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Case Report

An Endoscopic Approach to Bilateral Orbital Cellulitis - A Case Report

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Abstract

Bacterial orbital cellulitis is a rare entity in adults. Very few literature mentions about bilaterality of infection. Acute bacterial sinusitis being the most common cause of Orbital cellulitis. The aim of this study is to highlight the need for early and prompt treatment to prevent ophthalmoplegia and blindness. A 36 year old male presented with bilateral eye swelling, pain, diplopia along with diminution of vision. CECT scan of paranasal sinus revealed bilateral eye axial proptosis. Patient underwent surgical drainage and Endoscopic decompression of both the orbits were done. Patient improved after surgery.

Keyword: Orbital Cellulitis; Endoscopic Sinus Surgery

Abbreviation

CECT: Contrast Enhanced Computed Tomography

Introduction

Orbital cellulitis is an infection of the ocular adnexal structures posterior to the orbital septum. Orbital cellulitis is a potential sight threatening infection. Acute bacterial sinusitis remains the most common cause of orbital cellulitis due to close proximity of paranasal sinuses around the orbit [1,2]. The close anatomic relation of the orbit to the paranasal sinuses predisposes to the contiguous spread of infection through the ophthalmic venous system, which freely anastomose with the facial, pterygoid, and cranial venous system. Retrograde spread of infection can lead to complications such cavernous sinus thrombosis, meningitis, brain abscess or death [3-5]. In the pre-antibiotic era, 20% of patients with periorbital cellulitis had permanent loss of vision and 17% died from central nervous system complications [6]. Today, despite antimicrobial and surgical management, 15% to 30% of patients with an orbital cellulitis develop various visual sequelae [7]. We describe a peculiar case of bilateral orbital cellulitis in an immunocompetent adult with favourable outcome.

Case Report

A 36 year old male with bilateral eye swelling, pain, diplopia for 4 days, right eye to start with followed by left eye. There was gradual diminution of vision (Right > Left) for 2 days. There was no history of trauma. Examination revealed right eye vision as Hand Movements close to face and that of left eye as Hand movements at 1 meter. The external examination of both eyes showed painful ophthalmoplegia with restriction of ocular movements in all directions. Proptosis in both eyes was axial with diffuse swelling of both upper and lower lids, chemosis of the bulbar conjunctiva. Cornea was clear with sluggish pupillary reactions. Fundus examination in right eye showed severe papilledema while mild to moderate papilledema in left eye. Patient had high grade fever, was mildly toxic with elevated blood counts (WBC). CECT scan was suggestive of well defined, oval hypodense lesions located in medial, lateral, inferior aspects of both orbits showing enhancement with axial proptosis (R > L). There was displacement of medial and inferior recti muscles laterally. Paranasal sinuses were normal.

Patient was put on antibiotics and steroids before surgical intervention. Orbital decompression by Endoscopic Sinus Surgery was contemplated in view of rapid deterioration of vision. The procedure was done under general anaesthesia. Both the nasal cavities were packed with oxymetazoline HCl soaked cotton for several minutes followed by local infiltration with 0.5% lidocaine with 1:200000 adrenaline. In right nasal cavity, middle turbinate was medialized and uncinate process was removed. A middle meatus maxillary antrostomy and complete ethmoidectomy was done

on right side. Medial orbital wall was removed by removing lamina papyracea from superior aspect of maxillary ostium to superolateral part of roof of sphenoid sinus. Swab from suspected region was sent for culture-sensitivity. Similar procedure was done on left side. After hemostasis ribbon gauze soaked in antibiotic ointment was packed in both nasal cavities. On 2nd day nasal packs were removed. The orbital swelling resolved dramatically by 3rd postoperative day and the visual acuity was normal in both eyes on 5th postoperative day (6/6, N6). Fundus examination of both the eyes was normal with complete resolvement of papilledema. Patient was discharged on 6th post-operative day.

Discussion

Orbital cellulitis is a relatively uncommon infection. Clinically it manifests as painful swelling of eyelids, chemosis, decreased ocular motility, diplopia, and proptosis. It can result in blindness, cavernous sinus thrombosis, meningitis and death [6,9]. Predisposing factors for orbital cellulitis are paranasal sinus infections, trauma, foreign body, dacryocystitis and dental infection. Paranasal sinus infection is most commonly responsible in development of orbital cellulitis. Route of spread of infection is local spread or haematogenous spreads [10-12]. Evidence of orbital inflammation, manifesting as chemosis, ophthalmoplegia and proptosis are important signs differentiating orbital cellulitis from pre-septal cellulitis [6,13]. The most common micro-organisms causing Orbital cellulitis are *Staphylococcus aureus*, group A Streptococci, nontypable *Haemophilus influenzae, Moraxella catarrhalis* and anaerobes.

Chandler and colleagues [6] modified a system devised by Smith and Spencer [8] in 1948 for the classification of the orbital complications of acute sinusitis. These were:

- Group I: Inflammatory oedema. Now more commonly termed preseptal cellulitis.
- Group II: Orbital cellulitis. Orbital inflammation with no discrete collection.
- Group III: Subperiosteal abscess. Orbital cellulitis with localised collection between the bony orbit and periorbita.
- Group IV: Orbital abscess. Orbital cellulitis with localised intra-orbital collection.
- Group V: Cavernous sinus thrombosis. Orbital cellulitis with infective thrombophlebitis extending into the cavernous sinus system.

CT Scanning remains the hallmark of investigation. MRI is indicated for assessing complications of orbital cellulitis including cavernous sinus thrombosis, meningitis, cerebritis and if CT scan is contraindicated [10,11]. Medical management includes broad spectrum antibiotic (injectable) along with anti-inflammatory and analgesics. Later antibiotics may be switched depending on the culture sensitivity report. However, in majority surgical intervention is not required, as it was suggested earlier. Puri and Innes [14] mentions that timely surgical debridement can decrease the mortality rate to 16 - 36% and delay in surgical therapy increases mortality to 73%. According to Potter., *et al*. [15] only 36% of patient required surgical intervention out of 78 diagnosed cases. Indication of surgical intervention is non-resolving infection on medical management, demonstration of abscess and presence of complication like visual compromise [11,15,16].

An endoscopic approach is always preferred if orbital cellulitis is secondary to sinus disease. The surgical management includes the urgent nasal endoscopic wide medial and inferior orbit decompression. The nasal endoscopic approach is safe and quick way of addressing sinus infection. The medial decompression is achieved by removal of lamina papyracea, part of superolateral part of sphenoid sinus wall and inferiomedial wall of the orbit so that orbital contents can herniated into nasal cavity, sphenoid sinus and maxillary sinus.

Conclusion

Orbital cellulitis is potentially a dreaded complication of sinusitis. Bilateral involvement is a rare and serious condition. A prompt recognition and treatment is necessary to avoid complication and death [6]. In present case patient recovered fully with no residual vision loss.

Aggressive medical and surgical management via Endoscopic approach is key in effective treatment of a potentially fatal condition.

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