Invasive cytomegalovirus infection of the nasopharynx: an exceptionally rare site of disease

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Introduction

Cytomegalovirus (CMV) is a ubiquitous herpesvirus that typically causes asymptomatic or mild infection in immunocompetent hosts but can lead to life-threatening invasive disease in the immunocompromised. The gastrointestinal tract, lungs, central nervous system, and eye are the most frequently affected sites. In contrast, nasopharyngeal involvement is exceedingly rare, with only a single case previously reported in the literature. Recognition of such atypical presentations is crucial, as they can mimic other invasive infections and delay targeted antiviral therapy. This report highlights a highly unusual site of invasive CMV infection — the nasopharynx.

Case History

A 72-year-old woman with probable seronegative autoimmune encephalitis since 2022, on mycophenolate mofetil 750 mg twice daily and prednisolone 30 mg daily since February 2023, presented with fever, cough, and altered mentation. Three months earlier, she had received pulsed methylprednisolone followed by a tapering course of prednisolone. Examination was unremarkable apart from drowsiness. Inflammatory markers were elevated, and chest X-ray showed patchy bilateral opacities. She was treated empirically for bacterial pneumonia and delirium.

Magnetic resonance imaging (MRI) of the brain demonstrated new pansinusitis and anterior skull base destruction with possible reactive pachymeningeal thickening, raising concern for infective sinusitis with skull base osteomyelitis and possible central nervous system (CNS) involvement. Computed tomography (CT) of the sinuses (Figure 1) confirmed pansinusitis and skull base destruction. Nasendoscopy revealed green crusting and copious mucopus in both nasal cavities, draining from the sinuses, with pale, unhealthy mucosa in the nasopharynx, maxillary, and ethmoid sinuses. Given her immunosuppression and these findings, invasive fungal sinusitis was the leading differential. She had no sinus tenderness, eschars, or skin lesions. Urgent functional endoscopic sinus surgery (FESS) was performed for drainage, debridement, and tissue sampling.

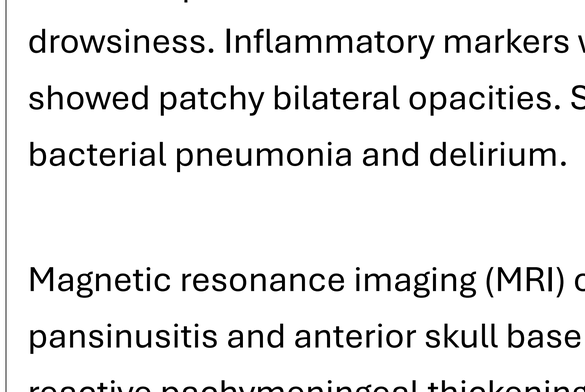

Figure 1: Maxillary and ethmoid sinusitis on CT sinuses scan

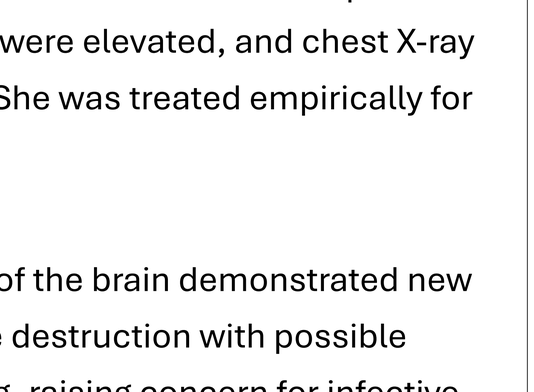

Figure 2: Frontal sinusitis on CT sinuses scan

Investigations

Blood cultures were negative, and serum *Aspergillus* galactomannan was 0.03. Intraoperative cultures grew *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, and *Staphylococcus aureus*; fungal smears and cultures were negative. Histopathology of the right middle turbinate showed CMV inclusion bodies (Figure 2), confirmed by immunohistochemistry (Figure 3). Serum CMV PCR was 160,000 IU/mL. Ophthalmological examination excluded CMV retinitis. Lumbar puncture to evaluate for CNS involvement was considered but deferred due to severe thrombocytopenia.

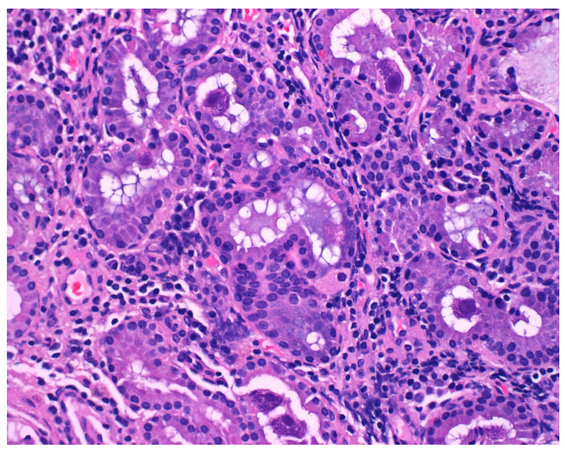

Figure 3: Histology showing CMV inclusion bodies

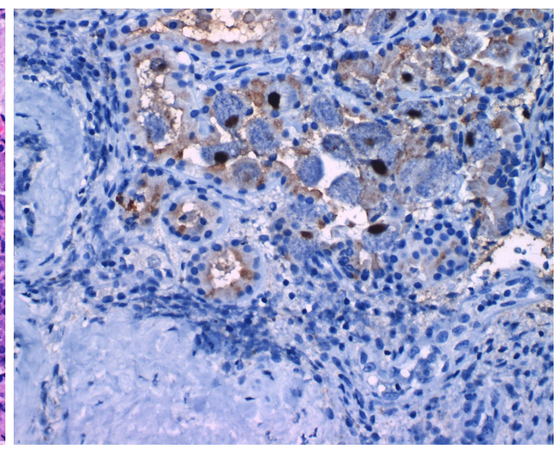

Figure 4: Immunohistochemistry positive for CMV

Treatment

Pending culture and histology results, the patient was started empirically on intravenous (IV) liposomal amphotericin B and broad-spectrum antipseudomonal antibiotics at CNS doses. Once cultures and histology results were available, IV ganciclovir was initiated and antimicrobials rationalized. She showed a favourable response, with improved nasendoscopic findings after three weeks of treatment and undetectable CMV titres at four weeks. Despite this, she succumbed to a bowel perforation of unclear aetiology a few days after achieving undetectable CMV titres; clinical assessment and CT scan at that time did not demonstrate features of colitis.

Discussion

This case illustrates an exceptionally rare presentation of invasive CMV infection in the nasopharynx. To our knowledge, only one prior case has been reported, in which a patient presented with a nasopharyngeal mass, was diagnosed with invasive CMV on histology, and improved with conservative management. Our case emphasizes the need to consider CMV as a differential diagnosis in immunosuppressed patients presenting with sinonasal disease. Future cases may warrant earlier consideration of CMV when the severity of sinonasal involvement appears disproportionate to bacterial or fungal culture results. Increased awareness of such rare manifestations may enable earlier recognition and prompt initiation of antiviral therapy, potentially improving patient outcomes.

References

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