

CASE REPORT

Orbital Cellulitis from Untreated Conjunctival Wound

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ABSTRAK

Selulitis orbital merupakan jangkitan tisu di sekitar mata di dalam ruangan orbit yang termasuk saraf mata. Ia boleh menyebabkan komplikasi yang membawa kematian sekiranya merebak melalui saraf mata dan ke otak. Penyebab utama jangkitan adalah termasuk penebaran jangkitan sinusitis dari ruangan paranasal atau melalui selulitis preseptal. Kes ini menggambarkan jangkitan di luar kebiasaan mengenai jangkitan orbital selulitis yang berlaku akibat luka torehan pada konjunktiva mata yang disebabkan oleh kemalangan. Rawatan antibiotik sistemik yang agresif mengurangkan risiko komplikasi penglihatan. Kesemua luka pada atau sekeliling mata haruslah dirawat dengan sebaiknya bagi mengelakkan berlakunya komplikasi yang membahayakan.

Kata kunci: trombosis sinus kavernous, kemosis, konjunktiva, selulitis orbital, jangkitan kuman

ABSTRACT

Orbital cellulitis is a potential blinding condition resulting from infection of the orbital contents, including the optic nerve. It may be fatal in cases with extension into the optic canal and subsequently the brain. Common aetiologies include extension of infection from paranasal sinusitis or preseptal cellulitis. This case report depicts the unusual occurrence of orbital cellulitis following a trivial superficial conjunctiva laceration wound from a motor-vehicle accident. Aggressive treatment with systemic antibiotics resulted in good visual outcome. All wound on or around the globe must be diligently treated to prevent such detrimental complication.

Keywords: cavernous sinus thrombosis, chemosis, conjunctiva, orbital cellulitis, wound infection

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INTRODUCTION

Orbital cellulitis, an infection affecting the soft tissues of the orbit, includes the fat and muscles within the bony orbit posterior to the orbital septum (Mallika et al. 2011). Delayed treatment may result in blindness, cavernous sinus thrombosis, meningitis, cerebral abscess and even death (Bergin & Wright 1986). Early diagnosis coupled with immediate and aggressive medical treatment is important in preventing these devastating outcomes of the disease (Reza et al. 2013).

CASE REPORT

A 30-year-old gentleman sustained multiple superficial facial injuries and a conjunctival laceration wound in the right eye following a motor vehicle accident. Dressing was done on his facial wounds but he failed to receive antibiotic eye drops for the conjunctival wound. Four days later, he presented to the eye clinic complaining of right eye swelling and redness, associated with blur vision, diplopia and mild pain on eye movement. Examination revealed a mechanical ptosis of the right eye, mild proptosis, conjunctival injection and chemosis. A linear conjunctival laceration wound was found with surrounding slough, necrotic tissue and pus collection within the wound (Figure 1). Extraocular muscle movements were restricted in all gazes (Figure 1). However, optic nerve functions were preserved. Visual acuity in the right eye was 6/24 correctable with pinhole to 6/18, while the left eye was 6/6. There was no relative afferent pupillary defect (RAPD). Fundus examination

was normal and the optic disc was not swollen. An urgent computed tomography (CT) scan of the orbit and paranasal sinuses revealed thickening of the pre-septal soft tissue and sclera, dilated superior ophthalmic vein and a possible slow flow carotid-cavernous fistula. There was also sinusitis involving both ethmoidal, maxillary and the left frontal sinus. There was no orbital fracture or evidence of cavernous sinus thrombosis (Figure 2). He was started on intravenous Ceftriaxone 2 gm daily with intravenous Metronidazole 500 mg three times daily for one week. Excision of the necrotic conjunctival tissue was done few days later. His condition improved with treatment and he was discharged with oral Cefuroxime and Metronidazole for another week. Upon follow up a week later, the conjunctival chemosis resolved with only mild injection of the conjunctiva. A repeat CT scan brain and orbit showed improvement of proptosis with normal calibre of ophthalmic vein and no evidence to suggest a slow flow carotid-cavernous fistula.

DISCUSSION

Orbital cellulitis is the infection and inflammation of the orbital soft tissues extending beyond the orbital septum. Risk factors for this condition include the spread of infection from the sinus cavity, eyelids, face, dental abscess, foreign bodies or distant sources by hematogenous spread (Chaudhry et al. 2012). There are no reports of orbital cellulitis from direct inoculation from an untreated conjunctival laceration wound as seen in this patient.



Figure 1: Pictures of conjunctival necrotic tissue and pus collection a) Restriction of elevation b) Restriction of depression c) Restriction of adduction.

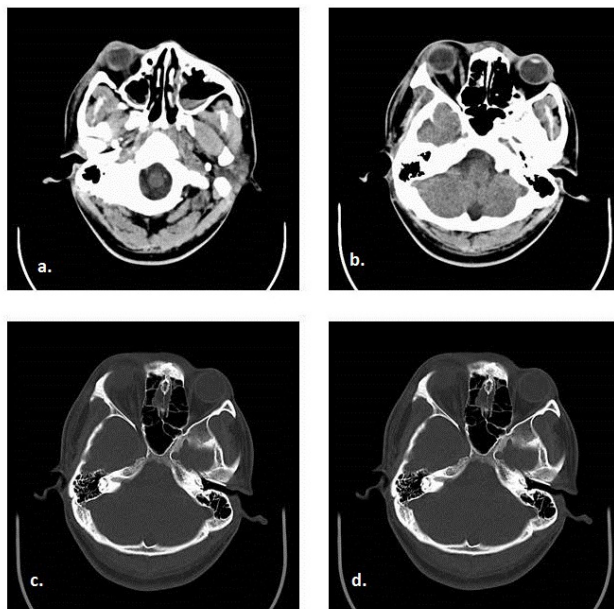


Figure 2: CT scan brain and orbit (axial view); a) and b) Mild Proptosis with mild scleral thickening, c) and d) Slight mucosal thickening of right ethmoid sinus with an intact medial orbital wall (lamina papyracea)

Anatomically, the conjunctiva is a loosely adherent layer of mucous membrane onto the underlying episcleral layer. At the conjunctival fornices, it deflects onto itself to cover the inner side of the eyelid. A laceration wound on the conjunctiva might have allowed infection to track through the loose adherence and spread into

the orbital space. It is also possible that the infection may have extended from sinusitis in the ethmoidal sinuses. However, this is less likely in this patient as there was no evidence of a breach in the lamina papyracea.

Common early presenting symptoms of orbital cellulitis include eyelid oedema, pain with eye movement,

and ophthalmoplegia (Lee & Yen 2011). Late signs like decreased vision and proptosis indicate vision threatening complications from ischaemic, compressive or infective optic neuropathy (Bluestone et al. 2002). Intracranial extension is a lethal sequelae leading to meningitis and cavernous sinus thrombosis which may result in bilateral blindness (Thakar et al. 2000). Determining the source of infection with imaging is also important as drainage is sometimes necessary to expedite recovery especially in cases with intraorbital abscess collection (Bluestone et al. 2002).

The classification of orbital cellulitis was initially set forth by Hubert in 1937 and was later modified by Chandler et al. in 1970 into five stages (Thakar et al. 2000). Stage I is described as preseptal cellulitis with inflammatory oedema of the eyelid. Stage II is a true orbital cellulitis with diffuse oedema of the orbital contents. Stage III is the presence of subperiosteal abscess between the periorbita and the bony orbital wall, usually at the medial or superolateral aspect of the orbit. Stage IV is when orbital abscess occurs with abscess collection within the orbital tissues. Cavernous sinus thrombosis is seen in stage V (Thakar et al. 2000).

Medical therapy is the mainstay of treatment (Thakar et al. 2000). Choosing the appropriate antibiotics is crucial according to the sensitivity pattern. A combination therapy with good penetration into the blood-brain barrier such as a third generation Cephalosporin and Metronidazole for greater coverage on gram-negative

anaerobes is preferred in trauma cases as the underlying organism is likely to be of multiple types (Thakar et al. 2000).

CONCLUSION

Immediate and aggressive therapy is important in treating orbital cellulitis to prevent devastating sequelae. Thus, it is important for primary care and emergency physicians to identify the predisposing factors as early referrals to an ophthalmologist can save a patient's vision and life. Sometimes, a small conjunctival laceration can be missed as a simple subconjunctival haemorrhage. Therefore, a thorough eye check should be done to exclude any possible external ocular soft tissue injury and an ophthalmology assessment might be sought for suspicious cases.

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