

# **That Fungus is HUMONGOUS:**

## **Chronic Invasive Fungal Rhinosinusitis**

### **Masquerading as a Neoplasm**

Logan Powell<sup>1</sup>, Nader Pahlevan<sup>1</sup>, Charlotte Taylor<sup>2</sup>

1. University of Mississippi, School of Medicine
2. Department of Radiology, University of Mississippi



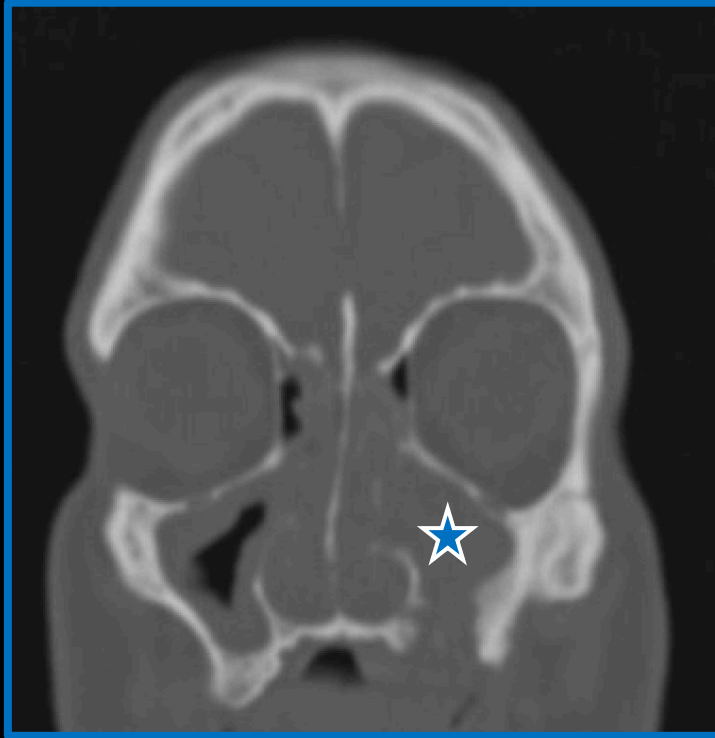
# Clinical Presentation

A 46-year-old immunocompetent male with a past medical history of hyperlipidemia and hypertension presents with 2-years of left-sided nasal congestion, epistaxis, hyponasal voice, decreased hearing, and ear fullness. The patient endorses a 5-10 lb weight loss over the last 6 months. He denies fever, vision changes, or paresthesia. He does report that his symptoms began after he started remodeling a building without the use of a mask. Patient is a lifetime non-smoker.

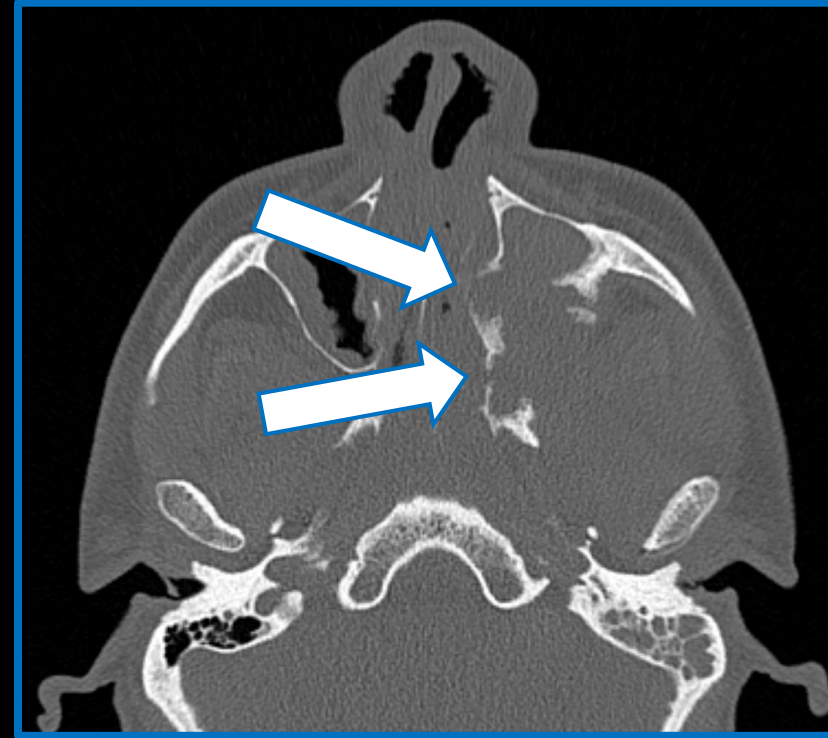


# IMAGING

## Coronal CT



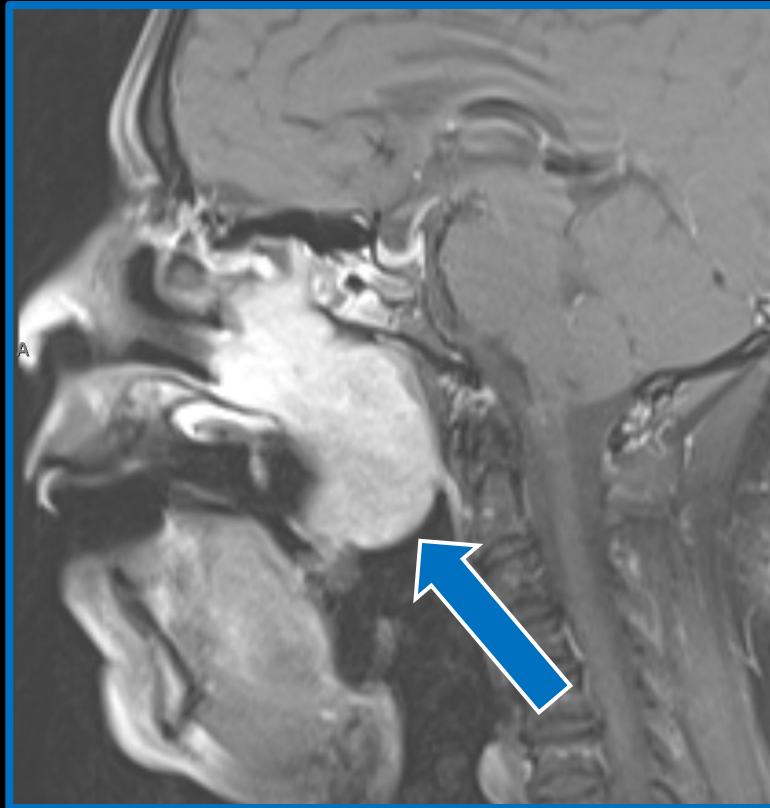
## Axial CT



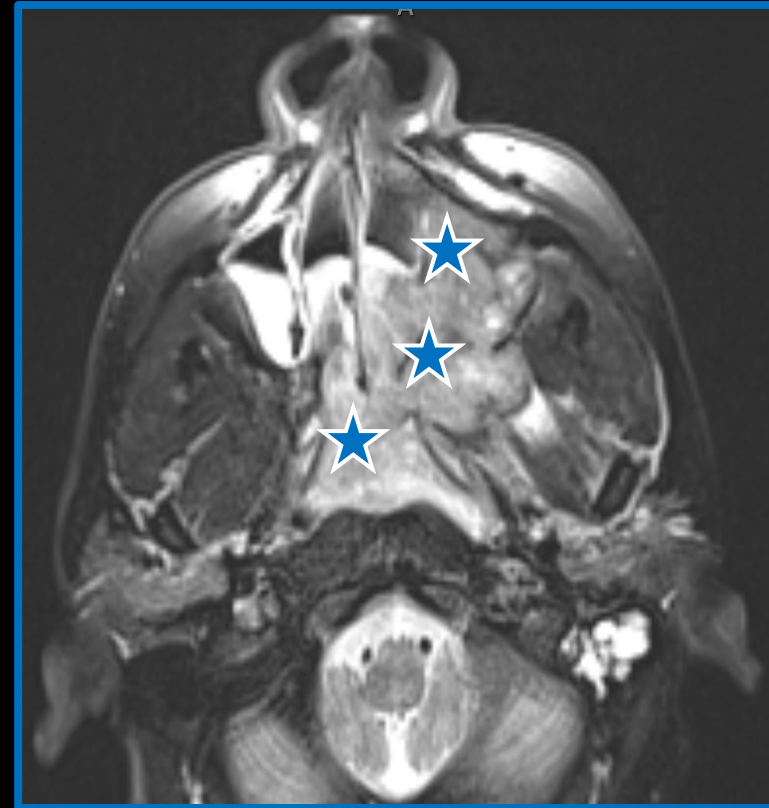
Near complete opacification of the left maxillary sinus (blue star, left). Erosion of the left lateral aspect of the hard palate with suggestion of soft tissue density in the submucosal region. Erosions of the left maxillary sinus wall (white arrows, right) and pterygoid process were present in the background of sclerotic sinus wall thickening. No intracranial or orbital involvement was found.

# IMAGING

Sagittal T1 FS+c



Axial T2 FS



Homogeneously enhancing, T2 isointense mass filling the posterior nasal cavities and nasopharynx with extension into the oropharynx (blue arrow). Reduced diffusion was present in some areas of the mass, and scattered T2 hypointense presumed flow voids were seen (blue stars).

# MANAGEMENT

- Following referral for chronic symptoms, nasal endoscopy revealed a friable mass in both nares extending into the left maxillary sinus.
- MRI with and without contrast and CT Sinus without contrast were obtained with initial concern for malignancy. No orbital or intracranial involvement was noted.
- Endoscopic resection and debridement of the mass were performed.
- Biopsy revealed fibroconnective granulation tissue, multinucleated giant cells, and fungal hyphae, without evidence of malignancy or angioinvasion. Flow cytometry was negative. Fungal speciation was consistent with *Curvularia*.
- The patient received 6 weeks of oral voriconazole and initially showed marked clinical improvement.

# OUTCOME

- The combination of negative flow cytometry and fungal hyphae on biopsy reduced the initial concern for neoplasm.
- Fungal speciation positive for *Curvularia* confirmed the diagnosis of chronic invasive fungal rhinosinusitis.
- Despite minimal clinical improvement following resection, otolaryngologic symptoms resolved following long-term oral anti-fungal medication.
- Re-presented months later for nasal congestion with nasal polyps on exam. The patient re-located to another state and was subsequently lost to follow-up.

# TAKE HOME POINTS

- **Chronic Invasive Fungal Rhinosinusitis (CIFRS)** is a rare subtype of fungal sinusitis characterized by invasion of mucosal, submucosal, osseous, and/or vascular structures.<sup>1</sup> Given its indolent nature, CIFRS presents specific diagnostic challenges, particularly when differentiating it from malignancy - imaging alone may be insufficient. Furthermore, cases of CIFRS in immunocompetent individuals are sparsely reported in the literature.<sup>2</sup>
- Curvularia fungal colonization or infection is usually associated with allergic fungal sinusitis. However, in this case, the absence of eosinophils excluded the diagnosis, although conversion from allergic fungal sinusitis to CIFRS has been documented.<sup>3</sup> Typically, Curvularia-speciated CIFRS is associated with histologic findings of noncaseating granulomas, which were not observed in our case.<sup>4</sup>
- Our case, involving an immunocompetent patient presenting with a large invasive mass caused by an atypical fungal species, highlights the importance of considering CIFRS as a diagnosis when biopsy results are negative for malignancy.

# References

1. Aribandi M, McCoy VA, Bazan C III. Imaging Features of Invasive and Noninvasive Fungal Sinusitis: A Review. *Radiographics*, 2007; 27:1283-1296.
2. Alotaibi NH, et al. Chronic Invasive Fungal Rhinosinusitis in Immunocompetent Patients: A Retrospective Chart Review. *Front. Surg.*, 2020; 7: 608342.
3. Edelmayer L, et al. Conversion to chronic invasive fungal sinusitis from allergic fungal sinusitis in immunocompetence. *The Laryngoscope*, 2019; 129 (11): 2447-2450.
4. Wang T, et al. Clinical Features of Chronic Invasive Fungal Rhinosinusitis in 16 Cases. *Ear, Nose, & Throat*, 2020; 99 (3): 167-172.

