Case Report

CONJUNCTIVAL EMPHYSEMA– IS IT TRYLY BENIGN?

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ABSTRACT

Conjunctival emphysema is a condition where the air enters the conjunctiva due to its laxity, mostly associated with fracture of the orbital wall. A 21-year-old male complained of bilateral eyelid swelling after a fist fight. He felt 'pops' over the left eye. He complained of reduced left vision and pain over the cheek. On examination, noted bilateral lids haematoma with reduced visual acuity. Air noted under the left conjunctiva. Intraocular pressure was 16 mm Hg OD and 21 mm Hg OS. Both fundi were normal. Facial radiographs showed air in the anterior soft tissues with evidence of left inferior orbital wall fracture. Patient was discharged with steroid eye drops,1 antiglaucoma medication OS, cold compression for both eyelids and to avoid blowing the nose. One week post trauma, patient visual acuity, intraocular pressure was normal and the emphysema subsided spontaneously. Conjunctival emphysema is a self-limiting condition that resolves spontaneously within days to weeks. The common cause is trauma to the orbit, however it may occur by pulmonary barotrauma, operation, infection or spontaneously. Cautious observation is the main treatment necessary unless the underlying cause is an infected sinus, whereby prophylactic oral antibiotics are required. If the conjunctival emphysema worsens, it may lead to orbital emphysema. Intraorbital pressure may increase as air accumulates within the orbit and lead to loss of vision. In these cases, orbital decompression is needed. Conjunctival emphysema can lead to grave consequences if not evaluated carefully.

INTRODUCTION

Conjunctival emphysema is a condition whereby air is trapped in the loose connective tissue in the orbit. It is an uncommon condition and primarily associated with fracture of the orbital wall that allows air to enter the orbit. This air often ends up under the conjunctiva due to its laxity [1,2]. Conjunctival emphysema can cause severe complications [1]. For instance, it can cause loss of visual acuity, optic atrophy, raised intraocular pressure, diplopia and ocular surface disease [3]. However, it is usually benign and has an uneventful course. Therefore most cases can be managed conservatively, as shown in this case.

PRESENTATION OF CASE

A healthy 21-year-old male was brought to the emergency department for bilateral eyelid swelling after a fistfight. He felt several 'pops' over the left eye during the fistfight. He also complained of reduced left vision and pain over the left cheekbone. The best -corrected vision was 6/9 and 6/18 in the right and left eye respectively. Near vision was normal in both eye; N6. On examination, there was no relative afferent pupillary defect. He had bilateral upper lids and left lower lids haematoma. Lagophthalmos was observed in the left eye due to the bulge in the conjunctiva. Air was present under the left conjunctiva involving the superior temporal region (Figure 1). The left cornea had generalised punctate epithelial erosions. However, there was no evidence of conjunctival laceration, proptosis, enophthalmos or restriction of extraocular muscle movement. The intraocular pressure (IOP) was 16 mm Hg and 21 mm Hg in the right and left eye. Both fundi were normal, and the lenses were clear.

Skull X-ray AP view revealed air in the anterior soft tissues and left inferior orbital wall fracture, evidenced by fluid levels in both maxillary sinus (Figure 2). The patient was discharged with topical dexamethasone 0.1%, one antiglaucoma medication (Gutt Timolol 0.5%), intensive lubricants for the left eye, cold compression for both eyelids and was advised to avoid blowing the nose.

One week post-trauma, his visual acuity improved. The right BCVA was 6/9, while the left BCVA was 6/12 . The intraocular pressure was 12mmHg in both eyes. The conjunctival emphysema had subsided spontaneously.

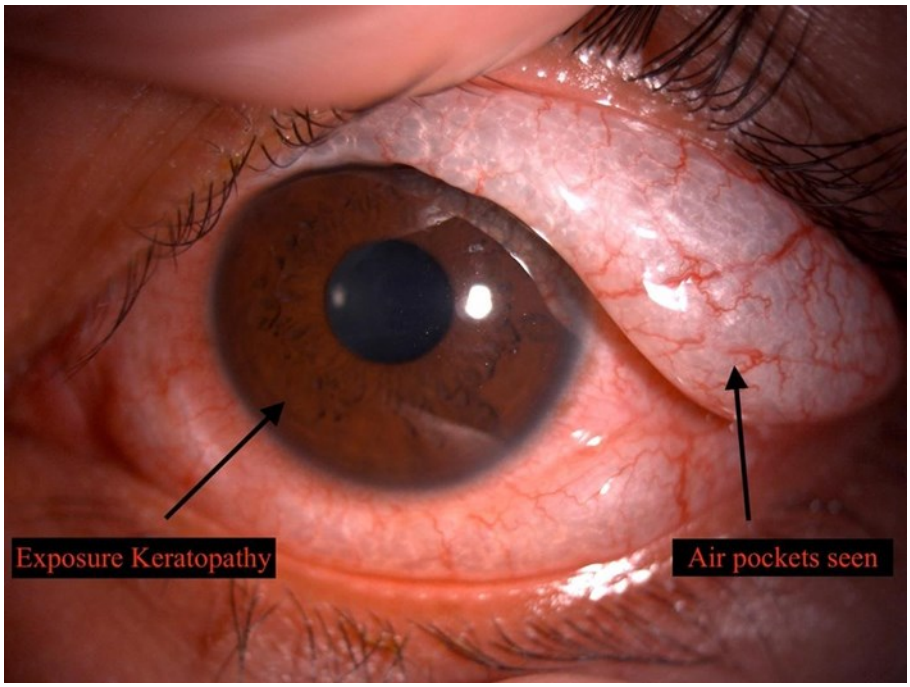

Figure 1: Anterior segment photograph: Left subconjunctival air pocket and exposure keratoplasty

Figure 2: Skull X-ray : bilateral maxillary air-fluid level

DISCUSSION

The commonest cause of conjunctival emphysema is trauma to the orbit. The prevalence of orbital emphysema due to blunt trauma to the orbit, face or head is about 63% [4]. Air enters the loose tissue planes of the orbit and subcutaneous soft tissues due to disruption of the periosteum of orbital walls. Presumably, in this case, there was a breach in the integrity of the inferior orbital wall that leads to probable communication between the maxillary sinus and the conjunctival planes [5]. Conjunctival emphysema may also occur in pulmonary barotrauma, eye surgeries, mechanical ventilation, infection or even spontaneously [6].

Ocular Trauma Score (OTS) was developed by the Ocular Trauma Classification Group to predict the visual outcome of patients in both open and closed globe eye injuries during their sixth-month follow-up [7]. In this case, the OTS score was 90; hence the estimated probability of visual acuity equal or better than 6/12 at sixth-month follow-up is 74%.

Conjunctival emphysema is usually a self-limiting condition that resolves spontaneously within days to weeks and requires no specific treatment [4,8]. Complication such as raised intraocular pressure is more commonly seen in orbital emphysema rather than in conjunctival emphysema [3,9]. A prolonged increase in intraocular pressure can lead to optic nerve damage [9]. Therefore, treatment should be instituted early.

In our case, due to the accumulation of air in the conjunctiva, the patient had mildly raised intraocular pressure and received short-term antiglaucoma medications. In addition, the patient also developed generalised exposure keratopathy due to lagophthalmos, which was treated with intensive lubricants.

The mainstay of treatment for conjunctival emphysema is cautious observation and proactively looking for complications with close follow-up initially. Treatment is usually conservative. The role of antibiotics was not clear unless there is an infected sinus or suspicion of infection for which treatment with oral antibiotics is required [1].

Option of drainage of trapped air in the subcutaneous tissue should be considered when there are signs of relative afferent pupillary defect, restricted ocular motility, sluggish pupillary reaction, disc oedema or decreased visual acuity. However, the clinician should bear in mind that this may subject the patient to risk of infection [2]. In this case, we did not opt for drainage of the trapped air as the patient did not have signs of compressive optic neuropathy due to the conjunctival emphysema.

Complication such as compressive optic neuropathy is indicated by the presence of relative afferent pupillary defect, which was not present in this patient. Compressive optic neuropathy requires urgent surgical interventions such as lateral canthotomy, cantholysis or orbital decompression [10]. Patient was advised to avoid blowing his nose to prevent further complications. Blowing of the nose can cause increased intranasal pressure and perforation in lamina papyracea, allowing air to enter the orbit and may worsen the conjunctival emphysema [1].

A favourable outcome, such as in this case, is indicated by improvement of the visual acuity and reduction of the intraocular pressure in the affected eye.

CONCLUSION

Conjunctival emphysema is a relatively benign condition. However, it may lead to grave consequences if not properly evaluated and treated accordingly.

REFERENCES

1. Mohan, B. & Singh, K.P. Bilateral subcutaneous emphysema of the orbits following nose blowing. *J Laryngol Otol* **115**, 319-320 (2001).
2. Shah, N. Spontaneous subcutaneous orbital emphysema following forceful nose blowing: treatment options. *Indian J Ophthalmol* **55**, 395 (2007).
3. Ababneh, O.H. Orbital, subconjunctival, and subcutaneous emphysema after an orbital floor fracture. *Clin Ophthalmol* **7**, 1077-1079 (2013).
4. Lee, H.J., Jilani, M., Frohman, L. & Baker, S. CT of orbital trauma. *Emerg Radiol* **10**, 168-172 (2004).
5. Reeves, D.L., Lucarelli, M.J. & Rose, J.G., Jr. Severe subcutaneous emphysema following orbital blowout fracture. *Ophthalmic Plast Reconstr Surg* **21**, 465-467 (2005).
6. Biger, Y. & Abulafia, C. Subconjunctival emphysema due to trauma by compressed air tube. *Br J Ophthalmol* **70**, 227-228 (1986).
7. Scott, R. The Ocular Trauma Score. *Community Eye Health* **28**, 44-45 (2015).
8. Moon, H., Kim, Y., Wi, J.M. & Chi, M. Morphological characteristics and clinical manifestations of orbital emphysema caused by isolated medial orbital wall fractures. *Eye (Lond)* **30**, 582 -587 (2016).
9. Carrim, Z.I., Anderson, I.W. & Kyle, P.M. Traumatic orbital compartment syndrome: importance of prompt recognition and management. *Eur J Emerg Med* **14**, 174-176 (2007).
10. Chak, G., Joseph, J.M. & Tao, J.P. Needle decompression of acute orbital emphysema: case report with video. *Br J Ophthalmol* **96**, 1346-1347, 1360 (2012).