Cervical Swelling: What in the Neck is It?

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What in the Neck is it?

Chief Complaint: 17 month old with neck area swelling

Management Decision Matrix

**History & Physical**
- Acute or chronic?
- Degree of tenderness?
- Unilateral or bilateral?
- Associated localized or systemic symptoms?
- Location – Anatomic relationships
- Exposure history

**Management Decisions**
- Empiric treatment (Abx) warranted?
- Diagnostic studies appropriate?
- Is referral to subspecialist needed?
Cervical Swelling: What in the Neck is it?

**Congenital**
- Branchial cleft cyst
- Thyroglossal duct cyst
- Cystic Hygroma
- Thymic Cyst
- Thyroid nodule
- Hemangioma
- Dermoid/Epidermoid cyst
- Teratoma

**Acquired**
- Inflammatory
  - Infectious (viral, bacterial/mycobacterial, fungal, parasitic)
  - Non-infectious
    - Reactive, Kawasaki Syndrome, Systemic Lupus Erythematosus
    - Kikuchi histiocytic necrotizing lymphadenitis
- Neoplastic
  - Benign (lipoma, hemangioma, fibroma, adenoma)
  - Malignant

Branchial Clefts

Thyroglossal Duct Cyst
### Branchial Cleft Cyst
- Consider when:
  - Mass is in lateral neck region, esp anterior to the sternocleidomastoid muscle
  - Dimple, pit or possible sinus tract noted
  - May be asymptomatic
  - Recurrent symptoms

### Thyroglossal Duct Cyst
- Consider when:
  - Mass is midline
  - Moves with tongue movement

### Cystic Hygroma
- Consider when:
  - Large, non tender mass
  - Located lower neck
  - "Crosses" landmarks
  - Sudden expansion respiratory compromise
  - Expands into surrounding tissue

### Thymic Cyst
- Consider when:
  - Location in path of 3rd branchial cleft
  - Anterior and deep to the sternocleidomastoid muscle

### Hemangiomas

### Dermoid/Epidermoid Cyst

### Thyroid Nodule
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Clinical Case #1
- 17 mos old – 3 wks of progressive left neck swelling
- Initially noted mild URI symptoms but no associated fever, pharyngitis or noticeable weight loss
- Vital signs – unremarkable
- PE: Normal except 3.5 cm swelling left anterior cervical neck with overlying erythema, 1-2+ tenderness

Parotid Gland

**Parotitis**
- Viral Pathogens:
  - Mumps
  - EBV
  - Coxsackie
  - Influenza A
  - Parainfluenza
- Bacterial Pathogens:
  - Staphylococcus aureus
  - Streptococcus species
  - Anaerobes (adults)
Lymph Glands - Infectious Agents

- Anterior cervical chain
- Posterior cervical chain
- Occipital nodes
- Submandibular nodes
- Submental nodes
- Supraclavicular nodes

Cervical Adenitis: Inflammatory - Infectious Pathogens

**Bacterial**
- Staphylococcus aureus
- Streptococcus pyogenes
- Mycobacterium
  - M. tuberculosis
  - M. Avium Complex
  - M. marinum
- Bartonella henselae
- Nocardia asteroides
- Actinomyces israelii

**Viral**
- Epstein Barr Virus
- Enteroviruses
- Adenovirus
- Cytomegalovirus
- HIV

**Fungal**
- Coccidioides immitis
- Histoplasma capsulatum

**Parasitic**
- Toxoplasma gondii
Clinical Case #1

Initial Management
- Labs: CBC, CRP, ESR, LDH, Blood culture, EBV panel, Bartonella IgM, IgG, lytes, creatinine, BUN
- Rx: TMP-S

Clinical Course
- Abx changed to augmentin
- HNS -> PPD, add clarithromycin
- Peds ID referral

Diagnostic Studies
- CRP = 3.5 mg/l
- ESR = 18 m/hr
- LDH 229
- EBV panel: Neg VCA-IgG, VCA-IgM EBV Ab all negative
- Bartonella henselae IgM, IgG = negative
- Toxopama gondii IgM, IgG = neg
- Coccidioides IgM,IgG = negative
- PPD – 22 mm induration
  Dx: Scrofula/ Mycobacterium tuberculosis

Mycobacterium tuberculosis Adenitis
- 10 days, 3 mos and 4 mos of INH + Rifampin @ 3 months
Non-tuberculous Mycobacterium Avium Complex Lymphadenitis

- Age: 1-5 yrs
- Unilateral and predominately submandibular nodes involved
- Associated overlying violaceous discoloration and fluctuant
- PPD 5-10 mm induration

Treatment
  - Surgical excision
  - Clarithromycin (or Azithromycin) + ethambutol +/- rifabutin (or rifampin)
  - Duration of antibiotic treatment unknown

Clinical Case #2

- 3 yo with 3-4 day history of progressive right neck area swelling
- No associated fever, URI symptoms
- Travel History: Visited family in Bakersfield for 2 weeks ago with outdoor activities including a Petting Zoo. + pet dog
- Vital Signs: unremarkable
- PE: Unremarkable except for 2-3 cm left neck mass with 2+ tenderness and slight overlying erythema, multiple insect bites with single small pustule on cheek

Diagnostic Work Up?
Clinical Case #2 - Differential Diagnosis

History -> Acute + Unilateral – Infectious
Tenderness – Suppurative -> Bacterial
Associated skin lesion -> Inoculation site/organismso

Travel Hx -> Cocci?
Animal/Pets -> but not cat?

DDX: Adenitis secondary to S. aureus or Strep pyogenes
Pustuar lesion -> Other?

Cat Scratch Lymphadenitis

- Etiologic agent: Bartonella henselae
- Clinical Course
  - Spontaneous resolution
  - Suppurate spontaneously (10-25%)
- Treatment
  - Short term vs long term outcome
  - Azithromycin vs Observation
Toxoplasmosis

- Protozoan parasite – *Toxoplasma gondii*
- Present in small intestine of cats in oocysts form
- Environment:
  - Contaminated soil, water
  - Ingestion of raw beef or cured/dried/smoked meats
- Seroprevalence rate ~ 11%, higher in other countries
- Ocular toxoplasmosis
- Treatment: Pyrimethamine + Sulfadiazine w/leucovorin (? TMP-S?)

### Cervical Adenitis: Non-Infectious Pathogens

<table>
<thead>
<tr>
<th>Inflammatory</th>
<th>Neoplastic</th>
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<tbody>
<tr>
<td>• Reactive Lymphadenitis</td>
<td>• Lymphoma</td>
</tr>
<tr>
<td>• Kawasaki Syndrome</td>
<td>• Consider if:</td>
</tr>
<tr>
<td>• Systemic Lupus Erythematosus</td>
<td>• Posterior triangle tumor</td>
</tr>
<tr>
<td>• Kikuchi histiocytic necrotizing lymphadenitis</td>
<td>• Multiple anterior triangle tumors</td>
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### Clinical Case #3

14 month old female with fever x 5 days. Fevers to 102 F with left neck swelling on 3rd day of fever and amoxicillin/clavulanate Rxed. Fevers persisted with development of non purulent conjunctivitis and some redness of tongue and lips. Erythematous rash on trunk and accentuated in the diaper area. Additional questioning revealed potentially some mild of swelling of fingers.
Kawasaki Syndrome

1. Erythema and cracking of lips, strawberry tongue, and/or erythema of oral and pharyngeal mucosa
2. Bilateral bulbar conjunctival injection without exudate
3. Rash: maculopapular, diffuse erythroderma, or erythema multiforme-like
4. Erythema and edema of the hands and feet in acute phase and/or periungual desquamation in subacute phase
5. Cervical lymphadenopathy (≥1.5 cm diameter), usually unilateral
Kawasaki Syndrome

Diagnostic Testing
- CBC
- CRP
- Urinalysis
- Albumin
- LFTs
- EBV panel
- Echocardiogram
- Don’t Forget Measles!

Clinical Case # 4
- 10 ½ year old Asian male
- Neck swelling first noted ~ 3 months prior
- Empiric amox/clavulanate – clinical improvement
- Admitted with 5 x 8 cm neck mass, IV clindamycin + ceftriaxone
- Labs/CXR normal except elevated CRP/ESR
- Discharged home on oral abx w/normal CRP and ESR = 28
- Swelling persisted at f/u visit

3.5 x 3.3 x 4.2 cm mass anterior to sternocleidomastoid
Biopsy – Necrotic mass --> Burkitt’s lymphoma
Management Decision Matrix

- Acute or Chronic?
- Degree of tenderness?
- Unilateral or Bilateral?
- Localized or Systemic Symptoms?
- Location – Anatomic
  - Congenital → Empiric Tx warranted, earlier radiographic studies
  - Lymph node (s) or Parotid gland → Observation vs Empiric Tx; diagnostic studies vs observation
- Exposure history – CSD, TB, Toxo, Cocci, Syphilis
- Diagnostic studies appropriate?
- Empiric treatment (Abx) warranted?

Diagnostic Testing

- Observation
- Non-specific (inflammatory markers)
- Serologic (EBV, Bartonella, Cocci, Toxo, Histo, Syphilis)
- Radiographic/Imaging
- Other (PPD, Rheumatologic markers, r/o KS labs)
- Response to empiric treatment
- Microscopic (pathology/culture)
Diagnostic Decision Pathway

- Acute, bilateral -> Reactive -> Observation
- Acute, unilateral -> Assoc symptoms, degree of tenderness or inflammation -> Observation vs Empiric Abx
- Acute, unilateral with failed empiric Tx -> CBC, Serologies*, PPD, secondary empiric Abx. Consider ultrasound, CT/MRI (? HNS/ID referral?)
- Chronic -> CBC, Serologies*, Uric acid, LDH, PPD, ESR, CXR. Consider ultrasound, CT/MRI; Referral (HNS-Biopsy, ID, Heme onc?)
  * EBV, CSD, Cocci, Toxo and if appropriate: Histo, syphilis EIA

Treatment

- Warm compresses (+/-)
- Empiric Antibiotics IF suspicious for bacterial infxn
  - Cephalexin
  - Clindamycin
  - TMP-Sulfa
  - Tetracycline/Doxycycline (> 8 yrs of age)
  - ? Amoxicillin/Clavulanate?
  - Clarithromycin/Azithromycin (? + Ethambutol or rifampin?)