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

Peds ~ 80-90% benign

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)
Neck Mass - History

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**
- immunosupression
- 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

**Traumatic**

**Vascular**

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

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

Congenital neck masses

Second Branchial Cleft Sinus

Excision of entire cyst tract

Thyroglossal duct cyst

Excision of entire cyst tract including medial hyoid bone
Parotid mass

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