



Invasive Rhino-orbital-cerebral-mucormycosis, case report

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Introduction

Rhino-orbital-cerebral-mucormycosis (ROCM) is rare and possibly deadly-illness triggered by thread-like fungi that mainly impacts the nasal-cavity, paranasal-sinuses, and the brain¹. It commonly affects immunocompromised-patients, like those with diabetic-ketoacidosis(DKA), among other diseases. Nevertheless, it's important to highlight that mucormycosis can also develop in patients without known underlying conditions^{2,3}. This case report describes acute visual-symptoms from an invasive sinonasal-mucormycosis.

Case discussion

A female in her 6th-decade admitted to the hospital-ICU for DKA management. During her hospital-course, she developed left-sided periorbital swelling, upper-eyelid ptosis and frozen-eye. On physical-examination, she had complete left-ophthalmoplegia, ptosis, severe left optic-neuropathy. This was highly localizable to the orbital apex and/or cavernous sinus.

CT/CTA head showed subtle hypoattenuation in the inferior frontal lobes and extensive opacification of the left sided sinonasal-cavity with subtle destruction/erosion(Figure1). These findings were initially missed.

MRI showed diffusion restriction in the inferior frontal lobes with edema and no enhancement (i.e.necrosis), extensive left pansinusitis, compression of the left optic nerve in the orbital apex with enhancement of the sheath and diffusion-restriction of the nerve. Left cavernous sinus was involved. There was mild diffuse swelling of the extraocular muscles with fat stranding and proptosis. The superior ophthalmic vein was not enlarged. There was no enhancement of the left nasal turbinate (i.e.necrosis)(Figure2)

ENT performed surgical debridement. Endoscopic examination confirmed fulminant necrotic tissue throughout the left sinonasal cavity which led to subsequent endoscopic surgery. Post-operatively, the patient was followed by infectious disease for medical management of biopsy-proven invasive-ROCM. The patient continued to spike fevers. Her follow up imaging showed abscess development in the necrotic frontal lobes which is in communication with the skull base(Figure3) and progressed into skull-base osteomyelitis. They continued medical-management.

ROCM typically starts in the nasal cavity and spreads to nearby paranasal sinuses. It's severity and duration, along with the host's immunity, influence the extent of disease. The middle turbinate is the most commonly affected area, followed by the middle meatus and septum. If bone infiltration goes undetected, it can spread to surrounding tissues, potentially leading to brain complications via pathways like the ethmoid sinuses or bone erosion².

ROCM presents with nonspecific clinical signs, complicating early diagnosis. Initial symptoms often include headaches and fatigue, along with nausea, fever, nasal congestion, and facial pain. Patients may experience nonspecific eye-related and CNS symptoms.

Given the nonspecific clinical signs, maintaining a high suspicion for the condition when risk factors are present is essential. If suspected, a biopsy of necrotic antral tissue should be done promptly for histopathological confirmation. Many clinicians choose to conduct a CT scan before the biopsy to save time, as it helps assess disease extent and provides a quick overview. Imaging may show bone erosion and sinus obstruction, while MRI, although not as readily available, is preferred for examining soft tissue^{4,5}.

FIGURE 1

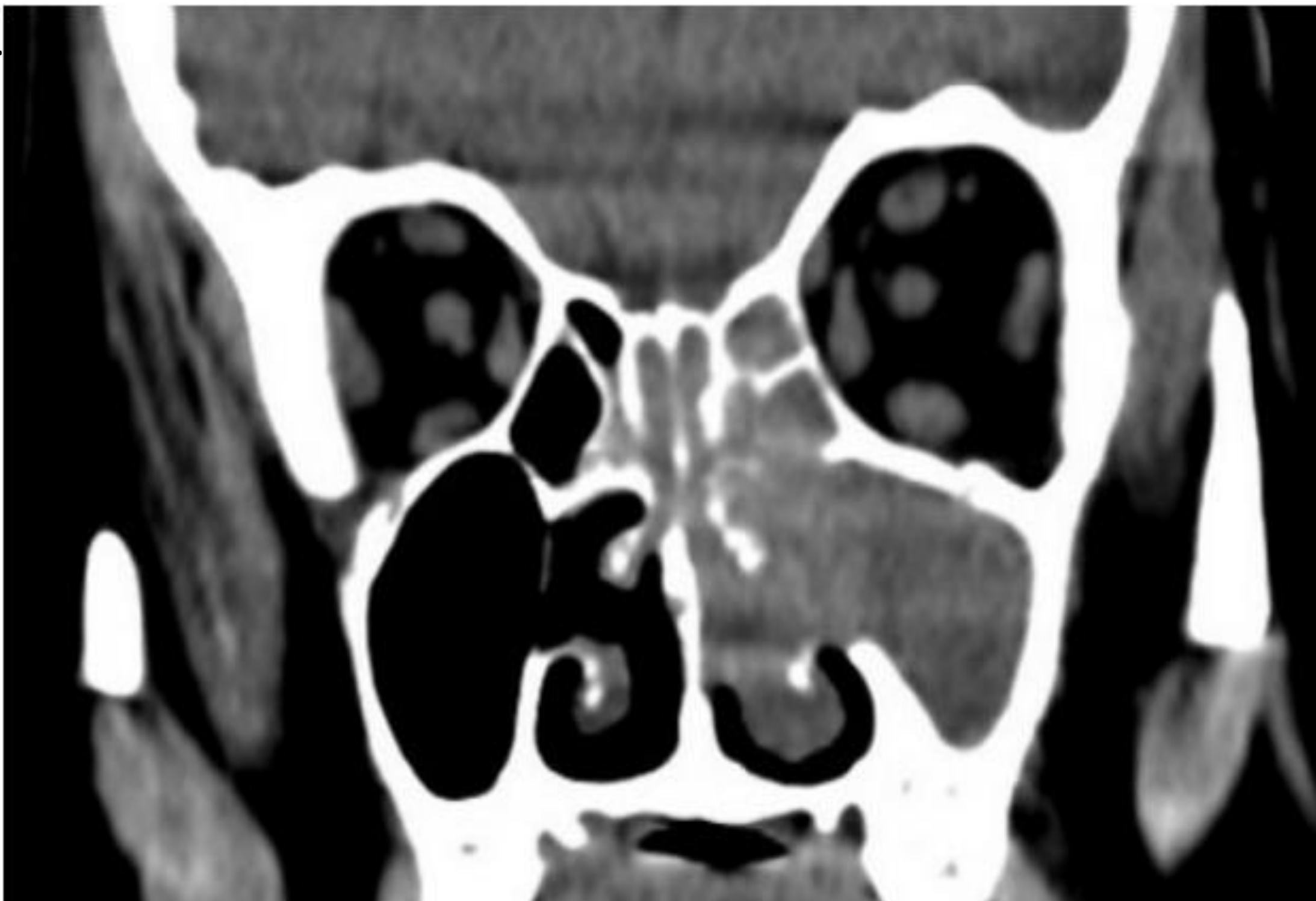


FIGURE 2

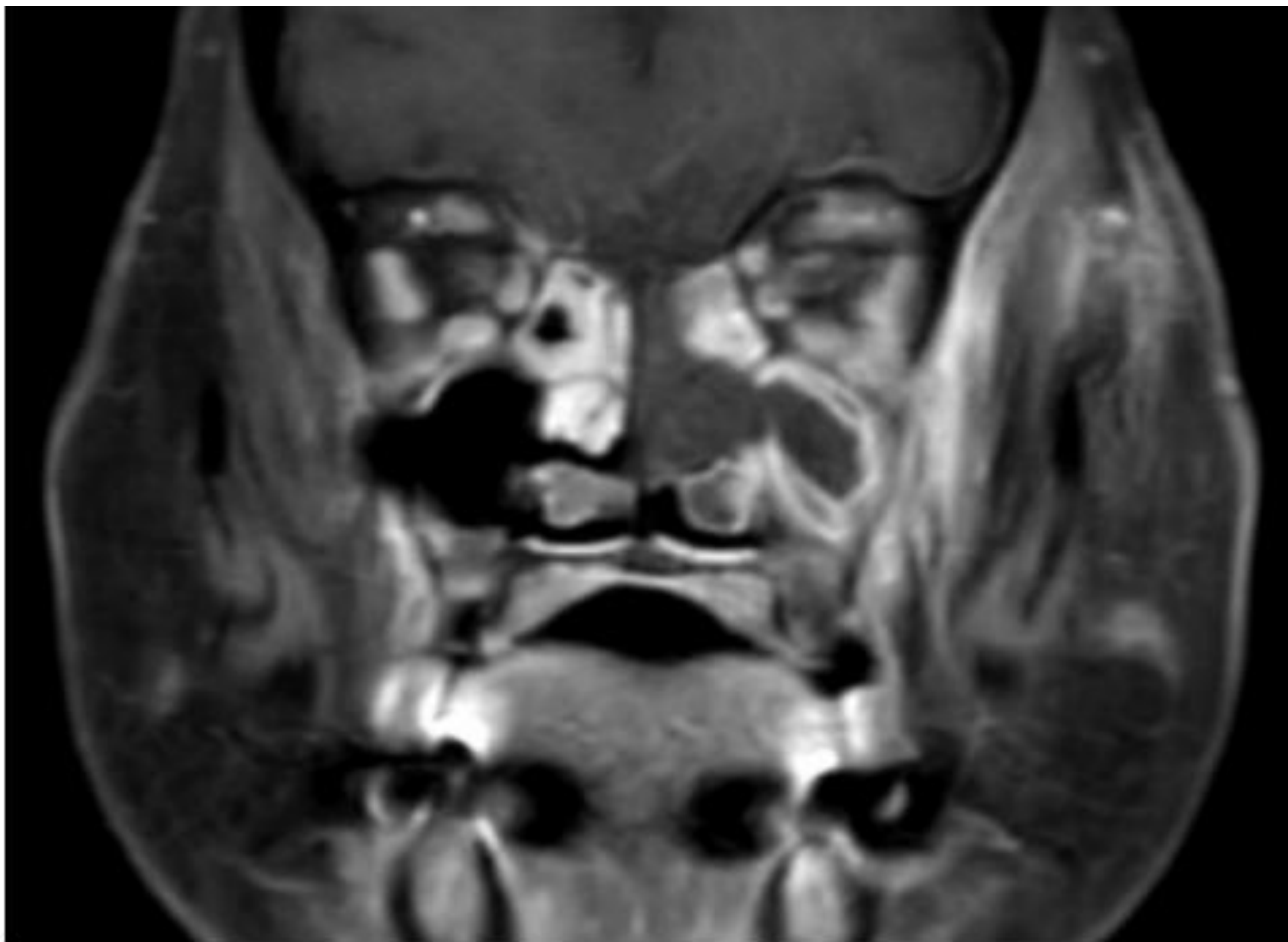
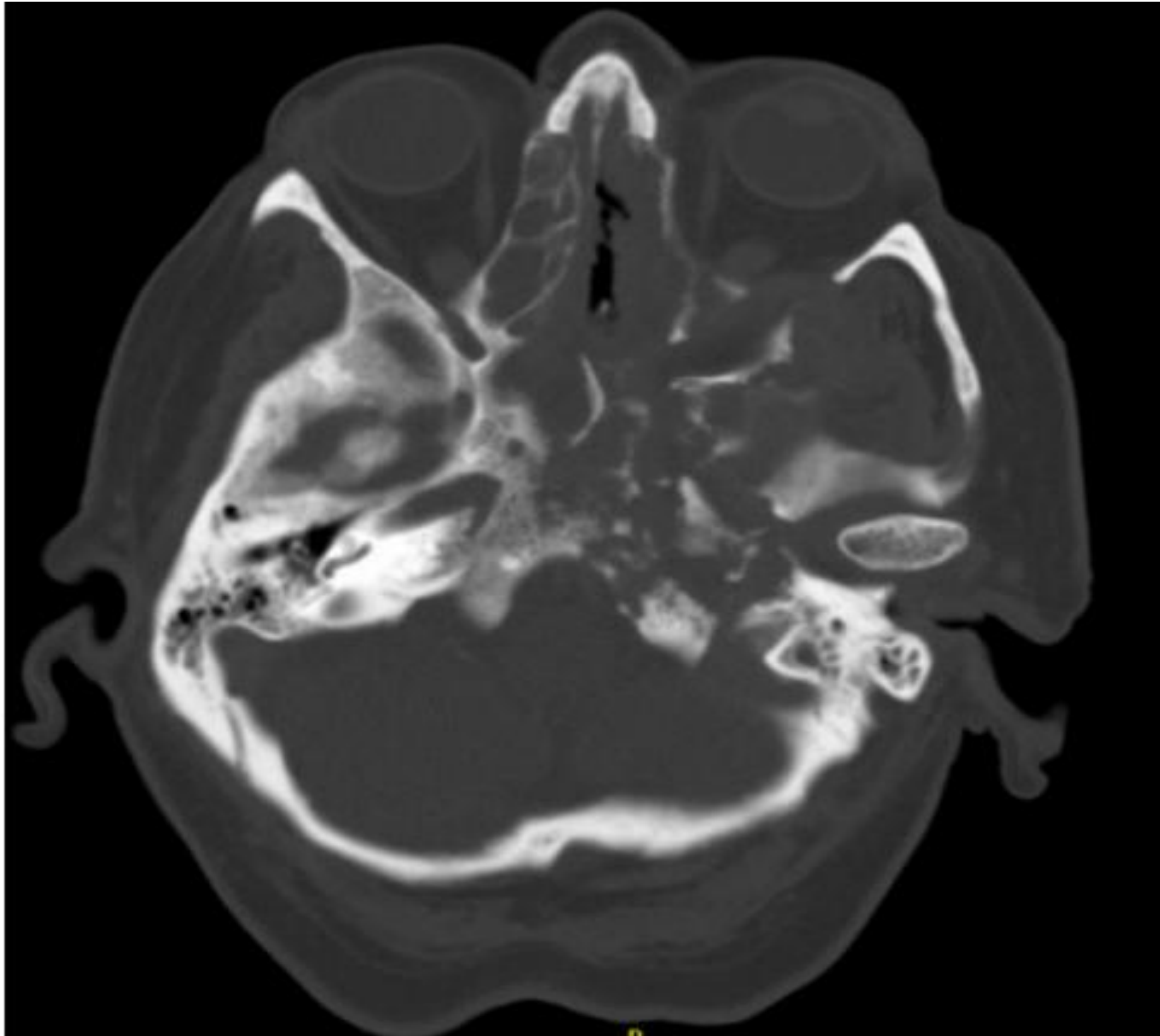


FIGURE 3



Conclusion

This case report highlights the importance of using imaging in making accurate diagnosis in patients with aggressive sinonasal infection. In particular, appropriate communication between the examining clinician and interpreting radiologist to ensure timely diagnosis and improve patient management.

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