"UNMASK" ASPERGILLUS

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Clinical Case

87-year-old man presented with:

Left peri-orbital pain and Diplopia

- VA 6/9 bilaterally
- No colour desaturation
- No RAPD
- No signs of inflammation/infection

Past medical history:

 Rheumatoid arthritis (Methotrexate + corticosteroids)

Type II diabetes

Investigations:

ANCA (-), ACE (-), Viral swab (-)

Radiological findings:

MRI and CT orbit: Soft tissue lesion in left posterior orbit floor extension into pterygopalatine fossa.

Differentials: Lymphoma/pseudotumour/metastatic tumour/temporal arteritis/Wegner's

Management:

Left endoscopic sinus surgery and biopsy

IV Voriconazole

Nasal Culture: Aspergillus fumigatus

Negative fungal antigen tests. (Galactomanan, Beta 1-3 gluten)



Introduction

Aspergillus: spore-forming, highly aerobic, dichotomously branching fungus. Found in soil, water, indoor environment and organic debris (4)

Inhalation of spores affects respiratory tract (4)

Aspergillus fumigatus is the most common species implicated in all pulmonary syndromes (4)

Aspergillosis can be non-invasive or invasive, which crosses tissues and causes necrosis (3)



Infection spread: Digestive tract, genitourinary system, blood vessels and CNS (1)

Sino-orbital involvement is rare and it can be aggressive. Maxillary sinuses are most commonly involved (1)

Immunocompromised patients are at most risk: Primarily neutropenia, corticosteroid use, transplant, HIV and uncontrolled diabetics (1, 3)

Cavernous sinus orbital apex syndrome is a potentially fatal complication of invasive aspergillosis, which necessitates prompt diagnosis and treatment (1, 6)

Investigations

Radiology

- Hallmark: Invasion of surrounding tissues (1)
- CT: Soft tissue infiltrative lesions including sinuses with bone destruction/continuous paranasal sinus involvement with or without intracranial extension (5)
- MRI: Mass lesion with the iso-to hypointense signals on T1- weighted images and extremely hypointense on T2-weighted images along with bright homogenous enhancement on post- contrast T1weighted images (5)

Management

1. Debulking and surgical debridement

Prevent intracranial nerve compression and infection spread(1)

2. Antibiotic therapy under internist care (4)

- Assessment of fungal sensitivities is essential (1)
- 40-60% is responsive to Amphotericin B. Long-term intake has been complicated with renal toxicity. (6)
- Azole class: the most promising and safer to administer with less systemic effects. (5)
- For invasive aspergillosis: Voriconazole (3)
- Duration: 6-12 months. To be discontinued when there is no radiological evidence and signs of disease. (1, 5)

Follow-up every 3-4 month: Imaging for detection of residual/recurrent disease. (1)

Conclusion

Due to a lack of specific clinical and radiological signs, diagnosis remains difficult (6, 5)

Treatment may be delayed or inappropriate (6)

Early surgical debridement and biopsy are crucial to confirm the diagnosis (1, 6)

Awareness of this disease may lead to an earlier diagnosis and prompt aggressive treatment to achieve optimal clinical outcome (5)

Multidisciplinary approach: Oculoplastics, ENT and neurosurgeons (4)

High index of suspicion:

- Immunocompromised patients (4)
- + Persistent unilateral pain, which progresses to relentless, and severe (5)

References:

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Figure I: T1-weighted MRI with contrast

However, the imaging studies lack specificity (6)

Biopsy and Culture: Gold-standard for diagnosis (5):

- Histopathological findings: granulomatous inflammation with multinucleated giant cells and few eosinophils (4)
- Best seen on Gomori methanamine silver and periodic acid Schiff stains. (5)



Figure III: Gomori methanamine silver staining. Black filaments. (4)

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