Head, Ear, Nose & Throat Emergencies

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Case #1

- 74 y.o. male patient
  - CC: Right ear pain, fevers & chills x 2 weeks
  - PMH: HTN, NIDDM
  - SOC: Tobacco

Malignant Otitis Externa

- Extension of the infection (otitis externa) to the surrounding bony structures
  - More common in immunocompromised patients (diabetic, elderly, steroids, chemotherapy, etc.)
  - Pathogen usually *Pseudomonas aeruginosa*

Malignant Otitis Externa

- Diagnosis
  - Generally made clinically
    - Signs and symptoms in a toxic appearing patient
    - Granulation tissue in the EAC and trismus may be present
    - Palsy of the ipsilateral seventh nerve may be present
    - In advanced cases radiography may show evidence of osteomyelitis

Malignant Otitis Externa

- Treatment
  - Emergent ENT consultation for possible tissue debridement
  - Admit for IV antibiotics
    - Anti-pseudomonal coverage

Malignant Otitis Externa

- Complications
  - Direct extension can result in:
    - Meningitis
    - Brain abscess
    - Septic thromboembolism

Otitis Externa

- Infection of the auditory canal
  - Precipitated by excessive moisture (“swimmers ear”) or trauma
  - Local ear pain exacerbated by pulling on tragus
  - Auditory canal can show:
    - Erythema
    - Swelling
    - Eardrum
- Causative organism
  - Usually *Pseudomonas*
  - May also see *Proteus, Staph and Strp*
Otitis Externa

- Treatment
  - Acetic acid solution
  - Combination steroid and antibiotic drops (Cortisporin otic suspension)
  - If significant canal swelling is present a cellulose (“Pope”) ear wick may be placed
  - If significant cellulitis or periauricular adenopathy is present a course of parenteral antibiotics is indicated

Case #2

- 21 month old male patient
  - CC: Fever, crying, won’t eat
  - PMH: Healthy term delivery
  - SOC: Smoking at home / daycare
  - Imm: UTD
  - Vitals: T – 103.1, P – 140, R – 36, BP – 90/60

Mastoiditis

- Persistent infection in the mastoid sinus (temporal bone)
  - Caused by a blockage of the connection with the middle ear
    - Pus
    - Debris
  - Rare since advent of antibiotics
  - May occur as result of inadequately treated otitis media

Mastoiditis

- Clinical findings
  - Mastoid tenderness and erythema
  - Loss of post-auricular crease
  - Outward or inferior displacement of pinna
  - Fluctuance

Mastoiditis

- Causative organisms
  - Strep. pyogenes
  - Strep. pneumoniae
  - Staph. aureus
  - H. influenzae
  - Pseudomonas
  - Chronic mastoiditis
    - Anaerobes (Bacteroides)

- Diagnosis
  - Plain radiographs may show mastoid cloudiness
  - Computed tomography
Mastoiditis

- Treatment
  - Emergent ENT consultation with surgical drainage
  - IV ABX

- Complications
  - Osteomyelitis
  - Sub-periosteal abscess
  - Facial palsies
  - Abscess extension into the neck or intracranially

Case #3

- 58 y.o. male patient
  - CC: (per wife) Bad sinus infection for months. Been acting “goofy” for the last few days. Today thought the dog was one of the kids. Fevers and chills. Patient denies headache or neck pain.
  - PMH: Neg.
  - Soc: Neg.

Vitals: T – 100.9, P – 90, R – 16, BP 120/80

HENT: Bilateral midface tenderness

Neuro: Bitemporal hemianopsia with decreased vision

Cavernous Sinus Thrombosis

- Late complication of an infection of the central face or paranasal sinuses
  - May also occur as a result of:
    - Bacteremia
    - Trauma
    - Infection of the ear or maxillary teeth
    - Rare with the advent of antibiotics

- Located at the base of the skull on either side of the sella turcica
  - Adjacent to the sphenoid sinuses
  - Posterior to the optic chiasm
  - Complex web of veins
Cavernous Sinus Thrombosis

- The internal carotid artery as well as cranial nerves 3, 4, 6, and the V1 and V2 branches of the 5th all pass through this venous complex
  - Coronal view

Cavernous Sinus Thrombosis

- Clinical presentation
  - History of:
    - Sinusitis or a mid-face infection
    - Headache
    - Malaise and fever
    - Orbital pain with periorbital edema, proptosis and visual disturbances
    - Ophthalmoplegia secondary to cranial nerve dysfunction
      - 6th nerve usually first involved
  - Progression of symptoms to the contralateral eye through the venous web is pathognomonic for cavernous sinus thrombosis
  - If untreated
    - Rapid deterioration to sepsis
    - CNS involvement with decreased mental status
    - Direct extension of infection and/or septic emboli

Cavernous Sinus Thrombosis

- Imaging
  - CT scanning may show increased density in the cavernous sinus
  - Contrasted studies will show filling defects in the venous plexus
  - MRV may be useful to further delineate affected anatomy

Cavernous Sinus Thrombosis

- Treatment
  - Aggressive broad-spectrum antibiotics
  - Heparin
    - Decreases the incidence of further thrombosis and septic emboli
  - Steroids
    - May be useful if involvement leads to pituitary insufficiency
  - Surgery on the cavernous sinus has not been shown to be helpful
  - Drainage of an infected sinus or facial abscess which was a primary infection should be undertaken

Cavernous Sinus Thrombosis

- Aggressive therapy
  - Mortality is 30%
  - Morbidity
    - 50% of patients have residual vision deficit or cranial nerve dysfunction
Epistaxis
- Significant bleeding from the nose is possible as blood supply originates from internal and external carotid arteries
- Attend to the ABC’s first

Epistaxis
- Multiple etiologies
  - Trauma
  - Infection
  - Allergic
  - Hypertension
  - Tumors
  - Congenital abnormalities
  - Coagulopathies

Anterior Epistaxis
- Most cases arise from anterior aspect of the nasal septum (~ 90%)
  - Kiesselbach’s plexus
- Factors suggesting an anterior bleed
  - Recent trauma
  - Foreign body
  - Use of nasal sprays or vasoconstrictors
  - Lack of blood running down the throat

Anterior Epistaxis
- Have patient blow out clots
- Obtain adequate lighting
- Inspect nasal cavity utilizing suction to attempt to identify area of bleeding
- Pack nose
- Silver nitrate
Anterior Epistaxis

- Consider laboratory studies (CBC, PT/PTT)
- Patients should be discharged on anti-staphylococcal antibiotics
- Prophylaxis against sinusitis and toxic shock syndrome
- Follow-up in 2-3 days for packing removal

Posterior Epistaxis

- Most cases arise from the sphenopalatine artery
- Factors suggesting a posterior bleed are:
  - Inability to visualize the site of bleeding
  - Bleeding from both nares
  - Blood running down throat especially continuing after placing an anterior pack
- Management
  - Posterior packing
  - Foley catheter
  - Commercially available posterior pack
- ENT consultation should be obtained on all patients with posterior nasal packing
- Antibiotics should be started to prevent infectious complications
- Due to the serious complications associated with posterior nasal packing all patients should be admitted
  - Hypoxia
  - Hypercarbia
  - Arrhythmia
  - Pain

Case #5

- 17 y.o. female patient
  - CC: Bilateral midface pressure, congestion, ear pain, yellow rhinorrhea, upper teeth ache. No sore throat or DIB
  - PMH: Significant seasonal allergies
  - Soc: Tobacco
Case #5

- Vitals: T – 99.5, P – 85, R – 16, BP 115/70
- Gen: Well appearing female
- HENT: Bilateral midfacial tender to percussion. TM’s sunken bilaterally. Throat normal.
- Neuro: CN’s intact

Sinusitis

- Inflammation with secondary infection in the sinuses
  - Due to interference of the normal outflow tract resulting in secretion stagnation
- Predisposed by
  - URI
  - Rhinitis
  - Deviated nasal septum
  - Nasal polyps
  - Foreign bodies
  - Trauma

Sinusitis

- Acute sinusitis
  - H. influenzae
  - S. pneumonia
  - GAS
  - S. aureus
  - B. catarrhalis
- Chronic sinusitis (greater than 3 weeks) is more likely caused by:
  - Anaerobes
  - Fungi
  - Mixed flora

Sinusitis

- Patients present clinically with complaints of pain over the affected area and nasal discharge
  - Maxillary: below eyes or in upper teeth
  - Frontal: supraorbital ridge
  - Ethmoid: in or between orbits

Sinusitis

- Examination
  - Warmth and tenderness overlying affected sinus
  - Erythematous mucosa with purulent discharge
- Imaging
  - X-ray or CT imaging may show:
    - Mucosal thickening
    - Opacification
    - Air-fluid levels
Sinusitis

- Treatment
  - Antibiotics (amoxicillin, cephalosporin, TMP/SMX)
  - Topical and oral decongestants
  - Analgesia

- Chronic sinusitis is frequently resistant to treatment and may require surgery

Extra Credit

- What is Pott’s Puffy Tumor?

Pott’s Puffy Tumor

- First described by English surgeon Sir Percival Pott in 1760
- Complication of bacterial frontal sinusitis
  - Sub-periosteal abscess
  - Overlying osteomyelitis
- Presents with pitting edema overlying the frontal bone

Case #6

- 48 y.o. female patient
- CC: Severe throat and neck pain.
- PMH: NIDDM
- Soc: Tobacco
- Vitals: T – 101.6, P – 120, R – 30, BP 140/90
- HENT: Poor dentition, trismus, hoarse voice. Unable to visualize posterior oropharynx secondary to tongue and trismus obstructing view.

Ludwig’s Angina

- Bilateral cellulitis of the submandibular space
  - Extension of an odontogenic infection
  - Often seen in patients with diabetes and other chronic illnesses
  - Patients present with swollen painful edema in the submandibular space
**Ludwig’s Angina**

- Symptoms
  - Decreased neck movement
  - Trismus
  - Dysphonia
  - Dysphagia and drooling
  - Posterior-superior tongue displacement
  - Progression to airway compromise can occur
  - Infection may dissect the facial planes in the neck
    - Mediastinitis
    - Vein thrombophlebitis
    - Arterial rupture
    - Septic emboli

- Pathogens are generally mixed anaerobic and aerobic oral flora
  - Streptococcus
  - Staphylococcus
  - Bacteroides

- Lateral neck XR may demonstrate
  - Soft tissue swelling
  - Airway narrowing
  - Air in the soft tissues

- CT may be useful in further delineating extent of infection in stable patients

**Treatment**

- IV antibiotics
  - Penicillin, clindamycin
- Airway control
- Surgical drainage
- Analgesia

**Case #7**

- 33 y.o. male patient
  - CC: Sore throat for 3 days, unable to swallow, left ear “killing me”
  - PMH: Neg.
  - Soc: Neg.
  - Vitals: T – 100.9, P – 115, R – 20, BP – 135/85
  - HENT: Left TM normal, moderate trismus

**Peritonsillar Abscess**

- Abscess formation in the tonsillar bed as a complication of tonsillitis or pharyngitis

- Patients present with:
  - Asymmetric sore throat
  - Trismus
  - Drooling and dysphagia
  - Unilateral ear pain
  - Same pathogens as with pharyngitis and tonsillitis
Peritonsillar Abscess

- Examination shows
  - Erythematous and enlarged tonsil with impingement toward the midline
  - The uvula and soft palate may become shifted

- Treatment
  - Antibiotics
    - Penicillin
    - Amoxicillin/clavulanate
    - Clindamycin
    - 3rd generation cephalosporin
  - Needle aspiration or I&D

Case #8

- 26 month old female patient
  - CC: 2-3 weeks. Fevers to 103, crying and will not eat or drink for last 2 days.
  - PMH: Healthy term delivery, occasional OM
  - Imm: UTD
  - Vitals: T – 103.7, P – 170, R – 30, BP – 95/40
  - Gen: Pt. looks moderately ill, sitting quietly on mother's lap
  - HENT: Clear rhinorrhea, TM's clear, shoddily bilateral anterior lymph nodes, oropharynx mild to moderately erythematous and epiglottis is visualized and is normal. No audible stridor or wheezing. Drooling is present.

Retropharyngeal Abscess

- Cellulitis and suppurative adenitis of the prevertebral lymph nodes
  - Most commonly seen in children
  - These lymph nodes atrophy by adulthood
  - Patients present with:
    - Fever
    - Difficulty swallowing and drooling
    - Trismus
  - May be sequelae of:
    - Pharyngitis
    - Otitis
    - Penetrating injury
  - Soft-tissue thickening is seen on lateral neck x-ray
  - CT imaging can help delineate extent of infection
Retropharyngeal Abscess

- Treatment
  - Airway intervention as needed
  - Antibiotics
  - ENT consultation for I&D

Case #9

- 15 y.o. male patient
  - CC: Sore throat for 3 days, Hurts to swallow
  - PMH: Neg
  - Imm: UTD
  - Vitals: T – 101, P – 100, R – 16, BP 120/80
  - Gen: Looks well

Pharyngitis

- Inflammation with or without infection of the:
  - Pharynx
  - Lymphatics
  - Tonsils and tonsilar beds

- Majority are infectious
  - 90% of these are viral
- Of bacterial causes:
  - GABHS (50%)
  - N. gonorrhea
  - C. diphtheriae

Pharyngitis

- Bacterial pharyngitis frequently presents with fever, headache, vomiting
  - Examination shows erythematous pharynx with petechiae and cervical lymphadenopathy
  - Tonsils often have white-yellow exudate on tonsillar crypts
- Viral pharyngitis presents with milder symptoms and benign exam

Pharyngitis

- Treatment
  - Symptomatic:
    - Analgesics
    - Antipyretics
    - Throat sprays
    - Rehydration
  - Antibiotic treatment
    - If bacterial cause is suspected

Pharyngitis

- Petechiae
- Exudate
Case #10

- 78 y.o. male patient
- CC: Right sided facial swelling and pain for 3 days.
  No trauma
- PMH: HTN, CAD, CHF
- Vitals: T: 99.1, P – 70, R – 16, BP – 150/90
- HENT: Right sided facial swelling, mild to moderately tender. Minimal warmth without erythema.

Suppurative Parotitis

- Bacterial infection of the parotid gland
  - One type of sialadenitis (salivary gland infection)
  - Presents with tender, swollen parotid gland
  - Predisposed by
    - Dehydration
    - Medications decreasing flow of saliva

Suppurative Parotitis

- Diagnosis made by milking purulent discharge from the duct (Stenson’s) by applying pressure to the affected gland
- Pathogen usually Staph

Viral Parotitis

- “Mumps”
  - Clinically presents with:
    - Fever and malaise
    - Bilateral parotid swelling
  - Incidence peaks between 4-6 years
  - Complications:
    - Orchitis in 25% post-pubertal males
    - Unilateral hearing loss in 4% (permanent in 1/20,000)
    - Rarely encephalitis
Sialolithiasis
- Stones in the salivary ducts
  - Majority occur in submandibular glands (Wharton’s duct)
  - Present with unilateral pain and swelling
  - Often exacerbated by meals
  - 90% of stones visualized by intra-oral radiography
    - CT
    - MRI
    - Ultrasound

Sialolithiasis
- Clinically may be able to palpate stone
- May be difficult to diagnose if concurrent infection

Sialolithiasis
- Sialogram showing blockage in Wharton’s duct

Sialolithiasis
- Treatment
  - Analgesia and antibiotics if concurrent infection
  - May be able to manually “milk” stone if distal
  - Sialogogues (e.g. lemon drops)
  - ENT referral for ductal dilatation

Case #11
- 42 y.o. female patient
  - PMH: Neg. (recently had sinusitis/URI)

Case #11
- Vitals: T – 98.5, P – 100, R – 16, BP – 115/75
- Neuro: Neg.
**Case #11**
- Performing this maneuver on the patient reproduces the spinning sensation
  - Nystagmus is noted
  - The patient begins vomiting

**Benign Positional Vertigo**
- A form of vertigo felt to be caused by otoliths in the vestibular portion of the inner ear (semicircular canals)
- Limited to the vestibular portion
  - No tinnitus
  - No hearing loss

**Benign Positional Vertigo**
- Treatment:
  - Antihistamines
  - Anticholinergics
  - Antiemetics
  - Benzodiazepines
  - Epley maneuver

**Vertigo**
- Peripheral
  - Intense spinning
  - Worsened by movement
  - Inhibited by ocular fixation
  - Fatigable
  - Unidirectional (horizontal)

- Central
  - Ill-defined
  - Not worsened by movement
  - Not inhibited by ocular fixation
  - Non-fatigable
  - Multidirectional

**Labyrinthitis**
- Infection or inflammation involving the cochlear and/or vestibular portions of the ear resulting in:
  - Sensorineural hearing loss
  - Peripheral vertigo

**Labyrinthitis**
- Allergic
- Toxic
  - Antibiotics
  - Diuretics
  - NSAIDS
  - Anticonvulsants
  - Cytotoxic
  - Other
Labyrinthitis

- Treatment
  - Removal of offending agent or treatment of underlying cause
  - Symptomatic relief
    - Antihistamines
    - Antiemetics
    - Anticholinergics
    - Benzodiazepines
  - Rarely surgical intervention may be required
    - Perilymph fistula
    - Severe intolerable vertigo

Meniere’s Disease

- Clinical condition characterized by the “episodic triad”
  - Severe vertigo
  - Tinnitus
  - Progressive sensorineural deafness
- Underlying etiology unclear

Case #12

- 19 month old male patient
  - CC: Fever for 2 days. A little more fussy than normal, and just won't eat or drink
  - PMH: Neg. Healthy term delivery
  - Imm: UTD
  - Gen: Looks well, cries on exam.

Stomatitis

- Pain of the oral mucosa secondary to aphthous ulcers
  - Often occur on
    - Lips
    - Tongue
    - Buccal mucosa
    - Floor of mouth or soft palate
  - Ulcerative lesions with raised yellow border and surrounding erythema

Case #12

- HENT: Eyes, ears, nose normal. Few anterior cervical nodes.
- Resp: No distress. No stridor or wheeze.

Stomatitis

- Multiple etiologies
  - Viral (herpetic)
  - B12, iron and folate deficiency
  - Autoimmune
  - Triggered by trauma or stress
**Stomatitis**

- **Treatment**
  - Supportive care
  - Rehydration
  - Analgesia
- **Spontaneous resolution in 7-10 days**

**Dentalgia**

- **Tooth pain which can occur from a variety of causes**
  - Trauma
  - Caries
  - Post extraction alveolar osteitis
  - Periapical abscess

**Dentalgia**

- **Offending tooth can be discovered by visualization or percussion**

**Dental Trauma**

- **Tooth avulsion**
  - Primary teeth: follow up with dentist (no emergent care needed)
  - Permanent teeth: salvage the tooth
    - Keep tooth in the patient's mouth
- **Fractures**
  - Enamel I
    -Tx: follow up
  - Enamel II
    -Tx: zinc oxide/calcium hydroxide paste or aluminum foil
  - Enamel III
    -Tx: enamel, dentin, and pulp
      -Tx: zinc oxide/calcium hydroxide paste or aluminum foil

**Periapical Abscess**

- **Abscess formed at a tooth apex with pain, swelling and mild tooth elevation**
  - Tooth very sensitive on percussion
  - Affects carious and nonviable teeth
Periapical Abscess
- Radiologically a well-defined luency may be present at the apex of the tooth.
- Treatment:
  - Analgesia (oral or regional)
  - Appropriate antibiotics
  - Dental referral

Acute Necrotizing Ulcerative Gingivitis
- Periodontal bacterial infection of non-necrotic tissue with destruction of the periodontium
- AKA “trench mouth”
  - Gingival pain with foul taste and odor
  - Firey red gingiva
  - With edema and a grey pseudomembrane

Acute Necrotizing Ulcerative Gingivitis
- Pathogens are generally *Fusobacterium* and spirochetes

Acute Necrotizing Ulcerative Gingivitis
- Treatment:
  - Oral or topical analgesia
  - Chlorhexidine rinses
  - Antibiotic treatment
    - Metronidazole
    - Penicillin
  - Dental follow-up

Temporomandibular Joint Disorders
- Radiographs will show dislocation and evaluate for fracture
- Reduction performed by downward and posterior pressure
  - Benzodiazepines
  - Consider cervical spine injury with trauma and posterior dislocation

Ear Foreign Body
- Anything small enough to fit in the EAC has been placed there
- Removal techniques may include:
  - Irrigation
  - Alligator forceps
  - Frazier-tip suction
  - Hook or cerumen loop
  - Cyanoacrylate glue
  - Kill insects (lido, viscous lido, mineral oil)
Ear Foreign Body

- Re-examine canal and TM after removal for injury
- Refer proximal foreign bodies and uncooperative patients for removal under anesthesia

Nasal Foreign Body

- Placed in nare often by children or mentally retarded patients
- Suspect foreign body in a patient with:
  - Malodorous, purulent, and unilateral nasal discharge
  - Anesthetize mucosa prior to removal attempts

Nasal Foreign Body

- Removal techniques
  - Have patient blow nose
  - Using speculum remove with suction tip, right angle hook, forceps, ear curette
  - Pass vascular catheter beyond object and remove after inflating balloon
  - Have parent puff into patients mouth

Foreign Body

- Take care not to push object further back
- Do not blow into nose
  - May dislodge object into oropharynx and potentially into the airway
  - Re-examine nares after removal