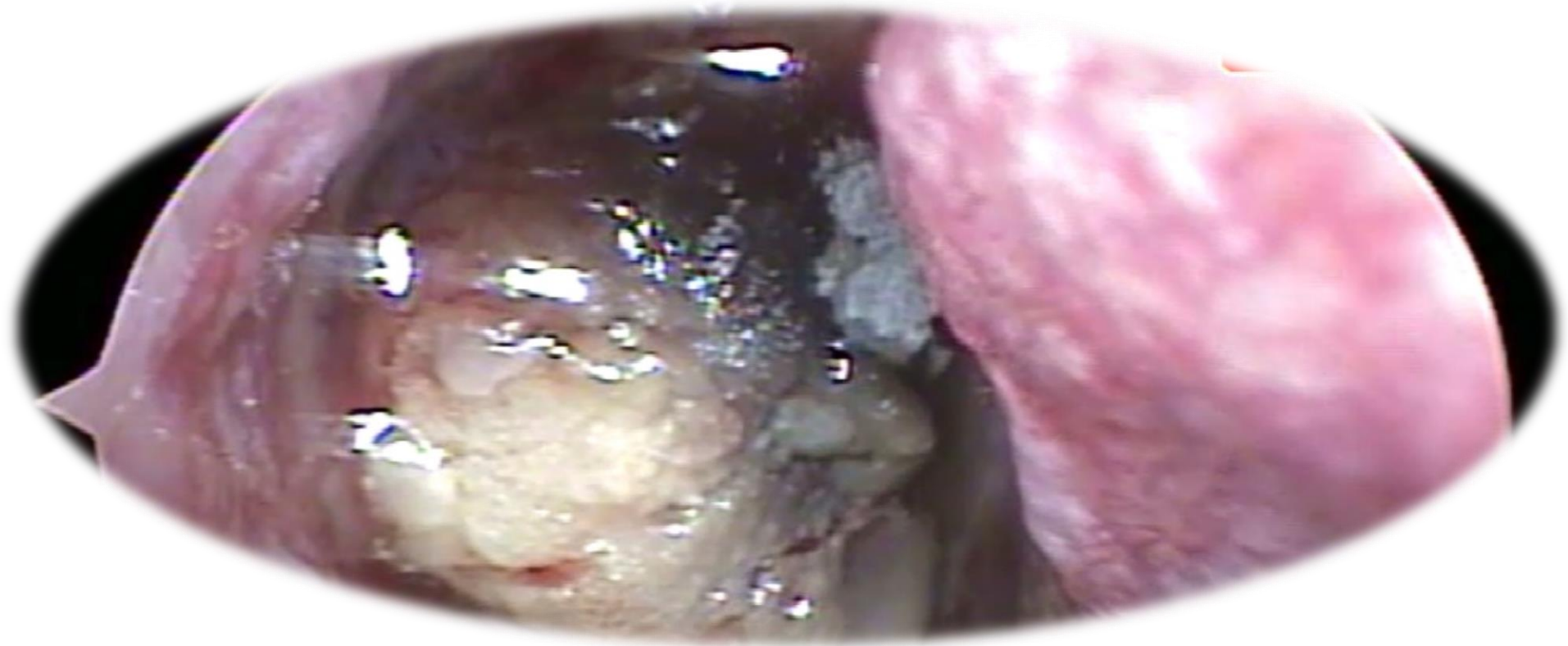


Mucormycosis



Dr. Farzad Zamani, M.D.,
Assistant Professor of Otorhinolaryngology-
Head and Neck Surgery
Arak University of Medical Sciences



Acute invasive fungal rhinosinusitis (AIFR) is an angioinvasive fungal infection of the nasal cavity and paranasal sinuses that typically develops in **immunocompromised patients**, such as those with hematologic malignancies, acquired immunodeficiency syndrome, neutropenia, and diabetes.



- Mortality rates of 40% to 80% in the literature. Patients with AIFR present with **fevers** and localizing symptoms, most commonly **facial swelling**, **nasal congestion**, **ophthalmoplegia**, **proptosis**, and vision loss.

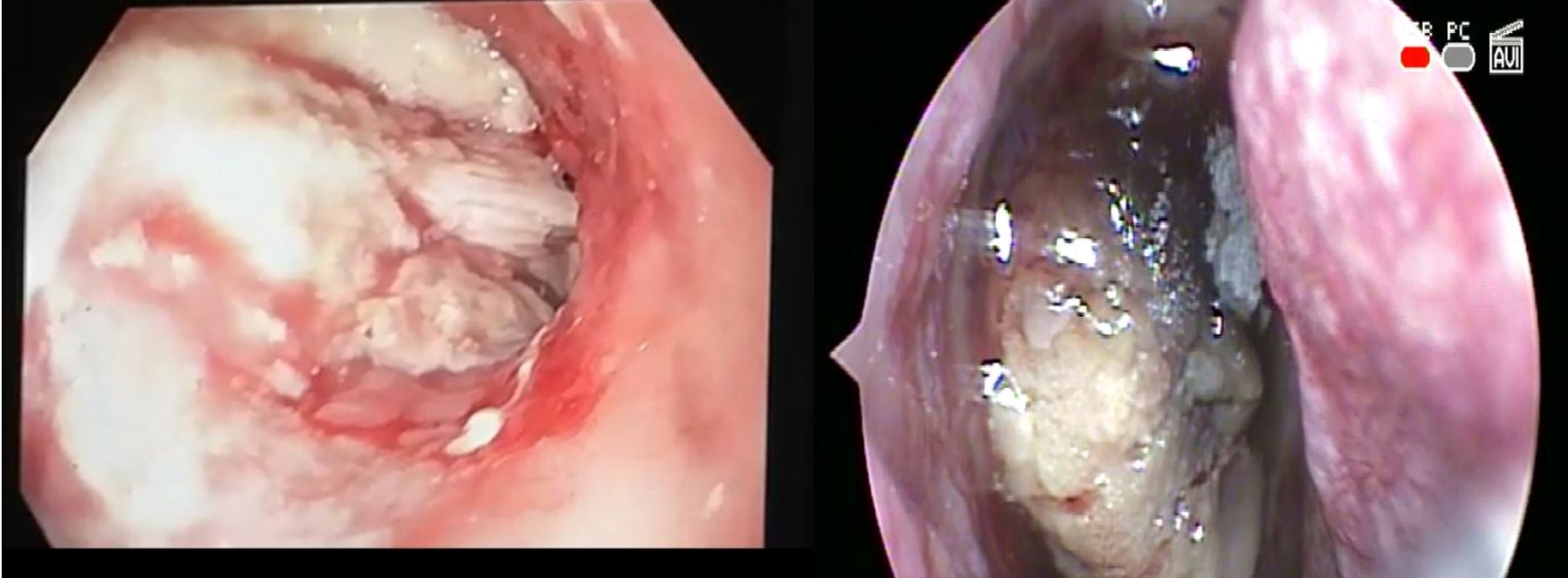


The most common organisms:

1. Aspergillus species (most commonly *A. fumigatus* or *A. flavus*)
2. Fungi from the Zygomycetes class, which cause mucormycosis(*Rhizopus oryzae*)

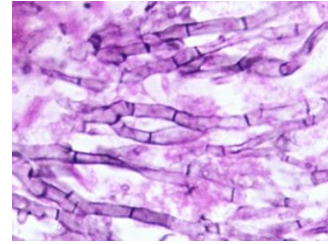


- All patients with suspected AIFR should undergo prompt nasal endoscopic evaluation with particular attention to nasal sensation!

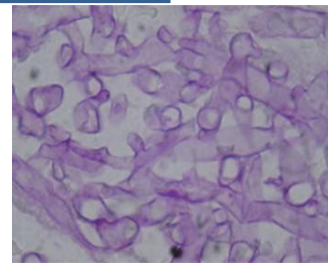


- Areas of mucosal pallor, crusting, or **necrosis**, which are most commonly seen on the **middle turbinate** should be biopsied and sent for frozen section!

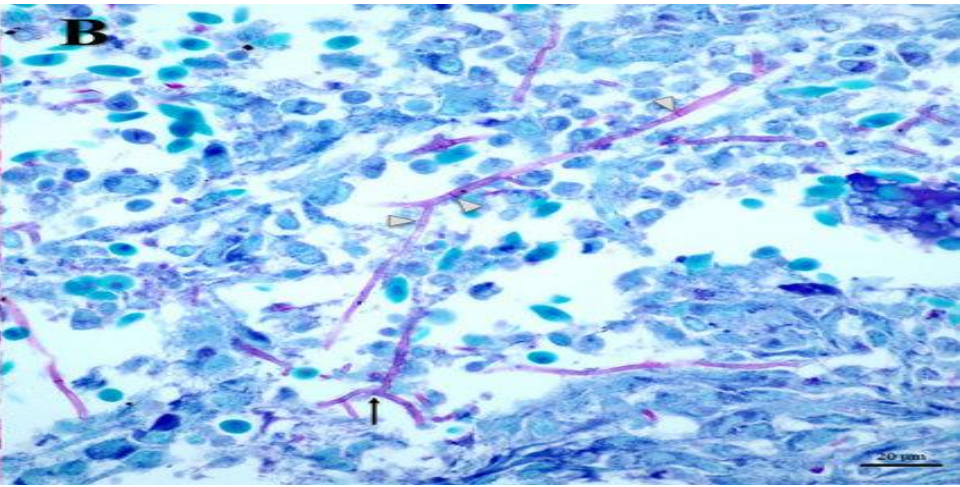
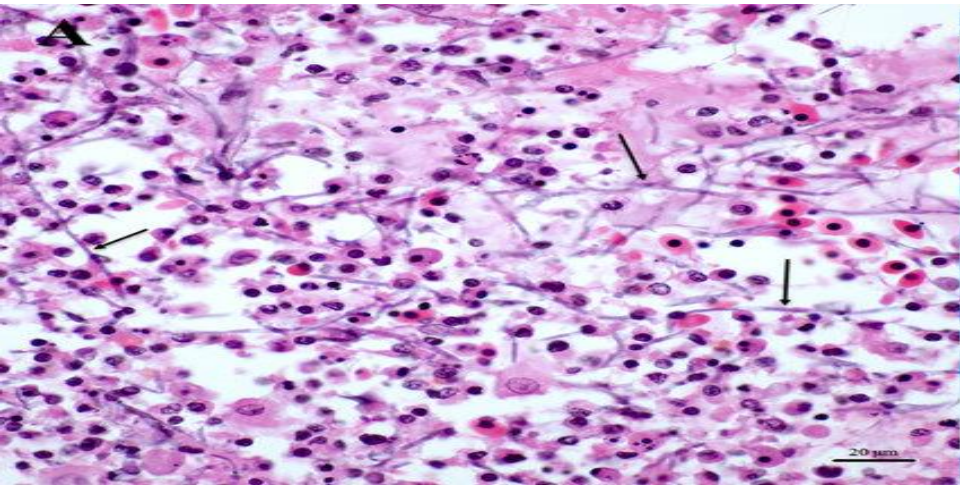
- The diagnosis can be made with visualization of necrosis, fungal forms, and angioinvasion on histopathologic analysis.



- Aspergillus species demonstrate septate hyphae that branch at acute angles (45 degrees) and Zygomycetes display ribbon-like hyphae that are nonseptate and branch irregularly.



- **Fungal cultures** such as Calcofluor-white and Grocott methenamine silver (GMS), as well as permanent pathology.



- Cultures may also reveal less common causative organisms such as *Fusarium* and *Alternaria* species.

- Imaging studies should be considered as an **adjunct** to assess for extent of disease, **but should not substitute for a thorough endoscopic examination!**
- CT scans may reveal **nonspecific opacification**, with more worrisome findings such as **bony erosion typically occurring late in the disease process.**
- The role of MRI has been evaluated more recently; it may be a more accurate test for assessment of disease extent due to the **loss of contrast enhancement** seen in devitalized mucosa involved by angioinvasion.

Management of AIFR

- Includes antifungal therapy, surgical resection, and reversal of immunocompromise.
- Extent of surgery is controversial, particularly with regard to the need for orbital exenteration!
- Current evidence:

There may not be an additional survival benefit provided by orbital exenteration!

- In patients with **neutropenia**, some have suggested a role for **granulocyte transfusions**, although evidence is limited to small case series.
- A large systematic review revealed that **surgical resection** and the use of **liposomal amphotericin B** were associated with improved survival in patients with AIFR.
- **Better overall survival** was also associated with **diabetes**.
- **Poorer overall survival** was associated with **intracranial involvement** and **advanced age**.

Surgical approach:

- Endoscopic sinonasal surgery is the mainstay of treatment.
- Initial biopsy is essential
- Surgical debridement is commonly included of turbinectomy (middle and inferior), ethmoidectomy, medial maxillectomy, antrostomy, drarf I-III, and removal of all devitalized tissue to find bleeding points in the normal vital tissue!

Open approach

- Maxillectomy (partial, subtotal, total, and extended i.e., orbital exenteration) and removal of the palate

Thank
you

