



Allergic Fungal Rhinosinusitis: An Advanced Case With Intradural Extension

Brandon I. Esianor, MD^{1†}, Desmond Garner, BA², Kolin Rubel, MD³, Naweed Chowdhury, MD, MPH⁴

1) Department of Pediatric OHNS, Texas Children's Hospital, Houston, TX 2) Vanderbilt University SOM, Nashville, Tennessee 3) Department of OHNS, University of Minnesota, Minneapolis, MN 4) Department of OHNS, Vanderbilt University Medical Center, Nashville, TN

Introduction

- **Allergic Fungal Rhinosinusitis (AFRS)** accounts for up to 10% of chronic rhinosinusitis cases.
- The mainstay of treatment consists of both surgery and medical management.
- When left untreated, AFRS can cause local bony remodeling and erosion.
- We present the first case of complex AFRS with intradural exertion resulting in remodeling of the frontal lobe and cerebritis with seizures.

Case Presentation

Patient:

- 26yo African American male with history of poorly controlled type 2 diabetes mellitus & four-year history of untreated "sinus problems".

Presentation:

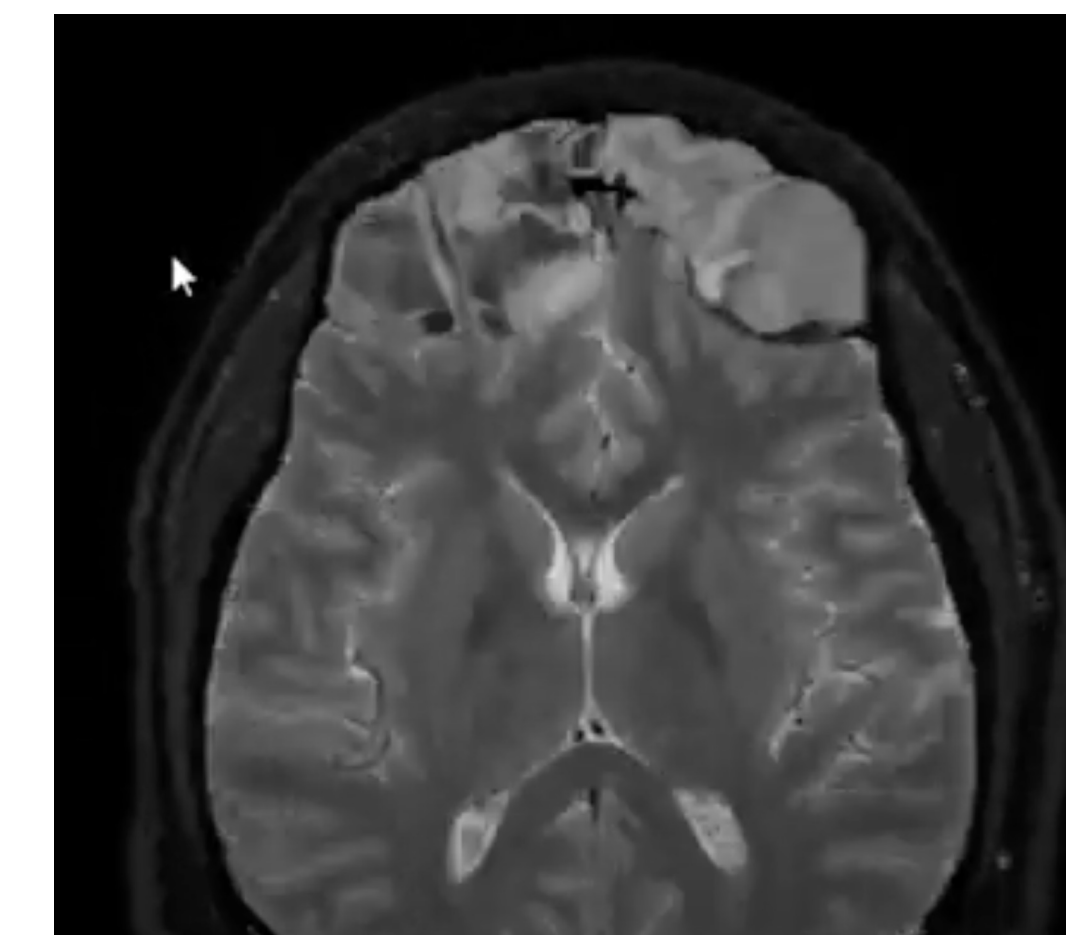
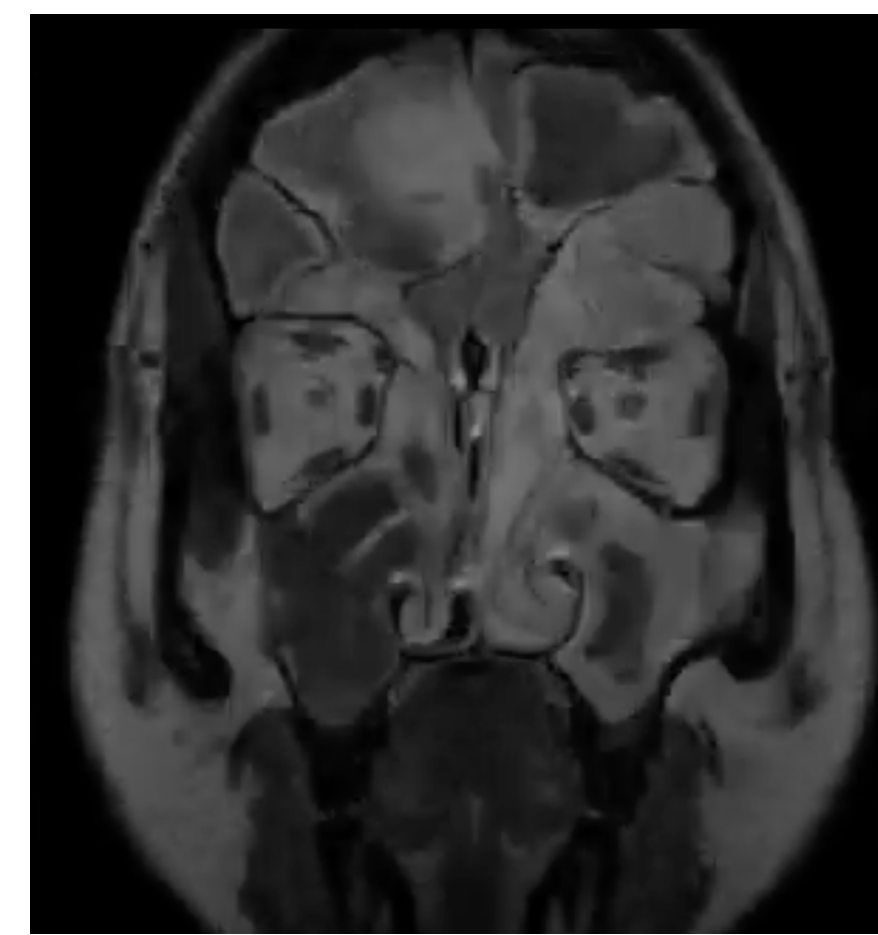
- Patient was in his usual state of health until late Nov. 2022 when he experienced two episodes of seizure activity.
- Presented to an outside facility with altered mental status. CT scan revealed complete sinus opacification with concern for dural invasion through a frontal sinus defect.
 - **(Coronal (L) and Axial(R) non-contrast Sinus CT.**



Case Presentation

Presentation (cont.)

- MRI showed intracranial extension with frontal lobe encephalomalacia secondary to compression by sinus contents. **(T2 Coronal (L), T2 Axial (R)) MRI)**

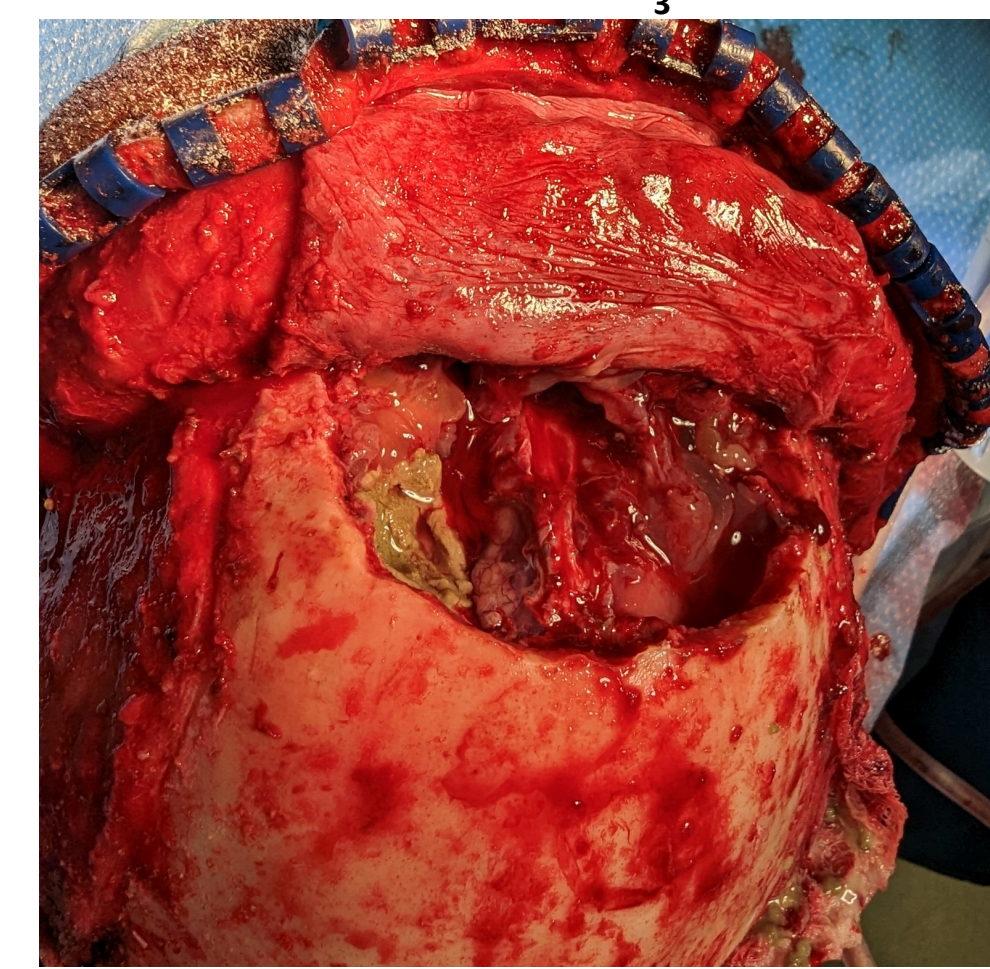
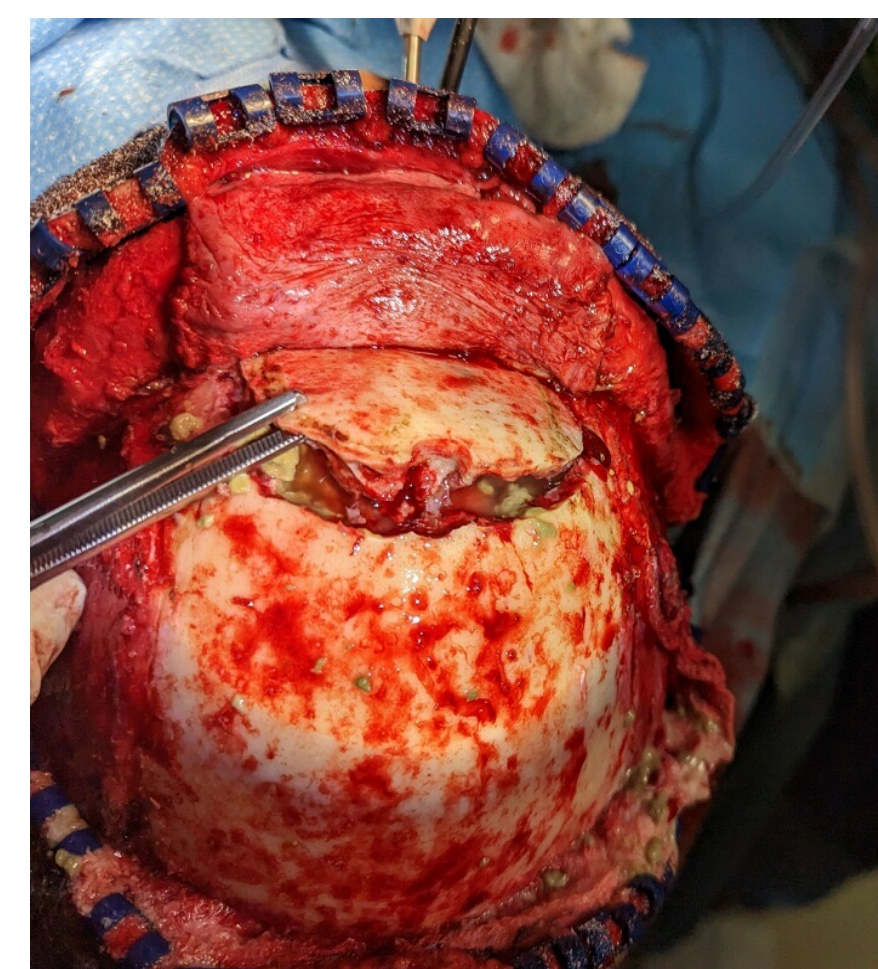


Procedures:

- Bilateral functional endoscopic sinus surgery
- Frontal sinus cranialization and obliteration with abdominal fat graft

Intraoperative Findings:

- Extensive chronic rhinosinusitis with nasal polyposis and allergic mucin present throughout the paranasal sinuses bilaterally.
- Extensive destruction of the posterior table and intradural extension of polyp and fungal mucin.



Case Presentation

Labs/Microbiology

- IgE Level- 1,133 (reference range 0-100IU/mL)

Pathology

- Acute/chronic inflammation, mild eosinophilia & inflammatory polyps
- Abundant luminal amorphous material with septate fungal hyphae and non-polarizable crystalline material. **No necrosis or invasion.**

Microbiology

- OR fungal culture without growth, galactomannan negative, 1,3, B-D glucan.

Post-operative course

- Budesonide saline rinses, saline sprays, Flonase
- Empiric Vancomycin, Flagyl, Ceftriaxone for 1 week
- Abmesome x1 week then transitioned to voriconazole for 6-12months
- Considering Dupixent after antifungal treatment

Conclusion

Severe cases of AFRS can result in damage to surrounding structures through progressive expansion, which can result in pressure atrophy and subsequent erosion. This is the first report describing intradural extension of disease resulting in cerebritis. Black patients with AFRS are at increased risk of presenting with advanced stages of disease. Further studies on social determinants of health affecting patients with AFRS may result in improved patient outcomes.

References

1. Gutierrez JA 3rd, Durrant FG, Nguyen SA, Chapurin N, Schlosser RJ, Soler ZM. Association between Social Determinants of Health and Allergic Fungal Rhinosinusitis: A Systematic Review and Meta-analysis. *Otolaryngol Head Neck Surg.* 2023 Jun 9. doi: 10.1002/ohn.396. Epub ahead of print. PMID: 37293865.
2. Dykewicz MS, Rodriguez JM, Slavin RG. Allergic fungal rhinosinusitis. *J Allergy Clin Immunol.* 2018 Aug;142(2):341-351. doi: 10.1016/j.jaci.2018.06.023. PMID: 30080526.
3. Chua AJ, Jafar A, Luong AU. Update on allergic fungal rhinosinusitis. *Ann Allergy Asthma Immunol.* 2023 Sep;131(3):300-306. doi: 10.1016/j.anai.2023.02.018. Epub 2023 Feb 26. PMID: 36854353.