Evaluation of Neck Mass

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Disclosure

• Nothing to disclose

Learning Objectives

1. Describe a systematic method to evaluate a patient with a neck mass
2. Select appropriate diagnostic studies
3. Generate a prioritized differential diagnosis
4. Name 2 common pediatric neck masses
5. What is the role of surgery for adult neck mass
Differential Diagnosis

Table 1. Common Neck Masses

<table>
<thead>
<tr>
<th>Neoplastic</th>
<th>Congenital/Developmental</th>
<th>Inflammatory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metastatic, Unknown</td>
<td>Sebaceous cyst</td>
<td>Lymphadenopathy</td>
</tr>
<tr>
<td>Epithelioid carcinoma</td>
<td>Branchial (ectopic)</td>
<td>Skin eruptions</td>
</tr>
<tr>
<td></td>
<td>Thyroid (primary)</td>
<td></td>
</tr>
<tr>
<td>Adenopathy</td>
<td>Thyroid (secondary)</td>
<td></td>
</tr>
<tr>
<td>Thyroid</td>
<td>Thyroiditis</td>
<td></td>
</tr>
<tr>
<td>Salivary</td>
<td>Adenopathy</td>
<td></td>
</tr>
<tr>
<td>Epithelial</td>
<td>Lymphangiomatous tumors</td>
<td></td>
</tr>
<tr>
<td>Adenoma</td>
<td>Dermoid cyst</td>
<td></td>
</tr>
<tr>
<td>Parathyroid adenoma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Epithelial</td>
<td>Laryngoscopy</td>
<td></td>
</tr>
<tr>
<td>Adenoma</td>
<td>Thyroiditis</td>
<td></td>
</tr>
<tr>
<td>Cubalized tumor</td>
<td>Thyroiditis</td>
<td></td>
</tr>
<tr>
<td>Blundy superciliou</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Neck Mass**

- History
- Patient age
- Location

**Patient History**

- Time course & progression
- Associated symptoms

- Medical
  - Dental work, trauma
  - Medications
  - Prior malignancy
  - Immunocompromised
- Personal History
  - Alcohol & Tobacco
  - Travel & animals
  - Radiation
  - Family history

**Associated Symptoms**

- Fever
- URI Sx’s
- Oral lesion
- Swallowing problem
- Ear pain, unilateral?
- Weight loss
- Pain
- Trismus
- Dental occlusion
- Night sweats
- CN Symptoms
- Dyspnea
Physical Examination

- Accurate measurement neck mass
- Document location/characteristics
- Inspection skin/mucosal surfaces
- Palpation oral cavity/tongue
- Cranial nerves

Document Physical Examination

- 3 cm left level II
- Firm to palpation
- Mobile
- No skin fixation

Describe

- Left level III/V
- Fixed
- Very firm
- Thinning of skin
Other Diagnostic Clues

- Age of patient
- Location of the neck mass

Patient Age

- Pediatric 0-15
- Young adult 16-40
- Adult >40

Location
Location Neck Mass

Descriptors:
- Level I-VI
- Anterior triangle
- Posterior triangle
- Central compartment

Common Neck Mass by Level

- Level I
  - Submandibular gland/LN's
- Level II - IV
  - LN's
  - Congenital
- Level VI
  - Thyroid
  - Congenital

Differential Diagnosis

Inflammatory
- Viral
- Bacterial
- Granulomatous

Neoplastic
- Benign
- Malignant

Congenital
Neoplasm: Differential Diagnosis

- Lymph node
- Salivary gland
- Thyroid
- Neurogenic
- Vascular
- Adipose

Age Versus Category

<table>
<thead>
<tr>
<th></th>
<th>0-15</th>
<th>16-40</th>
<th>&gt;40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflammatory</td>
<td>YES</td>
<td>YES</td>
<td>Maybe</td>
</tr>
<tr>
<td>Congenital</td>
<td>Likely</td>
<td>Less likely</td>
<td>Probably not</td>
</tr>
<tr>
<td>Neoplastic</td>
<td>Malignant</td>
<td>Benign</td>
<td>Malignant</td>
</tr>
</tbody>
</table>

What next?

- Antibiotics?
- Imaging?
- Blood work?
- FNA?
What next?

• What is working diagnosis?
  - Infection
  - Neoplasm
  - Congenital

What next?

• What do you want to know?
  - Anatomy → Imaging
  - Pathology → Biopsy
  - Function → Functional imaging
  - Systemic → Lab tests

Imaging:

• CT scan
• PET scan
• Angiography
• Thyroid scan

• MRI
• Ultrasound
• Sialogram
• Sestamibi scan
Diagnostic Imaging

- Computed tomography (CT)
- Magnetic resonance imaging (MRI)
- Ultrasound
- Radionuclide scan
- PET scan
- Sestamibi scan
- Angiography

Biopsy

- Fine needle aspiration biopsy
- Incisional biopsy
- Excisional biopsy
- H&E, IHC
- Cultures
- Flow cytometry

Blood Tests

- Thyroid function tests
- Monospot
- CBC
- HIV
- ACE
- PPD
- CRP, ESR
History

- 15 year old healthy female
- High school student
- 5 days sore throat & odynophagia
- Fever \(\rightarrow\) 38.5°C
- Bilateral level II tender LN’s 1.5-2.0 cm

Rx Reactive Lymphadenopathy

- Directed oral antibiotic
- Treat symptoms
- Follow up mandatory
  - LN’s smaller?
  - Same or larger
Computed Tomography

Thyroglossal Duct Cyst

Ultrasound

Imaging study of choice for thyroid nodule

Benign Thyroid Nodule
Consider FNA

- Adult neck mass w/out evidence infection
- Supraclavicular mass
- No resolution with conservative Rx
- Suspect lymphoma
- Suspect salivary neoplasm
- Suspect malignancy
  - Head and Neck Cancer
  - Metastasis (Breast, renal cell, germ cell)
## Differential Diagnosis

<table>
<thead>
<tr>
<th>Pediatric</th>
<th>Adult</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Reactive LN's</td>
<td>1. Malignancy</td>
</tr>
<tr>
<td>2. Congenital</td>
<td>2. Benign neoplasm</td>
</tr>
<tr>
<td>3. Malignancy</td>
<td>3. Reactive LN's</td>
</tr>
</tbody>
</table>

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HIV

- H&N complaints common
- Cervical LN's, oral candidiasis
- ENT may be 1st line for unusual presentations
- High index of suspicion
- HIV positive - refer to infectious disease

Congenital Neck Mass

- Thyroglossal duct cyst
- Branchial cleft cyst
- Dermoid
- Lymphatic malformation

Thyroglossal Duct Cyst
Thyroglossal Duct Cyst

- Most common congenital neck mass (70%)
- 50% present before age 20
- Midline mass
- Elevates on swallowing/protrusion of tongue
- Treatment is surgical removal

Branchial Cleft Cyst

- Abnormal development branchial apparatus
  - 2nd cleft most common (90%)
  - 1st cleft less common
  - 3rd and 4th clefts rarely reported
Dermoid

Inflammatory Neck Mass

• Bacterial
• Viral
• Granulomatous disease

Granulomatous lymphadenitis

• Onset slow, gradual (weeks to months)
• Minimal systemic complaints
• Firm, fixed node with injection of skin
• Common etiologies:
  - TB, atypical TB, cat-scratch fever,
  - actinomycosis, sarcoidosis, histoplasmosis
Cat-scratch fever (*Bartonella*)

- Pediatric group
- Preauricular and submandibular nodes
- Spontaneous resolution with or without antibiotics
**Atypical M. tuberculosis**

- Pediatric age groups
- Anterior triangle nodes
- Brawny skin, induration and pain
- Usually responds to complete surgical excision or curettage

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**Pediatric Malignancies**

- Lymphoma
- Thyroid cancer
- Neural tumor
- Soft tissue sarcoma

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**Pediatric Malignancy**

12% of pediatric malignancies occur in the H&N
- Lymphoma
- Thyroid cancer
- Neural tumor
- Soft tissue sarcoma
Lymphoma

- Both pediatric and adult
- Most common malignant neck mass in pediatrics
- Pediatric and adult
- Sign & symptoms
  - Diffuse adenopathy
  - B symptoms
  - Extranodal lymphoma
- Need tissue to characterize type
  - Flow cytometry
  - Cell architecture

Adult Neck Mass

Head and Neck Cancer

- Heterogeneous group
- Many sites
- Many etiologies
H&N Cancer Warning Signs

- Neck mass
- Weight loss
- Dysphagia
- Unilateral otalgia
- Dyspnea

- Unilateral serous otitis
- Hoarseness
- Unilateral sore throat
- Oral lesion

Oral Lesion

Referred Otalgia
Hoarseness

>2weeks

→ Laryngeal examination

Thyroid Nodule
Highly Suspicious Nodule

- Rapid growth
- Very firm
- Fixation to adjacent structures
- Family history
- Vocal cord paralysis
- Enlarged lymph nodes
- Symptoms of invasion

Increased Suspicion

- Age <15 years
- Male sex
- Nodule >4 cm
- History of radiation exposure
- Familial syndromes
- Ultrasound criteria
- PET positive

Suspicious US Findings

- Hypoechoic
- Intranodular vascularity
- Irregular margins
- Microcalcifications
- Absent halo
- Taller than wide
- Suspicious cervical LN's
Neck Mass

- History
- Patient age
- Location

Conclusions: Neck Mass

- Differential diagnosis extensive
- Be systematic & persistent
- Clinical judgment
- Discerning use of diagnostic tests
- Think cancer in adult > 40y
- Appropriate specialist referral