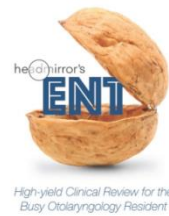


## Headmirror's ENT in a Nutshell

### Invasive fungal sinusitis

Expert: Garret Choby, M.D.



#### Presentation (2:25)

- Patient population
  - Hematologic malignancy with initiation of chemotherapy
  - Diabetes mellitus with uncontrolled glucose levels
  - Solid organ or bone marrow transplantation
  - Rarely, long-term steroid use
- Symptoms
  - Progressive, sudden sinusitis symptoms (congestion, nasal blockage, facial pain)
  - Trigeminal distribution numbness
  - Vision changes, restricted extraocular eye movements, proptosis, chemosis
  - Unilateral facial swelling
  - Fever
- Physical Examination
  - Nasal endoscopy: dead, necrotic, black, crusting
    - middle turbinate, middle meatus, inferior turbinate head most common, can present anywhere in the nose
- Differential diagnosis
  - Bacterial/fungal/viral sinusitis
  - Granulomatosis with polyangiitis
  - Intranasal drug use
  - Midline destructive lesions

#### Pathophysiology (5:00)

- Direct angioinvasion from fungal elements leads to thrombosis and ischemia followed by subsequent necrosis
- Rapidly progressive disease hours to days, fatal
- Aspergillosis
  - 45° branching with septations on Gomori's methenamine silver (GMS) stain \*
- Mucormycosis
  - 90° without septations on GMS stain \*

#### Workup (7:02)

- Imaging
  - non-contrast CT sinus
    - **Early** – nonspecific findings, typically unilateral
    - **Late** – bony erosion especially near orbit and pterygopalatine fossa
  - MRI with contrast
    - Not required in high-suspicion patients
    - Can be used for surveillance
    - Post contrast T1 hypointense due to angioinvasion

- Nasal endoscopy with frozen section biopsy
  - Lack of sensation on nasal endoscopy (nerve destruction)
  - Attention to the middle turbinate, middle meatus, inferior turbinate
    - Crusting, necrotic tissue
    - Biopsy suspicious areas and send for frozen pathology
  - If high index of suspicion but normal nasal endoscopy, consider repeat evaluation in 6-12 hours later

## **Treatment (11:48)**

- Surgical debridement
  - Mainstay of treatment
  - Large debridement followed by subsequent OR trips for further surveillance and debridement
  - Special attention to **pterygopalatine fossa involvement** as this can lead to significant extension
  - **Periorbital involvement** is independent risk factor for poor prognosis
    - Orbital exenteration does not provide survival benefit, therefore at our institution this is typically not performed routinely
  - **Intracranial extension**
    - Dural enhancement – do not typically resect
      - rely on IV amphotericin
    - Parenchymal involvement – discuss with neurosurgical partners if open resection indicated
      - Very poor mortality
- Adjuvant medical therapy
  - IV amphotericin B
  - Voriconazole and posaconazole can be initiated for long term prophylaxis in outpatient treatment
- Correction of underlying driving factors
  - Correction of underlying elevated glucose or neutropenia if possible