The Lump in the Neck: Evaluation and Management

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Introduction

► Common clinical finding
  • Often painless
  • Often an incidental finding

► Effects any age group
  • Age is the most critical factor in the differential

► Most neck lumps can be diagnosed clinically
  • Broad differential
  • Systematic approach is essential

► NECK MASSES SHOULD BE CONSIDERED MALIGNANT UNTIL PROVEN OTHERWISE*

* some restrictions may apply
Neck Mass Part 1: Evaluation and Management*

*(spoiler alert: Part 2 will be differential diagnosis)*

- A thorough medical history can significantly narrow the broad differential (diagnosis from the doorway)
- Age
  - Most critical factor
- Growth rate
  - Bad things don’t go away
- Symptoms
  - Listening actually works

"The tumour's about the size of that lump on your neck."
History of a Neck Lump

History of the Lump
- Site
  - Shape
    - Size
  - Number
  - Onset
- Growth or Change
- Tenderness?
- Duration

Slenderness? Consistency

Risk Factors
- FH of an endocrine tumour
- Recent trauma
- Recent illness
- PMH of a previous CA of the skin, lip, oral cavity, head, neck and other mucosal sites
- Travel
- Exposure to animals
- Exposure to infectious disease
- Previous lumps
- Radiation exposure
- Occupational exposure
- Alcohol consumption
- Smoking
- Asbestos
- Nickel
- Wood dust
- Heavy alcohol consumption

Associated Symptoms

Malignancy
- Local
  - Anorexia
  - Weight loss
  - Dysphonia
  - Dysphagia
  - Odynophagia
  - Dysphoeca
  - Odynoeca
  - Odynoeca
  - Persistent hoarseness
- Haematological
  - Weight loss
  - Night sweats
  - Fever
  - Fatigue
  - Pruritis
  - Sore
  - Bruising or bleeding
  - Recurrent infections
  - Bone pain
  - Abdominal pain
  - Alcohol-induced pain

Symptoms of Hyperthyroidism
- Symptoms suggestive of infection or inflammation
- Symptoms of hyperparathyroidism
- Symptoms suggestive of malignancy

Symptoms of Hypothyroidism
- Recent illness
- Recent travel
- PMH of a previous CA of the skin, lip, oral cavity, head, neck and other mucosal sites
- Exposure to animals
Age Rules...The 80/20 Rule

Pediatric Neck Masses
- Benign: 80%
- Malignant: 20%

Adult Neck Masses
- Benign: 20%
- Malignant: 80%

SO YOU'RE TELLING ME
THERE'S A CHANCE
Age Rules...The 20/40 Rule

Age <20

Inflammatory
(cervical LA)

Congenital
(TGD/Branchial)

Neoplastic
(lymphoma)
Age Rules...The 20/40 Rule

**Age 20-40**

- **Inflammatory**
  (cervical LA, deep neck, salivary)

- **Congenital**
  (TGD/Branchial)

- **Neoplastic**
  (thyroid, salivary)
Age Rules...The 20/40 Rule

Age >40

Inflammatory

Congenital

MALIGNANCY UNTIL PROVEN OTHERWISE*

* Untitled
Duration of Mass: The Rule of 7’s

- 7 Days: Inflammatory
- 7 Months: Neoplastic
- 7 Years: Congenital
## Growth Rate and Pattern

### Slow Growth
- Months to years
- Usually benign
- Bigger is sometimes better

### Fast Growth
- Days to weeks
- Can be very good
- Or very baaaad

### Fluctuating Growth
- Comes and goes
- Bad things don’t go away
Symptoms and Other History

- Pain
- Voice changes
- Hoarseness
- Dysphagia
- Otalgia

- Review of systems
- Travel
- Pets
- HIV/HPV
People who both smoke and drink heavily over several years have the highest risk of developing head and neck cancers.
Physical Examination

Familiarity with neck anatomy is critical for diagnosis and management of disease processes affecting this region.

- Central Neck
  - Hyoid bone
  - Thyroid/Cricoid cartilages
  - Trachea
  - Thyroid isthmus

- Lateral Neck
  - Anterior triangle
  - Posterior triangle

- Other considerations
  - Carotid bulb
  - C2 process
  - Mastoid process
Location, Location, Location

- **Preauricular and jaw angle**
  - salivary/lymphoid

- **Central neck**
  - Thyroid gland, thyroglossal cyst

- **Anterior border of SCM**
  - Jugulodigastric nodes, often malignant
  - Second branchial cleft cyst

- **Posterior to SCM**
  - Most worrisome for malignancy

- **Supraclavicular**
  - left side, worry about mets from lung/GU/GI
  - Virchow’s node
Lymph Node Levels

- Six Levels: I-VI
- Mets follow well-defined patterns
- Supraclavicular adenopathy is suspicious for lung/GI primary
- Fixed, firm, or matted lymph nodes and nodes larger than 1.5 cm require further evaluation
Characteristics of the Mass

- Firm vs soft (firm worrisome for malignancy)
- Fixed vs mobile (fixed worrisome for malignancy)
- Pulsatile (possible vascular tumor)
- Warm (infectious)
- Moves with swallowing (occurs with thyroid)
Head and Neck Exam

(Basically a full Ears, Nose and Throat Exam)

- General assessment
  - Voice, appearance

- Skin evaluation
  - Cutaneous lesions

- Ears
  - Serous fluid

- Oral cavity/Oropharynx
  - Tongue and tonsil tumors

- Cranial nerves
  - CN VII, IX, X, XII deficits

- Upper airway endoscopy
  - Usually transnasal
  - Gold standard in 2015

A newly discovered neck mass that doesn’t resolve within 3 weeks generally requires referral for a comprehensive ENT exam including endoscopy to evaluate the entire upper aerodigestive tract!
Fiberoptic Transnasal Endoscopy
Lab studies should be directed by the potential differential, and usually don’t help very much

- **Infectious**
  - CBC
  - ESR/CRP
  - EBV/CMV/HIV
  - Bartonella
  - Lyme
  - PPD

- **Inflammatory**
  - RF
  - ANA
  - Anti-Ro, Anti-La

- **Neoplasm**
  - CBC
  - PFA, PT/PTT
  - TSH
  - PTH
Diagnostic Tests

- Fine needle aspiration (FNA)
- CT
- MRI
- Ultrasound
- Radionucleotide scanning
- Plain XR films are useless please stop getting them*

*except maybe CXR
Fine Needle Aspiration Biopsy

- Preferred diagnostic approach for the majority of neck masses
- Small gauge needle
  - Seeding not an issue
  - Local vs none
  - Done immediately
- Direct palpation vs US guided vs. CT guided
- Almost no contraindications
  - ?vascular
- 85% specificity, 99% sensitivity
- Should always be performed prior to any open procedures
Other Diagnostic Tests

- **CT scan**
  - Solid vs cystic
  - Extent of lesion
  - Vascularity (with contrast)

- **MRI**
  - More soft tissue detail
  - Better for upper neck and skull base

- **Ultrasound**
  - Gold standard for thyroid
  - Noninvasive for peds

- **Radionucleotide scanning**
  - Functional evaluation
  - Rarely used now (FNA)
Open Surgical Biopsy

- Open INCISIONAL biopsies should be discouraged!!
  - Contaminates the surgical field
  - Unless FNA suggests lymphoma
  - Or if draining an obvious abscess

- Open EXCISIONAL biopsies should only be done if:
  - Have the ability to perform frozen section and:
  - Prepared to immediately do a full neck dissection if malignancy encountered

- Thus, my bias is that ONLY head and neck surgeons (ENT’s) should be cutting into or around neck masses!!!*
Mandatory Algorithm Slide-Adult (from AAFP)

Adult patient presenting with neck mass

Diagnosis suggested by history and physical examination

- Congenital anomaly
  - CT (contrast medium optional)
  - Excisional biopsy

- Inflammatory or infectious condition
  - Single course of broad-spectrum antibiotic; close follow-up for 2 to 4 weeks
  - Clinical improvement
    - Observation; reassessment in 2 to 4 weeks
  - No clinical improvement or progression of neck mass
    - Chest radiograph and PPD tuberculin skin test
      - Positive PPD test
        - Treatment or subspecialist consultation
      - Negative PPD test or findings suggestive of neoplasm
        - Contrast-enhanced CT scan and fine-needle aspiration biopsy

- Neoplasm (also based on consideration of risk factors, including age > 45 years)
  - Contrast-enhanced CT scan and fine-needle aspiration biopsy
  - Subspecialist consultation for endoscopy

- Management based on histology and stage

Subspecialist consultation
Mandatory Algorithm Slide-Pedi (from AAFP)
Neck Mass Part 2: Differential Diagnosis

Three broad categories:
- Congenital
- Inflammatory
- Neoplastic
Congenital Neck Masses

- Branchial cleft cysts (20% of congenital masses)
  - First branchial cleft cyst
    -Rare
    -EAC, facial nerve concerns
  - Second branchial cleft cyst
    -Most common
    -Anterior border of SCM, tracts to tonsillar fossa
  - Third branchial cleft cyst
    -Lower, tracts to pyriform sinus
Thyroglossal duct cyst

- Midline neck mass, most common congenital mass
- 40% present over the age of 20
- Elevates with tongue protrusion
- Sistrunk procedure (remove central hyoid bone)
Congenital Neck Masses

- Vascular tumors
  - Hemangiomas
    - Rapid growth as infant then gradual resolution
    - Look for other areas (GI tract/spine/subglottis)
  - Lymphangiomas
    - Remain unchanged, can be huge
    - Surgical resection
Congenital Neck Masses

- Laryngocoele
- Dermoid
- Teratoma
- Ranula
Inflammatory Neck Masses

- Reactive cervical lymphadenopathy
  - The most common
  - Usually viral
  - Resolves 1-2 weeks
  - A node over 1.0 cm lasting over two weeks from resolution of viral symptoms requires imaging
  - Mononucleosis has larger and more posterior nodes

- Bacterial lymphadenopathy
  - Suppurative from Staph
  - MRSA
  - Cat scratch and other granulomatous etiologies
# Neoplastic Neck Masses

**Benign**
- Thyroid
- Salivary
- Paragangliomas
- Schwannomas
- Lipomas
- Cutaneous lesions

**Malignant**
- Metastatic squamous cell until proven otherwise
- Lymphomas
- Salivary
- Thyroid
- Cutaneous

*Image: Why the f**k are there so many tumors?*
Summary, Final Thoughts:

- Extensive differential diagnosis
- Age of patient is important
- Accurate history and complete exam essential
- FNA – invaluable diagnostic tool
- Possibility for malignancy in any age group
- Close follow-up and aggressive approach is best for favorable outcomes
History of a Neck Lump

Symptoms of Hypothyroidism
- Exposure to animals
- Insect bites
- Exposure to infectious disease

Symptoms of Hyperthyroidism
- Suggestive of infection or inflammation

Local
- Anorexia
- Weight loss
- Dysphonia
- Dysphagia
- Edema
- Gynecomastia
- Ophthalmopathy
- Pruritus
- Sol
- Bruising or bleeding
- Recurrent infections
- Hoarse / Abnormal voice
- Alcohol - induced rash

Symptoms of Hyperparathyroidism
- Suggestive of malignancy

Associated Symptoms
- Trauma

Malignancy
- Weight loss
- Night sweats
- Fever
- Fatigue
- Pruritus
- Sol