

Chronic Invasive Fungal Sinusitis Mimicking a Sinonasal Malignancy: A Case Report

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Introduction

- Chronic invasive fungal sinusitis (CIFS) is a rare form of invasive fungal sinusitis.
- It is an insidious and invasive fungal infection which can extend intracranially and cause significant morbidity and mortality when untreated.
- Classically, CIFS has been associated with diabetes.
- The prevalence of CIFS may potentially be increasing given the growing use of long-term steroids and immunocompromised populations.

Methods

- The authors present a case of an immunocompetent patient with CIFS which mimicked a sinonasal malignancy.
- A comprehensive literature review was performed.

Case Report

- A 78-year-old male presented with a nasopharyngeal and sphenoid sinus mass. Nasopharyngoscopy showed submucosal fullness within the nasopharynx.
- He underwent a nasopharyngeal biopsy which was benign.
- He then underwent a sphenoidotomy with biopsy which was also benign but showed inflammation and fungal elements. There was no evidence of fungal invasion on frozen pathology.
- Final pathology of the second biopsy showed fungal angioinvasion concerning for invasive fungal sinusitis.
- MRI demonstrated involvement of the right temporal lobe and cavernous sinus.
- He was admitted and underwent endoscopic sinus surgery which included an extended dissection of the pterygopalatine and infratemporal fossae, the nasopharynx to the base of the clivus, and a sphenoid sinus drill out.
- He was treated with long-term anti-fungal therapy and has been doing well postoperatively.

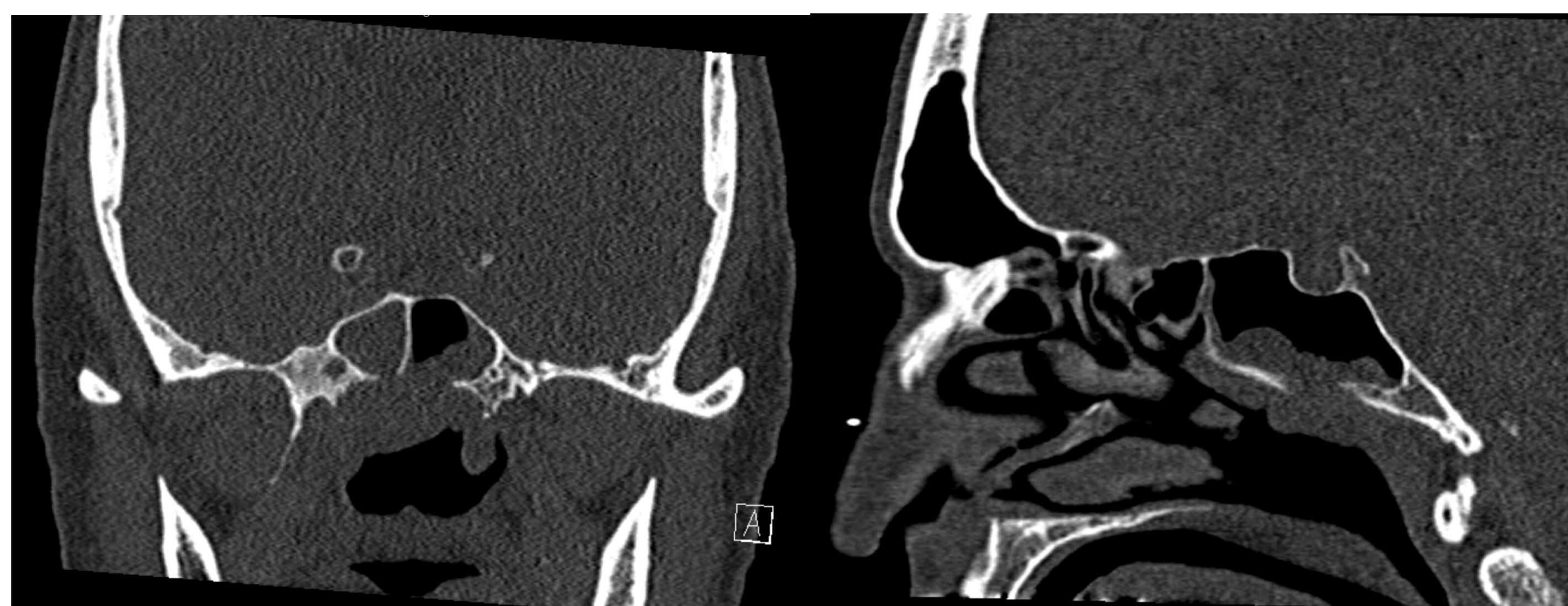


Figure 1: Preoperative CT demonstrating a nasopharyngeal and sphenoid sinus mass with erosion of the floor of the sphenoid sinus.

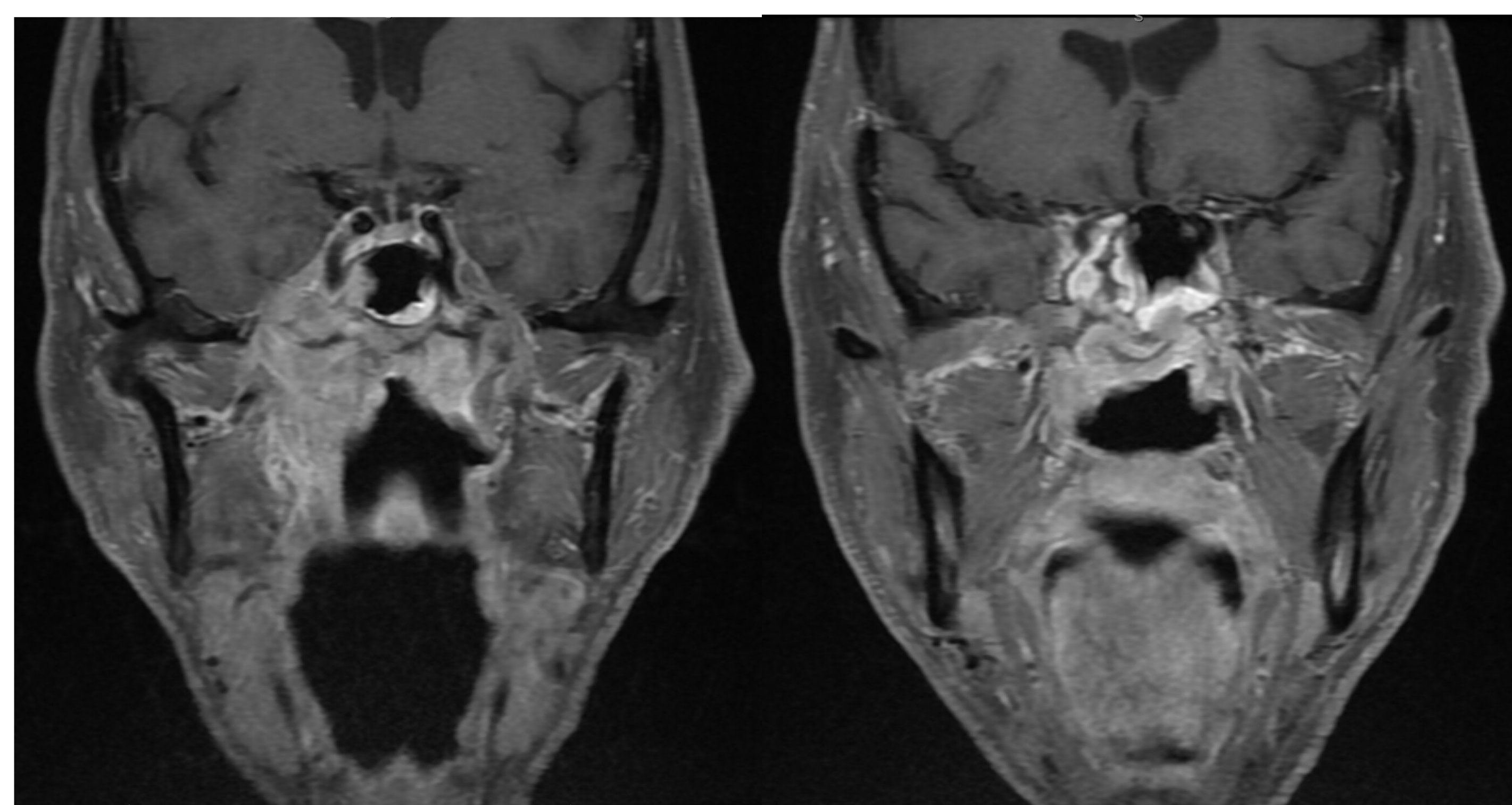


Figure 2: Preoperative MRI demonstrating enhancement of the right temporal lobe and cavernous sinus.

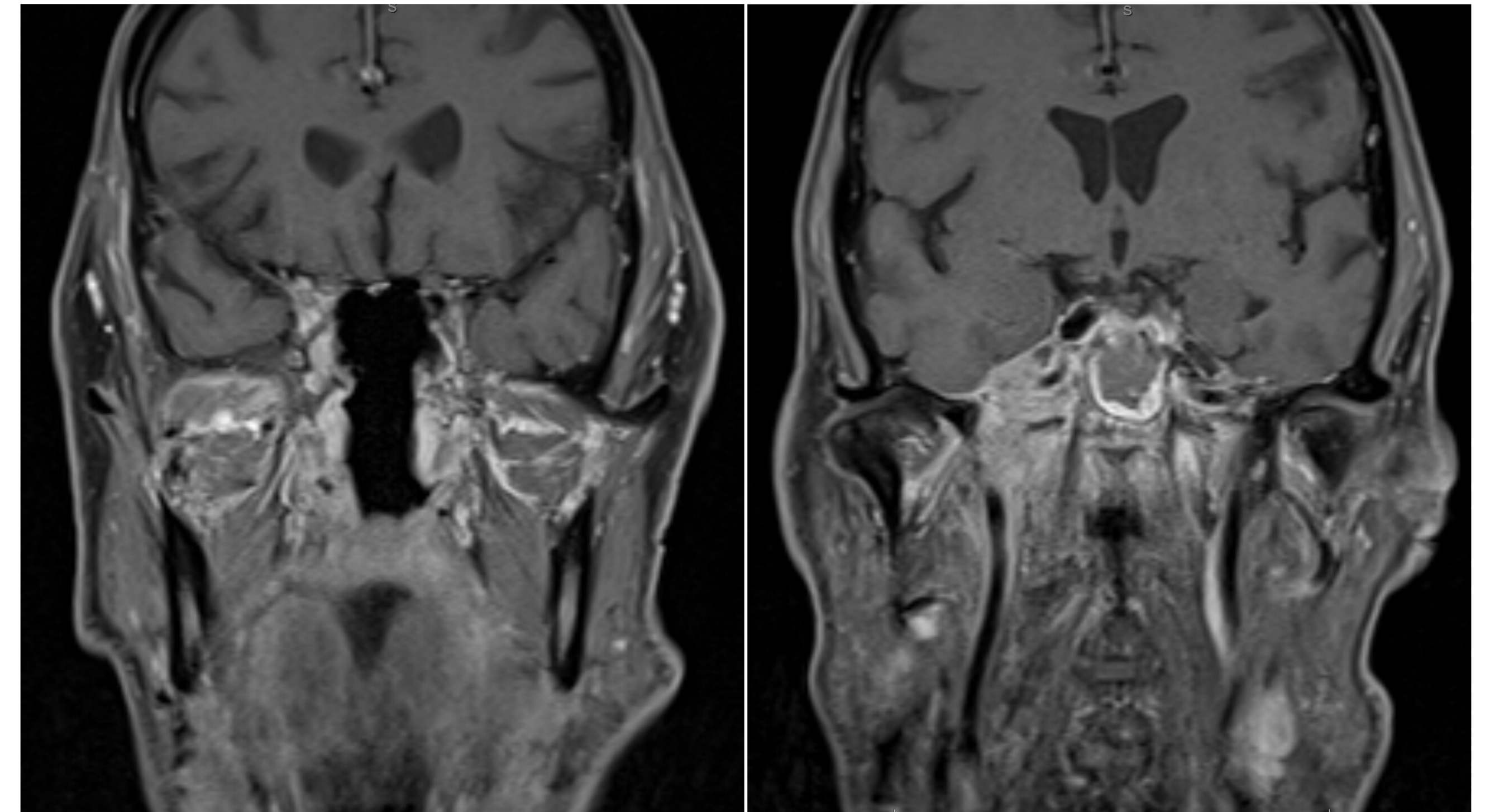


Figure 3: Postoperative MRI demonstrating right temporal lobe involvement and the extent of surgical dissection within the nasopharynx and sphenoid sinus.

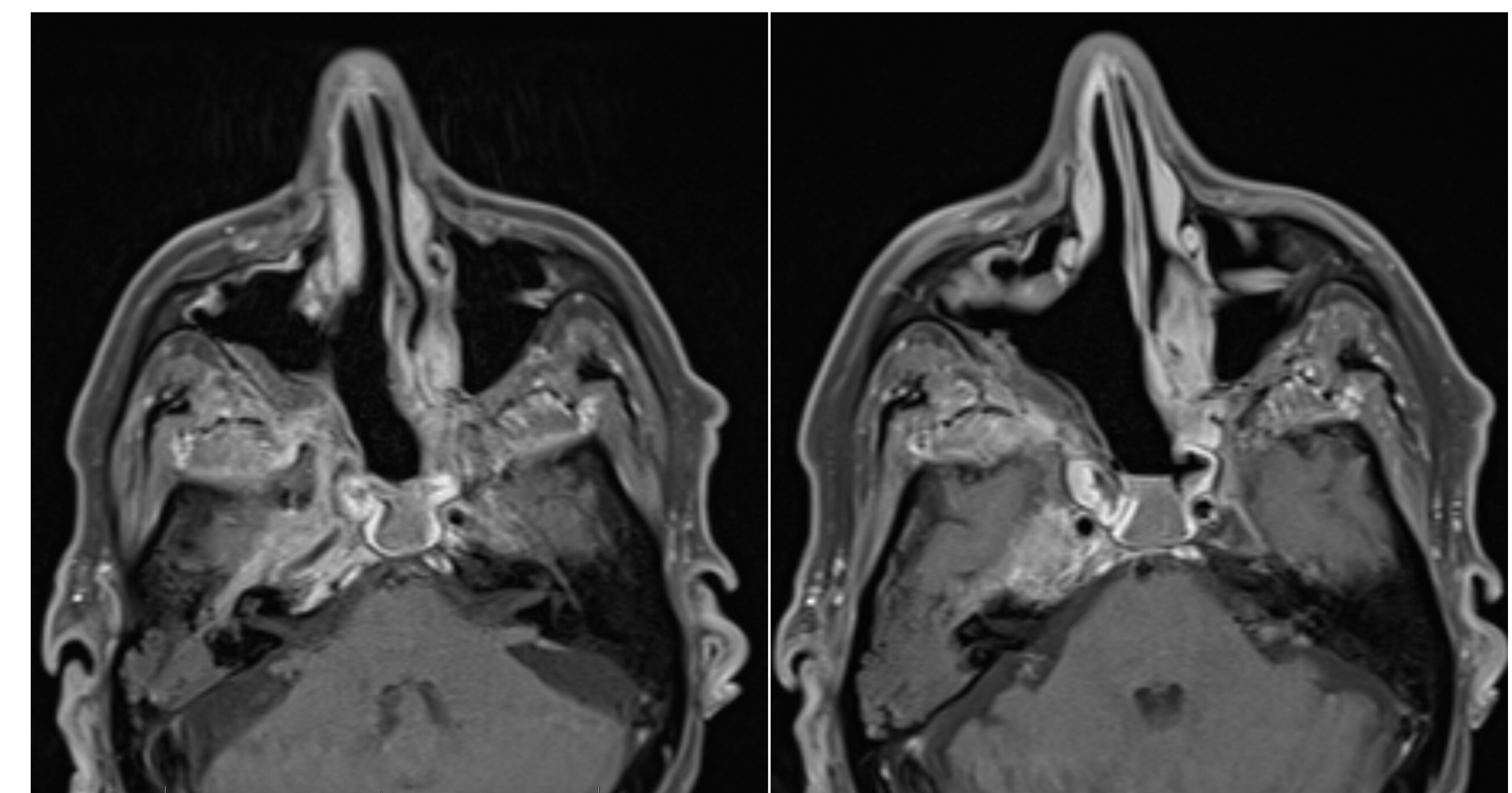


Figure 4: Postoperative MRI demonstrating involvement of the right cavernous sinus with disease surrounding the right internal carotid artery.

Results of Literature Review

- A total of 16 articles were reviewed which discussed immunocompetency status in the presence of CIFS.
- A total of 95 cases were reported. 63 were immunocompetent and 32 were immunocompromised.
- Many articles did not discuss their inclusion criteria for immunocompetency. Moreover, many studies did not specify if patients were treated with corticosteroids for sinusitis, which may be a potential cause of immunocompromise.

Conclusions

- CIFS is a rare disease which can affect both immunocompetent and immunocompromised patients.
- Radiologically, it may mimic a sinonasal mass which may lead to a delay in diagnosis.
- CIFS should be considered a part of the differential diagnosis when evaluating atypical sinonasal lesions, especially when bony erosion is noted.
- Endoscopic biopsy and pathologic evaluation with fungal staining will assist in making the diagnosis.
- MRI may assist in preoperative diagnosis by identifying specific changes in the sinonasal cavity and identifying intracranial involvement.

References

- deShazo et al. A new classification and diagnostic criteria for invasive fungal sinusitis. Arch Otolaryngol Head Neck Surg. 1997 Nov;123(11):1181-8. doi: 10.1001/archotol.1997.01900110031005. PMID: 9366697.
- Li et al. Chronic invasive fungal rhinosinusitis vs sinonasal squamous cell carcinoma: the differentiating value of MRI. Eur Radiol. 2020 Aug;30(8):4466-4474. doi: 10.1007/s00330-020-06838-1. Epub 2020 Apr 11. PMID: 32279114.
- Alotaibi et al. Chronic Invasive Fungal Rhinosinusitis in Immunocompetent Patients: A Retrospective Chart Review. Front Surg. 2020 Dec 16;7:608342. doi: 10.3389/fsurg.2020.608342. PMID: 33392248; PMCID: PMC7772145.