Isolated Traumatic Orbital Mucocele: Report A Case and Brief Review of Literature

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Abstract

***Purpose*:** To report a rare case of isolated orbital mucocele after trauma

***Case report*:** A 45-year-old man presented with swelling in the left orbital region. The only significant event in his medical history was trauma which occurred 25 years previously during the Iran-Iraq war. Computed tomography revealed a left medial intraorbital cystic mass lesion. The cystic mass was completely removed through the transcaruncular approach. The cystic mass was isolated in the orbital cavity. Histological examination confirmed the diagnosis of mucocele.

***Conclusion*:** Generally, mucocele is within the sinus cavities or its origin is from sinus cavity, but in the present case, the old trauma was the most likely cause of the mucocele that had caused sinus epithelium take access to the orbital cavity and grow there.

***Keywords*:** Orbital Mucocele, Isolated Mucocele, Traumatic Mucocele

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Introduction

The cystic structures with pseudostratified ciliated columnar epithelium are called mucoceles. These are resulted from obstruction of the sinus duct. They could expand and invade the orbital walls or the cranium, so the progression can be associated with morbidity and mortality. Their usual origin is the frontal or ethmoidal sinuses. The distinctive findings on imaging can be confirmed the diagnosis preoperatively. Evacuation of the mucocele and reestablishment of drainage of the affected sinus or obliteration of the sinus by mucosal stripping and packing with bone or fat is the surgical treatment of them.[1,2]

Although they usually have a communication with one of the periorbital sinuses, but sometimes they can present without any connection to sinuses.[3,4] Here we present an isolated orbital mucocele presenting after trauma.

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This manuscript data has been applied with taking informed consent from patients.

Case report

A 45-year-old man presented with swelling of left lower eyelid from 1.5 months ago. There were pain and mild erythema over it (Figure 1). He had a history of stricken quiver to the left orbit 25 years ago at the Iran-Iraq war and his eye become blind since that time probably due to traumatic optic neuropathy. His left eye had proptosis and large angle exotropia with limited movement in all directions which have been present after trauma of the left eye since 25 years ago. The right eye was normal with $^{20}/_{20}$ vision.

The orbital CT-scan showed the soft tissue swelling in the left lower eyelid due to abscess formation according to his clinical manifestations. The drainage of this abscess was done by transcutaneous incision and systemic antibiotics were prescribed. CT-scan also revealed inferomedial wall fracture with well-defined encapsulated orbital mass that pushed the bony medial wall. It was isodense, non-homogenous and retrobulbar (Figure 2). At the lateral orbital wall, the foreign body was seen. The patient underwent trans-caruncular medial orbitotomy. After dissection posterior to lacrimal crest a large mass exposed. It had severe adhesion to the medial rectus. After trying to dissect it fully, the cyst wall was opened and its purulent material was removed. After complete removal of the cyst material, the cyst wall was removed. Pathology report showed a well delineated cavity containing mucinous material with pseudostratifiedciliated columnar epithelium characteristic of mucocele.

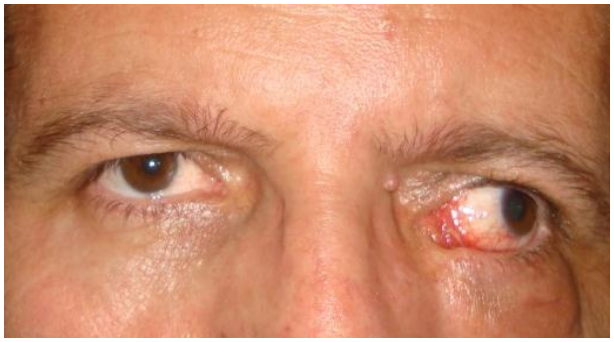
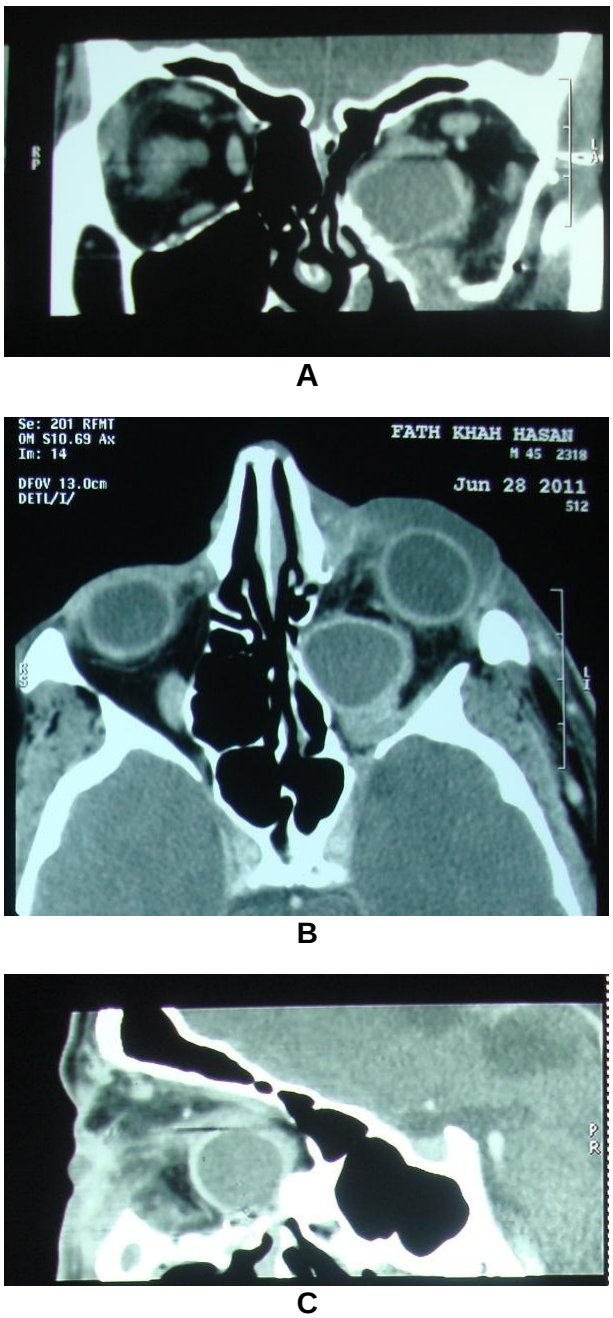


Figure 1. Photograph of the patient showing lower eyelid swelling and large angle exotropi



A

B

C

Figure 2. Coronal (A), axial (B) and sagital (C) CT-scan of the patient showing a well defined cystic mass at the medial wall of the left orbit that pushed the globe anterolaterally. Medial bowing of the left medial wall due to long standing mass could be seen also. Swelling of the lower eyelid could be seen at the axial view (B).

Discussion

The inflammation and obstruction of sinus duct result in accumulation of mucus secretions and mucocele formation. The predisposing factors of the orbital mucocele might be inflammation (e.g. chronic sinusitis,

polyps), obstructive mass (e.g. osteosis), trauma (e.g. orbital wall fracture), prior operation (e.g. open or endoscopic sinus surgery) or congenital anomalies.[3,4] Linuma et al[5] reported 2 cases of fronto-ethmoidal mucoceles due to trauma at 23 and 14 years before, respectively which had been occurred after medial wall fracture. Diaz and Schmidt[6] depicted the ethmoidal mucocele presenting an orbital mass in an 11-year-old boy with prior endoscopic sinus drainage for subperiosteal abscess 9 years ago.

Isolated orbital mucocele has been reported by few authors. They usually present a history of trauma or infection causing sinus epithelium access to the orbital area through the opening in the orbital walls as was detected in our case. Asamoto et al[3] reported a 46-year-old man with orbital mass and history of minor trauma during ice hockey 15 years ago. It was removed totally through sub-frontal extradural approach. It had not any communication with paranasal sinuses. The orbital walls were intact. Histology confirmed the mucocele. They suggested that this case of mucocele was caused by mucous aberration due to trauma. Unlike to other reports, Baysal et al[4] reported an isolated orbital mucocele in a 55-year-old man without history of trauma, operation, infection or any other predisposing factors. The left orbital mass was excised endoscopically. They recommended endoscopic approach primarily if the mass is not massive or aggressive.

The mucoceles have different signs and symptoms including chronic headache, retrobulbar pain, diplopia, nasal obstruction and proptosis. The expansion and invasion of the mucoceles cause several complications such as ocular or cranial nerve palsies.[2,7] Pineles et al[8] showed left eye superior oblique weakness with limitation of elevation in adduction caused by orbital mucocele at the left superomedial orbital region. Some authors reported isolated oculomotor nerve palsy without pupil involvement resulted in diplopia and ptosis in sinus mucocele.[7,9,10] In addition, frontal mucocele with isolated unilateral abducents nerve palsy in a 51 year-old-man was seen by Karl et al.[11] The mucocele was removed via functional endoscopic sinus surgery, after surgery the limitation in abduction was improved.

For treatment of sinu-orbital mucoceles, some authors preferred primary endoscopic technique, but only small, localized mucoceles without extensive invasion or destruction could be treated initially via endoscopy. Large mucoceles with facial bones instability, dangerous complications and aggression to the adjacent structures such as eye and brain should be removed by wide and open techniques.[2] Shah et al[12] reported 5 patients with frontoethmoidal mucoceles and orbital extension. They managed them successfully by primary endoscopic sinus approaches.[12] Diaz and Schmidt[6] treated the ethmoidal mucocele with removal of the three walls (anterior, inferior and medial) of the mucocele via endoscope in an 11-year-old child. They concluded that the goal of surgery is to marsupialize it for good drainage and preventing recurrence. They recommended endoscopic nasal surgery in children.[6] On the other hand Gupta et al[13] represented a 52-year-old lady with a frontal sinus mucopyelocele with intracranial and intraorbital extension. It was excised surgically by external approach. The symptoms (proptosis, diplopia and diminution of vision) and signs subsided entirely within a week. They recommended that early diagnosis and treatment of mucoceles is important for avoidance of invasion and destruction of orbital or intracranial structures.[13] Weitzel et al[2] reported five patients with combined fronto-orbital mucoceles that extended intracranialy. These were managed via transconjunctival approach open technique. The complete simultaneously combined removal of mucoceles with reconstruction of orbitocranial defects was done for all of them, in a single stage.[2]

Our case presented some new points that should be emphasized: this case had an isolated mucocele that had excisted since 25 years ago. Our patient had a history of quiver 25 years ago that destructed the medial orbital wall. It seems that at the time of trauma, sinus epithelium has taken access to the orbit and its growth and accumulation of mucous secretions has caused the orbital pathological finding of this case. As it had caused a complete restriction and adherence of the eye, the endoscopic approach may not be recommended in such a case which could traumatize the orbital contents.

Conclusion

Careful history taking and examinations of a patient with orbital problem following orbital trauma and demanding CT or MRI of the orbit may help to early diagnosis and treatment of the lesion.

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