“DOc my throat is killing me”

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Neck and Upper Airway infections

Objectives:

1. To identify life threatening neck and upper airway emergencies from less benign one.

2. Treatment and best approach of the clinical entity.

3. To create a relaxing, collegial scholastic learning atmosphere.

Neck and Upper Airway Infections

- Most common cause of Bacterial Pharyngitis?
- Most common cause of Viral Pharyngitis?

Neck and Upper Airway Infections

- Group A β-hemolytic Streptococcus is the most common bacterial cause of pharyngitis
  - 15%-30% of cases
- Viral pharyngitis is mostly caused by rhinovirus (approx. 20% cases)
  - Also can be caused by EBV, HIV, CMV
- Less common infections include Mycoplasma pneumoniae, Chlamydia pneumonia

Neck and Upper Airway Infections

- How do you tell the difference clinically between a bacterial vs viral pharnygitis?

Neck and Upper Airway Infections

- Important to identify patients who require antibiotic therapy
- Non-bacterial pharyngitis requires only symptomatic treatment
  - Gargling warm saltwater, adequate oral intake, antipyretics, analgesics and rest
  - Single dose 10mg PO dexamethasone reduces severe pharyngeal inflammatory pain
    - Not considered routine treatment for pharyngitis

Viral Pharyngitis

- Typically has vesicular and petechial pattern on soft palate and tonsils and rhinorrhea
  - Tonsillar exudate or cervical adenopathy are not typical
  - Cough and conjunctivitis are more typical of viral origin

Neck and Upper Airway Infections

- What is the classic clinical triad of Mono?
- What other viral etiology should be considered if you think of Mono-like-illness?

Viral Pharyngitis

- Infectious mononucleosis (“Kissing disease”)
  - Clinical triad of fever, exudative pharyngitis, lymphadenopathy the young adult
  - Also fatigue, splenomegaly (50%)/mesenteric adenitis = present with abd pain
  - 25% false negative monospot in first week of symptoms; 10% will be persistently heterophile negative
- HIV-1 (acute retroviral syndrome)
  - Can mimic mononucleosis
  - Pharyngeal symptoms develop 2-4 weeks after exposure and resolve within 2 weeks
  - Diagnose with HIV RNA viral load test (antibody titer not positive until 4-6 months after exposure)
  - A good history prompts testing

Group A β-Hemolytic Streptococcus

- S. pyogenes seen in 5-15% adults and 15-30% children
  - Associated with acute rheumatic fever or acute glomerulonephritis
  - Incubation 2-5 days; sudden onset sore throat, painful swallowing, chills, fever, headache, nausea, vomiting
  - Signs include marked erythema of tonsils, tonsillar pillars, tonsillar exudate, enlarged/tender anterior cervical lymph nodes
  - Typically do NOT have rhinorrhea, cough, conjunctivitis
  - Untreated infection lasts 7-10 days; patients infectious 1 additional week
  - Treatment shortens infectious period to 24hrs, reduces symptoms to 1 day and prevent most complications
  - Treatment: IM 1.2million units of PenG x 1 or 500mg PenVK PO BID x 10 days; macrolide or clindamycin for PCN allergy

OMT ENT

OMT Treatment:

-improve lymphatic circulation and respiratory chest wall excursion.

-reduce pain relieving compression of CN exiting the cranial base and reduce muscle spasm of the upper cervical area.

Remember NO direct treatment to the infected area until the infection is under control.

OMT ENT

- General approach:

  - cervical soft tissues (cervical fascia release and muscle energy)

  - Lymphatic techniques (thoracic pump and diaphragm doming)

  - Thoracic inlet release

  - OA/AA/C2 (Parasympathetic)

  - C3-C5 (Phrenic)

  -Chapman's Points (anterior: 1st rib/intercostal and posterior: C1-2)

Centor Criteria (1990)

- 1.)tonsillar exudates
- 2.)tender anterior cervical adenopathy
- 3.)absence of cough
- 4.)fever
- No antibiotic treatment with 0-1 criteria; rapid strep test for 2-4 criteria; antibiotics for positive test results
  - Recommended by Infectious Diseases Society
- Alternative: test patients with 2-3 criteria; limit abx to positive rapid strep or all 4 criteria positive
- Limiting abx for patients with 3-4 positive criteria results in unnecessary abx in 44% patients

Centor Criteria Modified (McIsaac2000)

- "CENTOR" pneumonic
  - C = Cough absent
  - E = exudative/erythema tonsils
  - N = nodes- anterior cervical LN
  - T = temperature/fever
  - OR = <14 yo OR > 45 yo

  Give 1 point under 14; 0 pt for 15- 44; minus 1 for over 45

Diphtheria

- Caused by Corynebacterium diphtheria
- Spread by air-droplets of sneezing, coughing, rhinorrhea but also direct contact ie sharing a utensils, cups.
- Slow onset course
- Affects nose, throat, airway with a thick tan-gray adherent pseudo-membrane of the pharynx/airway accompanied by fever, swollen glands, loud barking cough, drooling.
- Rare in the immunized patient.
- Produces a toxin which can lead to myocarditis, paralysis, kidney failure.

Diphtheria

- Treatment of Diphtheria:

  - ABC's

  - typically 20,000-40,000 units of the antitoxin IM/IV (horse derived) along with IV erythromycin or penicillin to eradicate the bacteria.

Case

A 23 y.o. male comes to the Urgent Care complains of a sore throat for five days. Pt has a fever 101.3 with mild nausea and malaise. Pt was exposed to strep throat from a" female friend".

What do you see when you look in the back of the throat?

Peritonsillar Abscess

- Polymicrobial
- Primary in young adults during winter and early spring
- Risk factors: periodontal disease, smoking, chronic tonsillitis, multiple oral abx
- Patients appear ill, have fever, malaise, odynophagia, dysphagia, trismus, muffled voice “hot potato voice”, inferior/medial displacement of tonsil, uvular deviation, palpable fluctuant mass
- Diagnosis made by H&P alone; if in question, US, CT w/ contrast, needle aspiration
- Bilateral peritonsillar abscesses are rare

Peritonsillar Abscess

- Treatment – drainage by needle aspiration, I&D, rarely tonsillectomy
- No difference in outcome when comparing needle aspiration to I&D
- Therapy includes abx effective against Grp A Strep and oral anaerobes
  - Augmentin 875mg BID, PENVK 500mg QID + flagyl 500mg QID or clindamycin 150mg QID in PCN allergic
- Follow-up within 24hrs ; complications include: airway obstruction, rupture of abscess with aspiration, hemorrhage, retropharyngeal abscess, mediastinitis

Case

- For the past few days, 2 y.o. female seems to have a ST with painful swallowing and difficulty swallowing. Pt states has a fever of 101. Upon entering the room pt is sitting upright with head extended forward and has stridor.
- What should you do?

Epiglottitis

- Inflammatory condition that can lead to life threatening airway obstruction
- Streptococcus, staphylococcus and viral are most common causes. But other causes such as thermal burns
- Sx: 1-2 days of worsening dysphagia, odynophagia, dyspnea
  - “three D’s” : drooling, dysphagia, distress
- Stridor is inspiratory; patients often sitting up, leaning forward, mouth open, head extended, panting

Epiglottitis - Diagnosis

- Lateral soft tissue XR: obliteration of vallecula, swelling of aryepiglottic folds, edema of prevertebral and retropharyngeal soft tissues, ballooning of hypopharynx
- Epiglottis enlarged and thumb-shaped
- Direct laryngoscopy can confirm dx if necessary; perform with extreme caution

Epiglottitis - Treatment

- Require immediate ENT consult
- Prepare to establish definitive airway
- Do NOT leave patients unattended
- Supplemental humidified oxygen, IV hydration, cardiac monitoring, pulse oximetry, IV antibiotics (Rocephin 2gm IV; alt. cefotaxime)
- Steroids often given to decrease inflammation
- If airway obstruction, be prepared for very difficult airway
- Intubation failure -> cricothyrotomy, needle cricothyrotomy

Case

- A 2 y.o. is brought into your office for “funny breathing”. Apparently the child has had a runny nose past 4 days and “felt warm” which now progressed today to painful harsh cough and difficulty breathing.
- When you see the child sitting on mom’s lap the child has stridor at rest and when you approach he starts to cry and you hear a barky cough.
- What does the child have and what do you do?

Croup

- Croup (is Larygotracheobronchitis)
- Most common cause is parainfluenza but others are influenza, RSV, adenovirus, rhinovirus.
- Airborne spread entering the nose/pharnyx causing inflammation and edema of the pharynx, larynx and particularly the trachea/subglottic areas hence airway obstruction.

Croup

- Croup begins with a 1-5 days of prodrome of cough and coryza which is followed by the classic barky, seal-like cough.
- May lead to hoarseness, stridor (inspiratory or biphasic) which peaks on days 3-4.
- Diagnosis is clinical but may do x-rays such as soft tissue lateral neck to r/o epiglottis, foreign body aspiration etc.

Croup

- Treatment: Do little agitation as possible and check pulse ox.
- Give one time dose of 0.6 mg/kg of decadron PO or IM even in mild cases proved benefit.
- Stridor at rest or signs of respiratory distress should receive nebulized racemic epi 0.05ml/kg up to 0.5 ml of 2.25% solution.
- (stridor with only agitation do NOT need epi)
- If low pulse ox give O2 or Heliox (70% He: 30% O2 mixture)
- Intubations are rare 1%

Croup

- Treatment in the ED: Observe for 3-4 hours after racemic epi and then reassess.
- Admit: persistent stridor at rest, tachypnea, retractions, and hypoxia or requiring second dose of racemic epi.

Case

- A 10 y.o. female complains of VERY painful sore throat. ED temp of 102. When you look at the back of the pharnyx, it looks very benign. The complaint seems out of proportion especially when you “rock the larnyx”.
- What are you worried about?

Retropharyngeal Abscess

- Potential space anterior to prevertebral fascia that extends from base of skull to tracheal bifurcation
- In children, abscess typically from suppurative changes within a lymph node with primary infection elsewhere in head and neck
- Adults abscess a direct extension of purulence from adjacent site (ie. Ludwig angina)
  - More likely to extend into the mediastinum

Retropharyngeal Abscess

- Symptoms include: sore throat (not impressive throat but pain out of proportion), fever, torticollis, dysphagia, poor intake, muffled voice and respiratory distress
- Stridor and neck edema are likely in children but not adults
- CT w/ contrast is gold standard for diagnosis
  - May show mild fat stranding, nonsuppurative edema, linear fluid, minimal mass effect, no associated enhancement

Retropharyngeal Abscess

- Cultures usually polymicrobial
- Aerobes include S. viridans, S. pyogenes, β-lactamase producing staph
- Bacteroides and peptostreptococcus most common anaerobes

Retropharyngeal Abscess - Treatment

- Immediate ENT consult
- IV hydration and antibiotic therapy
  - Clindamycin 600-900mg IV, cefoxitin 2gm IV
  - Alt. zosyn, unasyn
- Most patients will require surgical intervention
- Complications: extension of infection into mediastinum, asphyxia, aspiration

Odontogenic Abscess

- Arise from infected tooth or after tooth extraction
  - Usually mandibular teeth are source
- Typically polymicrobial; aerobes and anaerobes
  - S. viridans identified most often
  - Anaerobes include peptostreptococcus and gram negative rods prevotella and bacteroides

Odontogenic Abscess

- Sx: neck mass, trismus, fever, leukocytosis, dysphagia, dyspnea
- Soft tissue involvement ranges from cellulitis to abscess formation in the gingiva
- Most deep neck infectious originate from an odontogenic source

Odontogenic Abscess

- Treatment: ABC's with Analgesics, hydration, I/D followed by Pen VK 500 3-4x/day or Clindamycin #300 3x/day.

Ludwig Angina

- Infection of submental, sublingal, and submandibular spaces bilaterally. Typically have poor dental hygiene.
- Presents with dysphagia, odynophagia, trismus, edema of upper midline neck and the floor of the mouth.
- Exam reveals edema of entire upper neck and floor of mouth; progression causes posterior/superior displacement of tongue causing airway compromise.
- Stridor, difficulty managing secretions and cyanosis are late signs and require emergent airway management (ie nasotracheal intubation).
- Systemic antibiotics are not a substitute for definitive airway management; edema may last for >1 week with antibiotic therapy.

Oral and Pharyngeal Masses

- Squamous cell carcinoma is most common malignancy of upper airway
  - Typically present with dysphagia, odynophagia, otalgia, weight loss, neck mass in patient with smoking or alcohol history
  - Usually persistent non-healing ulcerative lesions found in upper airway
  - If stidor and suspected mass lesion needs nasopharyngeal fiberoptic exam

Neck masses

- Result from congenital, infectious, neoplastic disorders
- Age, location of mass aids in diagnosis
- Adults >40yo, 75% of lateral neck masses persistent for > 6wks are malignant
- Common causes include: lymphangioma, hemangioma, branchial cleft cyst, reactive lymphadenopathy, thyroglossal duct cyst, salivary gland infection

Branchial Cleft Cysts

- Painless, fluctuant masses anterior to anterior border of sternocleidomastoid muscle
- Represent incomplete obliteration of the branchial apparatus
- May become apparent at any age
- Treatment is antibiotics for infection → surgical excision

Potential Causes of Airway Obstruction

- Posttonsillectomy Bleeding
  - Rate of bleed ranges from 1%-6%
  - Most bleeding seen post-op days 5-10 and associated with sloughing of eschar
  - Higher incidence of bleeding between age 21-30
  - Can be fatal (approx 1 in 40,000 with bleeding will die)
  - Treatment: keep NPO and upright, apply direct pressure to bleeding tonsillar bed using tonsilar pack or 4x4 on a long clamp
    - Moisten pack with thrombin or 1:10,000 epinephrine and 1% lidocaine
  - Massive bleeding rare; intubation to protect airway

Foreign Bodies

- In year 2000, 160 children < 15yo died from obstruction of respiratory tract
- Pediatrics usually present with hx of choking episode, cyanosis followed by dysphagia, wheezing and coughing
- Signs/Sx of pulmonary foreign body aspiration
  - Choking episode, cyanosis, followed by coughing, wheezing, unilateral breath sounds
  - Asymptomatic interval
  - Recurrent unilateral pneumonia, wheezing, worsening or new-onset asthma, croup

Foreign Body Aspiration

- Laryngeal foreign bodies more common than tracheobronchial foreign bodies
  - Subglottis is narrowest part of airway in young children
- Food most often aspirated foreign body
  - Nuts, carrots, popcorn
- CXR often normal but may see unilateral hyperexpansion and lobar atalectasis or pneumonia
- All suspected foreign body aspirations require bronchoscopic evaluation even if asymptomatic at presentation
- Coins are most common esophageal foreign body in children; food boluses are most common in adults

Angioedema of Upper Airway

- Paroxysmal swelling of dermal or submucosal layers of skin or mucosa
- Asymmetric, nonpitting and nonpruritic
- Causes: 1) congenital or acquired loss of C1 esterase inhibitor; 2) IgE type I allergic reaction to food, drug or exposure; 3) adverse rxn to ACE inhibitor; 4) idiopathic
- Mortality 25%-40% if untreated

Allergic Angioedema

- Treatment allergic angioedema:

  - secure airway (always ABC'S)

  - Epi 1:1000 solution IM of a dose 0.1mg/kg not to exceed 0.3 mg q 15-20 min.

  -Solumedrol 40-125 mg IV (not effective for hours)

  -Benadryl 1-2 mg/kg IV (max of 50mg)

ACE Inhibitor Angioedema

- Highest incidence within 1st month of taking medication, but may occur after years of treatment.
- Occurs in 0.1%-2.2% of patients and more common in blacks.
- ACEI alters conversion of angiotensin I to II and inactivates bradykinin → causes local increase in bradykinin→ vasodilation -> increased vascular permeability.
- Treat like allergic but probably will NOT work.

Hereditary Angioedema

- C1 esterase inhibitor deficiency
  - Results in unregulated activity of vasoactive mediators
- 40% patients have sx before age 5; 75% before age 15.
- Diagnose by measuring C1 and C4 esterase inhibitor levels.
- Epinephrine can produce some improvement.
- FFP replaces missing inhibitor and can improve symptoms
  - Some patients become more edematous
  - Not recommended in life threatening laryngeal edema
- If life threatening edema → fiberoptic intubation and prepare for surgical airway.
- Long term acetylated artificial androgens can prevent attacks.

Hereditary Angioedema

- FDA approved Berinert (=human C1 esterase inhibitor) 20units/kg IV
- Ecallantin (=kallikrein inhibitor) 10mg SQ x3 doses

THANK YOU!

Questions???

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