposures?: sick contacts, travel, pets/animals, h/o TB
Prior trauma or surgery in that area
Neck mass - History

Associated symptoms?
- Dysphagia
- Odynophagia/sore throat
- Hoarseness
- Otalgia
- Dyspnea/stridor
- Constitutional symptoms

Risk factors for malignancy:
- smoking
- alcohol
- prior XRT to head and neck
- other malignancy, including skin cancer*
- immunosuppression
- family hx
  - thyroid, lymphoma

* Must r/o malignancy in any patient with facial or parotid mass with an associated facial nerve weakness or paralysis
Neck mass - exam

Location helps guide differential dx
• Lateral neck most common site for metastatic disease from UADT
  - upper neck anterior/deep to SCM
• Midline neck masses likely related to thyroid, elevates with swallowing

Concerning features:
• any abnormality in other area of head and neck
  - skin/scalp/ear lesions, mucosal lesion of nasal cavity, oral cavity, pharynx, larynx
• hard mass
• fixation to surrounding structures (skin, SCM, mandible)
• single, asymmetric node/mass ~ 1.5 cm
• mass in posterior neck or supraclavicular fossa
• neurologic abnormalities (cranial nerves)
• multiple rapidly growing nodes may suggest lymphoma

Concern for abscess warrants referral to ENT possible I & D
Neck mass - exam

Head and neck examination not complete without visualization of all mucosal surfaces of upper aerodigestive tract in patient with concern for primary head and neck malignancy --> ENT referral

• Waldeyer’s ring: tonsils, base of tongue (oropharynx), nasopharynx
• hypopharynx
• larynx
Common neck lumps and locations

Roland N, and Bradley P J BMJ 2014;348
Lymphatic drainage of head and neck

Majority of mets in neck are to upper deep neck nodes

Posterior neck NP mets, posterior scalp, thyroid

GI, lung, GU
Neck Masses – Differential Dx

**Inflammatory/infectious**
- lymphadenopathy/lymphadenitis → LN > 1.5 cm
  - bacterial, viral, fungal, parasitic
    - can become neck abscess
- infectious granulomatous disease
  - TB, atypical mycobacteria, cat scratch
- non-infectious granulomatous disease
  - sarcoidosis, Kawasaki, Castleman, Kikuchi, Kimura
- sialadenitis/sialolithiasis

**Congenital**
- branchial cleft cysts
  - very rare in adults >40
- laryngocele

**Neoplastic**
- metastatic disease
  - usually from lesion of mucosa of upper aerodigestive tract, skin
- primary neoplasms
  - lymphoma
  - thyroid
  - salivary gland
  - neurogenic
  - paraganglioma
  - lipoma
  - sarcoma
  - others

**Traumatic**

**Vascular**

**Most inflammatory adenopathy is self-limited and will resolve without treatment**
Neck masses

Roland N, and Bradley P J BMJ 2014;348:bmj.g1078
**Figure 116-2.** Diagnostic schema for a new neck mass.
Imaging of neck masses

CT neck with contrast
- study of choice – skull base to clavicles
- evaluation of mucosal surfaces, neighboring structures, detailed 3-d anatomy, enhancement, necrosis
- excellent bony resolution

Ultrasound: best for thyroid lesions, pediatric pts
Can distinguish cystic vs solid, guide biopsy

MRI with contrast:
- best soft tissue resolution, useful for salivary glands, concerns for nerve enhancement
- pts with iodinated contrast allergy

Other imaging studies:
- Pet/CT in pts with documented malignancy, staging or restaging
- CT or MR angiography in pts with vascular lesions
- no role for plain films
Neck mass biopsy

Fine needle aspiration is preferred method of biopsy

- safe, well-tolerated, can distinguish inflammatory vs neoplastic process, helps direct management
- can perform in pediatric patients

Indications for FNA:
- single asymmetric node >1.5 cm
- persistent enlarged node without prior signs of active infection
- persistence after trial of antibiotics and observation >2-4 wks
- increasing size of mass
- If concerned about vascular lesion, can obtain FNA after imaging studies

FNA success at establishing diagnosis of neck mass ~ 95%
Success at diagnosing malignancy ~ 95%
Success at diagnosing benign process ~ 87%

Amedee et al, Laryngoscope 2001;111:1551-57
Neck mass biopsy

Fine needle aspiration is preferred method of biopsy

- try to avoid incisional biopsy if concerned about mass being metastatic SCC
- excisional biopsy may be necessary if FNA is non-dx, concerning for lymphoma or other malignancy
  - flow cytometry can be obtained in evaluation of possible lymphoma
  - negative FNA cannot completely possibility of lymphoma
- can increase yield by U/S guidance or core biopsy
- can send material for gram stain and cultures
- may not be able to diagnose some thyroid malignancies on FNA alone
Thyroid masses

Majority are benign, but need to be concerned about potential malignancy
Common benign process: cysts, multinodular glands, adenoma, TGDC

Workup: thyroid /neck US, FNA of any concerning lesions
Pediatric Neck Masses

- Differential diagnosis: inflammatory, congenital, neoplastic
- Majority of neck masses in children are a benign process
- Inflammatory disease is most common cause of neck masses in children
  - Cervical adenitis

- Up to 10-15% of peds neck masses will be malignant
- Location is key factor in determining Ddx
Peds neck mass - history

- duration
  - timing of onset – eg present at birth?
- location
- growth pattern
- associated symptoms
- painful
- recent infections esp URI or sick contacts
- animal bites or scratches
- travel
- family history (malignancy)
- trauma

Fever
Night sweats
Fatigue
Weight loss
Easy bruising
Neck mass - exam

Location helps guide differential dx

• Lateral neck most common site for metastatic disease from UADT
  - upper neck anterior/deep to SCM
• Midline neck masses likely related to thyroid, elevates with swallowing

Concerning features:

• any abnormality in other area of head and neck
  - skin/scalp/ear lesions, mucosal lesion of nasal cavity, oral cavity, pharynx, larynx

• enlarging or hard mass
• fixation to surrounding structures (skin, SCM, mandible)
• single, asymmetric node/mass ~ > 2 cm
• mass in supraclavicular fossa or parotid
• neurologic abnormalities (cranial nerves)
• multiple rapidly growing nodes may suggest lymphoma

Concern for abscess warrants referral to ENT possible I & D
Pediatric neck masses

Reactive adenopathy from viral or bacterial illness → most common cause

The majority of inflammatory lesions are self-limited and will resolve with conservative therapy

- B cervical lymph nodes, node size < 3cm, decreasing size, not significantly tender or erythematous → may be treated with observation


Antibiotic guidelines

Suggest empiric treatment with antibiotics for:
- pts with failure to regress ~4-wks
- pts without systemic symptoms
- node < 2-3 cm
- unilateral adenopathy
- associated erythema and tenderness

S. aureus and group A strep most common pathogens
10 day course of Cephalexin, amoxicillin/clavulanate, or clindamycin

IF:
- no decrease in size after 4-6 weeks
- or after appropriate abx course
- or signs of abscess formation or ulceration
- or matted/rubbery nodes without inflammation
- Or other concerning findings,
  → for biopsy or surgical excision, other evaluation

Dulin, et al. Am Fam Physician 2008;78(9);1097-98
Figure 116-2. Diagnostic schema for a new neck mass.
Peds neck mass - Evaluation

Imaging Studies

• Ultrasound
  – Allows differentiation between solid vs cystic
  – Assess normal thyroid tissue location in TGDC

• CT with contrast
  – Allows differentiation between phlegmon and abscess
  – Better anatomic detail, surgical planning

• MRI
  – Ideally suited for soft-tissue evaluation (ie vascular malformations)

Lab Studies

  Can be useful particularly if malignancy or systemic infection suspected

  • CBC
  • ESR
  • Ca if suspect sarcoidosis
  • PPD
  • Serology
    – EBV, CMV, cat-scratch disease, monospot
  • FNA
    – For culture, histopathology
Indications for referral:

- Concern for neoplasm/malignancy
  - supraclavicular mass, posterior triangle mass
  - enlarging mass, size > 2cm
  - B symptoms without signs of associated infection

- Concern for congenital lesion
  - midline or lateral mass

- Concern for abscess or atypical infectious/inflammatory lesion
  - persistent, unilateral adenopathy
  - no resolution after single course of broad spectrum antibiotic

- Neck mass duration > 6 weeks

Lymphoma is most common malignancy that presents as a neck mass in children
Congenital neck masses

Second Branchial Cleft Sinus

Excision of entire cyst tract

Thyroglossal duct cyst

Excision of entire cyst tract including medial hyoid bone
7 yo with R parotid mass for 6 weeks, not responsive to 7 days of abx, low grade fevers, firm mass with central fluctuance, some tenderness, adjacent erythema and induration, normal facial nerve function

7 yo with R parotid mass for 6 weeks, not responsive to 7 days of abx, afebrile, no pain, firm mass with normal overlying skin, normal facial nerve function
14 yo healthy male presents with DOE, CXR obtained showing R deviation of trachea

US obtained showing ~ 3.5 cm solid nodule in L thyroid lobe

FNA obtained showing follicular neoplasm

Underwent hemithyroidectomy showing Follicular variant of papillary thyroid cancer
Neck mass

• Do not observe neck mass for > 2-4 wks in adult, > 6 wks in peds
  – Peds LN > 2-3 cm, adult LN/mass size >1.5 cm

• CT scan with contrast and FNA of mass are most useful dx tools, helpful if done before referral
  – U/S better than CT if pediatric patient or thyroid mass