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Case Report

An unexpected cause of orbital apex syndrome in an immune-competent elderly male

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Invasive aspergillosis causing orbital apex syndrome (OAS) in an immune-competent individual is a very rare phenomenon, scarcely reported in medical literature. A 68-year-old male presented with progressive loss of vision in the right eye, starting after a cataract surgery. Neurological examination suggested OAS. Imaging was suggestive of mass lesion causing destruction of ethmoid bone. Biopsy of the lesion could not be done initially in view of its proximity to the major neuro-vascular bundle in the orbital apex and cavernous sinus and the major risk involved in the procedure relative to its yield. There was no response to empirical therapy with antibacterials, steroids or Amphotericin-B. Gradually the mass increased in size and was amenable to biopsy. Endoscopy guided biopsy revealed invasive aspergillosis. Switching over to voriconazole lead to successful management. This case highlights the importance of early diagnosis and selection of an appropriate antifungal therapy in the management of invasive aspergillosis.

INTRODUCTION

Orbital apex syndrome (OAS) has been described previously as a syndrome involving damage to the oculomotor, trochlear, abducens and ophthalmic branch of the trigeminal nerve in association with optic nerve dysfunction [1]. *Aspergillus* is a fungus found in soil and organic debris. Aspergillosis commonly presents as localized disease of lung and paranasal sinuses usually as a fatal opportunistic infection in patients with acquired immunodeficiency syndrome, diabetes, leukaemia and lymphoma [2]. Invasive aspergillosis is a rare disease and is often misdiagnosed. The clinical course is quite aggressive and is potentially fatal.

CASE REPORT

A 68-year-old male patient, presented to us with history of progressive loss of vision in the right eye and persistent right-sided retro-orbital pain and headache for 2 months which started immediately after the cataract surgery of the right eye (Phacoemulsification under topical anaesthesia using lignocaine 2% eye drops) with intra-ocular lens implantation. The pre-operative visual acuity was 6/60 in the right eye and 1/60 in the left eye. The patient reported initial improvement in vision, but it was followed by rapid deterioration, for which he attended his ophthalmologist, who diagnosed it as a case of optic neuritis, as a complication of cataract surgery. He was started on oral methyl-prednisolone. There was no improvement in the symptoms and then the patient attended our outpatient department clinic. He had no history of diplopia, redness, watering, proptosis or floaters. There was no history of trauma or symptoms suggestive of meningitis or encephalitis. There was no history of cough, dyspnoea or haemoptysis.

On examination, the patient was conscious and oriented, with non-tender paranasal sinuses and bilaterally palpable temporal arteries. Neurological examination revealed complete right-sided ophthalmoplegia with mydriasis, hypoalgesia and diminished right corneal reflex. Ophthalmological examination revealed right and left visual acuity of 3/60 and 1/60, respectively. Right pupil was dilated and fixed, whereas the left pupil was reactive to light. Fundoscopy revealed oedema and pallor of right disc, whereas the left disc was normal.

Laboratory investigations revealed haemoglobin of 12 g/dl (Normal:12−16 g/dl) and fasting blood sugar of 105 mg/dl

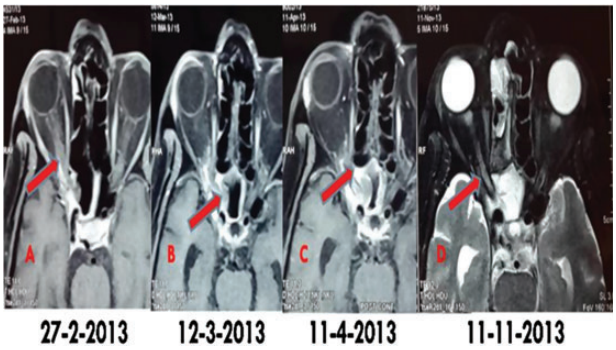

Figure 1: (**A**) T_1-weighted axial MRI showing minimal soft tissue at the right orbital apex abutting the right optic nerve. (**B** and **C**) T_1-weighted axial MRI showing increase in the size of the mass with bony erosion of sphenoid and ethmoid sinus. (**D**) T_2-weighted axial MRI revealing decrease in the size of the mass after 7 months of oral voriconazole.

(normal: 60–100 mg/dl). Serum angiotensin-converting enzyme and thyroid function tests were within their normal limits. Serum immuno-inflammatory markers were within normal limits. He was negative for HIV, hepatitis B and C and had normal levels of cluster of differentiation (CD)-4 and CD-8.

The first T_1-weighted axial magnetic resonance imaging (MRI) of brain (Fig. 1A) showed minimal soft tissue at the right orbital apex which was abutting the right-sided optic nerve suggestive of OAS. In view of clinical examination and MRI report, a presumptive diagnosis of pseudotumor (inflammatory versus infectious aetiology) was made and the patient was started on ceftriaxone and vancomycin in meningitis dosage with tapering course of dexamethasone. Even after 10 days of this treatment, there was no improvement in symptoms. Instead, the visual acuity in the right eye decreased to perception of light only with development of right-sided proptosis.

Repeat T_1-weighted axial MRI scan of head (Fig. 1B) revealed an increase in the size of the mass with bony erosion of sphenoid sinus which was suggestive of infectious aetiology. Biopsy of the lesion was deferred in view of the proximity of the mass to the major neuro-vascular bundle in the orbital apex and cavernous sinus and the major risk involved in the procedure relative to its yield. The patient was empirically started on liposomal amphotericin-B in view of possibility of fungal infection.

Even after 21 days of liposomal amphotericin-B, there was further increase in proptosis and the visual acuity in right eye diminished to 'No light perception' with increased intensity of peri-orbital and retro-orbital pain. A repeat T_1-weighted axial MRI of head (Fig. 1C) revealed further destruction of the local anatomic sites with increase in mass lesion to 19 × 16 × 14 mm. Serum galactomannan antigen level was 0.5 index (Borderline).

By virtue of its size and extension, the mass was now accessible for biopsy. Under general anaesthesia, endoscopic navigation-assisted biopsy was taken from seven different sites. Review of histological specimen from posterior ethmoid

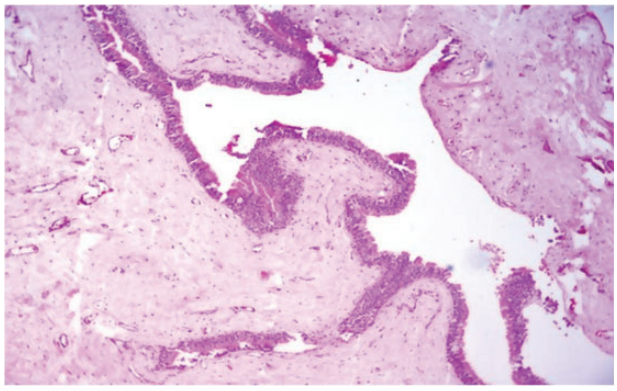

Figure 2: Hematoxylin–eosin stain of the biopsy showing fragments of respiratory epithelium with sub-epithelium showing mild chronic inflammation.

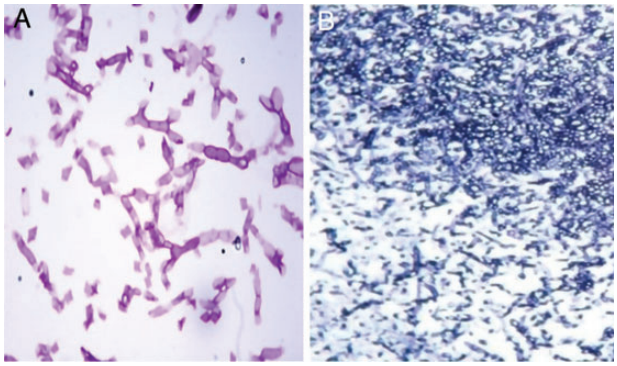

Figure 3: (**A**) Periodic acid-Schiff stain of the biopsy showing septate hyphae with dichotomous branching suggestive of *Aspergillus*. (**B**) Methanamine silver stain showing *Aspergillus* species.

mucosa, posterior ethmoid tissue near optic nerve and sphenoid sinus mucosa (Fig. 2) showed fungal hyphae (Fig. 3A and B) morphologically compatible with *Aspergillus species*.

He was subsequently started on injectible voriconazole which was continued for 10 days. Now the patient showed dramatic improvement in his headache which resolved completely in 5 more days. Right eye movements began. The patient was then discharged on oral voriconazole.

The patient was completely free of symptoms with completely resolved ophthalmoplegia with repeat T_2-weighted axial MRI revealing decrease in the size of the mass (Fig. 1D), after 7 months of oral voriconazole. But unfortunately, the patient had no recovery of vision in his right eye.

DISCUSSION

OAS might have many aetiologies like sarcoidosis, connective tissue disorders, orbital tumours, optic nerve gliomas, infraclinoid aneurysm of internal carotid artery and many more. Aspergillosis is the rarest of them [3]. Aryasit *et al.* [4] conducted a retrospective review of 50 patients diagnosed with OAS between 2001 and 2008 and found that the most frequent aetiology was neoplasia (48%) of which lymphoma was the

most common in that group. Fungal infections are the least common causes of OAS. Invasive aspergillosis in immunocompetent patients is rare. It occurs very often in the granulocytopenic patient and is potentially fatal. Predisposing factors include alcoholism, steroid therapy and diabetes mellitus [3].

The main routes of central nervous system (CNS) contamination are haematogenous dissemination from a distant primary source, mainly lungs, and contiguous spread from an adjacent focus such as orbit or paranasal sinuses [5]. OAS due to fungal infection is mostly a complication of fungal sinusitis [6]. Twenty-three per cent of CNS involvement appears with no extra-CNS source.

Presentation of OAS is usually variable and non-specific. Predominant symptoms include fever, focal neurological deficits, seizure and headache. Cerebrospinal fluid is rarely helpful for the diagnosis. Surgical debridement with antifungal is the preferred modality of treatment [7]. The overall case fatality rate is 58%, and it is highest for bone marrow transplant recipients (86.7%) and for patients with CNS or disseminated aspergillosis (88.1%) [8]. In patients with invasive aspergillosis, initial therapy with voriconazole is associated with better clinical response, improved survival and fewer severe side effects [9]. While fungal OAS is not usual in the absence of fungal sinusitis, temporal association with cataract surgery might be a coincidence in our case.

REFERENCES

1. Yeh S, Foroozan R. Orbital apex syndrome. *Curr Opin Ophthalmol* 2004;**15**:490–98.
2. Denning DW. Invasive aspergillosis. *Clin Infect Dis* 1998;**26**:781–805.
3. Bray WH, Giangiacomo J, Ide CH. Orbital apex syndrome. *Surg Ophthalmol* 1987;**32**:136–40.
4. Aryasit O, Preechawai P, Aui-Aree N. Clinical presentation, aetiology and prognosis of orbital apex syndrome. *Orbit* 2013;**32**:91–4.
5. Camarata PJ, Dunn DL, Farney AC, Parker RG, Seljeskog EL. Continual intracavitary administration of amphotericin B as an adjunct in the treatment of aspergillus brain abscess: case report and review of the literature. *Neurosurgery* 1992;**31**:575–79.
6. Thurtell MJ, Chiu AL, Goold LA, *et al.* Neuro-ophthalmology of invasive fungal sinusitis: 14 consecutive patients and a review of the literature. *Clin Exp Ophthalmol* 2013;**41**:567–76.
7. Luong ML, Husain S, Rotstein C. Pharmacoeconomic assessment of therapy for invasive aspergillosis. *Mycoses* 2013;**56**:338–49.
8. Lin SJ, Schranz J, Teutsch SM. Aspergillosis case-fatality rate: systematic review of the literature. *Clin Infect Dis* 2001;**32**:358–66.
9. Arakawa H, Suto C, Notani H, *et al.* Selection of the antifungal agent decides prognosis of invasive aspergillosis: case report of a successful outcome with voriconazole. *Int Ophthalmol* 2014;**34**:85–9.