CASE REPORT

Dangerous diplopia: A case of pansinusitis

Haizul IM, Umi Kalthum MN

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Authors:

Umi Kalthum Md Noh, MB; BCh; BAO, BA, MS (Ophth.)
(Corresponding author)
Department of Ophthalmology, Universiti Kebangsaan Malaysia, Jalan Yaacob Latiff, 56000 Cheras, Kuala Lumpur
Tel: +60391455981
Fax: +60391456673
Email: umi_fizul@yahoo.com

Haizul Ikhwan Murat, MD (UKM)
Department of Ophthalmology, Universiti Kebangsaan Malaysia, Jalan Yaacob Latiff, 56000 Cheras, Kuala Lumpur, Malaysia

Abstract:

Purpose:
To report a case of pansinusitis after swimming in a common pool

Case report:
Acute sinusitis is ranked the fifth-most common indication for antibiotic prescriptions.[2] Although sinusitis is often diagnosed clinically, cases that are resistant to conventional antibiotic therapy or recurrent cases may require diagnostic imaging in order to confirm the diagnosis. The complications of sinusitis, though rare, may lead to serious consequences if not diagnosed and treated early. We report a 33-year old man with pansinusitis presenting with a sudden onset of peripheral gaze diplopia associated with progressive frontal headache. His symptom resolved completely after he was given intravenous antibiotics and a nasal decongestant.

Case Report

A 33-year old man presented to the eye clinic with a sudden onset of double vision associated with progressive frontal headache for three weeks. He did not complain of any eye pain, fever, neurological symptoms, or reduction in visual acuity. A month ago, after swimming and diving in a common pool, he started having symptoms of sinusitis such as headache and nasal congestion (also known as pool sinusitis). The headache persisted though he completed a full five-day course of amoxicillin-clauvulanic acid (Augmentin) followed by one-week course of azithromycin. The patient was otherwise healthy.

Physical examination found eye abduction was limited to 80% bilaterally with corresponding diplopia. He had good visual acuity in both eyes without any sign of optic nerve dysfunction. The anterior segment examination was unremarkable. Both optic discs were pink without signs of swelling (Figure 1). The patient was afebrile and had stable vital signs.

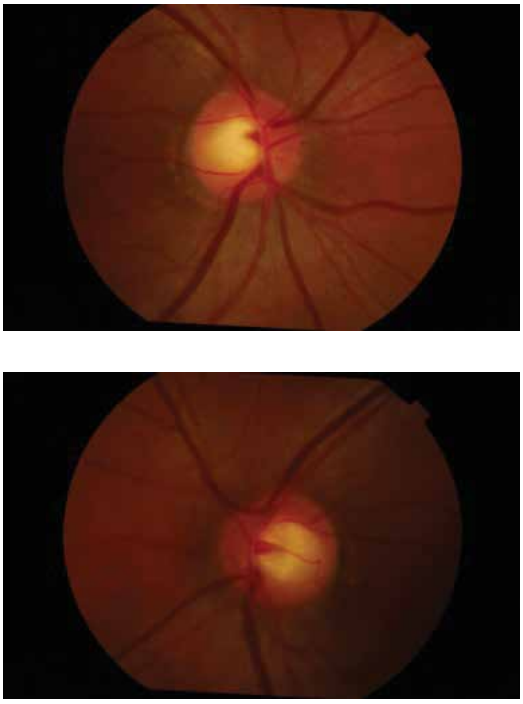

Figure 1.
Fundus photos show normal-looking optic discs without evidence of swelling

The blood cell count was normal, but the erythrocyte sedimentation rate was elevated at 72 mmol/h. Contrast-enhanced computed tomography (CECT) and magnetic resonance imaging (MRI) showed mucosal thickening of the anterior and posterior ethmoidal, sphenoid, and both maxillary sinuses, which were consistent with pansinusitis (Figure 2). No obvious brain abscess was noted.

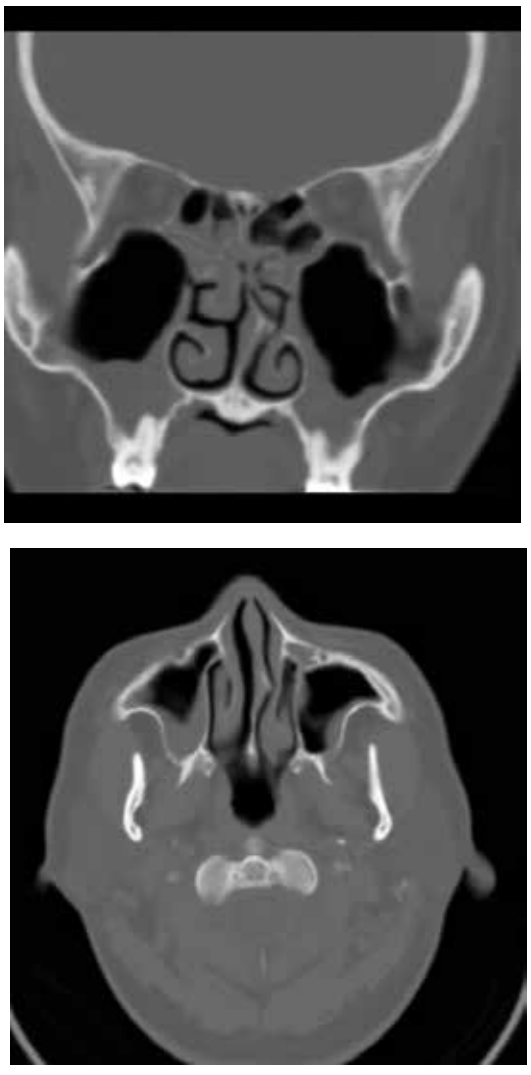

Figure 2.
Contrast enhanced computed topography scan of the brain and orbit shows mucosal thickening involving posterior ethmoidal sinus, sphenoid sinus and both maxillary sinuses.

The patient was referred to the otorhinolaryngology unit but endoscopic examination revealed no abnormality. He was later diagnosed with pansinusitis with secondary bilateral sixth cranial nerve palsy. The patient was admitted to the ward and given a course of intravenous antibiotics consisting of ceftriaxone (2g four times a day) and metronidazole (500 mg three times a day), along with antihistamines and oral dexamethasone (8 mg three times a day).

The results of the cerebrospinal fluid analysis were normal. There was no sign of fungal infection or tuberculosis. The patient's diplopia resolved completely by day 7 of antibiotic therapy; similarly, his extraocular muscle movements were restored. Repeated imaging of the paranasal sinuses showed that the sinusitis had resolved.

Discussion

Acute sinusitis is a common condition associated with significant morbidity. Sphenoid sinusitis in isolation is relatively uncommon and the condition is usually accompanied by pansinusitis.[3] Although acute sinusitis usually responds to antibiotic therapy, occasionally the inflammation may spread to the brain, which is a medical emergency. In order to prevent life-threatening consequences, early recognition of focal neurological deficits such as cranial nerve palsies and prompt referral to the otorhinolaryngologist are imperative. In general practice, cases of acute sinusitis that do not improve with two courses of conventional antibiotic treatment should alert physicians of the possibility of more severe complications. A study by Chee and colleagues found that patients with at least three documented episodes of sinusitis in the previous year had a higher likelihood of immune dysfunction, demonstrating the importance of early referrals in such cases.[4]

The incidence of sixth cranial nerve palsy varies according to age.[5] In young adults, sixth cranial nerve palsies are usually idiopathic or associated with a viral infection or meningitis.[6] The pathophysiology of sixth cranial nerve palsy may be related to a direct irritation of the nerve due to an increase in intracranial

pressure. This may occur as a result of trauma or a space-occupying lesion; hence, the term "false localising" sign. In viral infections of the central nervous system, the immune-complex reaction or the infection can induce an abduction deficit similar to that seen in sixth nerve palsy. The sphenoid sinus lies adjacent to many important structures such as the sixth cranial nerve, the dura mater, the cavernous sinus, and the internal carotid artery.[7] In this case, involvement of the sphenoid sinus may directly irritate the sixth cranial nerve, resulting in an abduction deficit. Although uncommon, cases of abducens nerve palsy in connection with sinusitis have been reported.[8,9]

The diagnosis of sinusitis is often based on clinical findings. However, in refractory or recurrent sinusitis, CT scan or MRI may aid in confirming the diagnosis and exclude potential life threatening complications. Delineating these structures radiographically allows proper evaluation prior to endoscopic surgery.[7]

The symptoms of sinusitis may be non-specific and varied. Headache, nasal congestion, fever, and visual disturbance are the most common presentations but they may occur in isolation, thus making the diagnosis challenging.[8] For instance, although fever occurs in half of the patients infected with sinusitis,[3] our patient presented with chronic frontal headache without fever. Such cases of pansinusitis must be treated with intravenous antibiotics and a combination of different antibiotics is preferred to monotherapy.

The role of steroids in the management of sinusitis is controversial. Additional steroids may aid in reducing inflammation but may also dampen immune response and exacerbate a primary infection. Williamson et al. found that neither antibiotics nor steroid nasal sprays were effective in the treatment of acute maxillary sinusitis.[9] Our patient's symptoms improved dramatically following systemic antibiotics and oral steroid treatment. In this case, the antibiotic therapy was initiated 48 hours prior to the steroid treatment.

Conclusion

Acute sinusitis is a common condition encountered by family physicians. However, the optimal approach to patient management may not always be easy to discern. Refractory cases may require radiological imaging to confirm the diagnosis and identify secondary complications. As reported here, pansinusitis may present as diplopia secondary to a sixth cranial nerve palsy. A combination of high-dose antibiotics with or without a steroid is necessary to treat patients with complicated sinusitis.

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