

Orbital Emphysema Following a Forceful Blowing: A Case Report

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Abstract

Orbital emphysema is a benign condition around the orbit as a result of subcutaneous air accumulation. It can occur as results of directly or indirectly trauma of the face. Although orbital emphysema is usually self-limited and resolves spontaneously, it assumes greater importance because of the possibility of visual complications due to the compartment syndrome and related orbital injection. Our patient was a 35 years old male. He presented with sudden and painful onset of left periorbital swelling following a powerful blowing of the nose. CT scan of the paranasal sinuses showed fracture which included the lamina papyrcea. We decided not to perform needle aspiration so outpatient treatment was provided (Ice-pach application, lay-down rest to the pathological side avoidance of nose blowing and sneezing were advised. Empiric antibiotic, nasal decongestant and non-steroidal antiinflammatory drug treatment were prescribed. Twenty-four hours later, nasal bleeding had stopped and ocular assesment was normal. Two weeks later orbital emphysema had completely resolved.

Key Words: Orbital emphysema, compartment syndrome, visual impairment, decompression.

Introduction

Orbital emphysema is the abnormal presence of air in the loose subcutaneous tissues of the orbit¹. It is a benign condition which is caused by trauma in the lamina papyrcea or the orbital floor. If orbital emphysema is noted, the patient should be told to avoid blowing, sneezing, coughing or any valsalva maneuver. Prophylactic antibiotics should be used to prevent infection. Lateral canthotomy and cantholysis are the choices for decompression therapy. These methods can be performed under local anaesthesia and they carry minimal risk and complication rate for the patient. In this case report.

It is usually self-limited phenomena². It may very rarely cause permanent ischemic vision loss. In this presented case report, we describe a patient with history of no trauma who developed orbital emphysema following powerful nose blowing. The aim of this case report is to emphasize the recognition of ocular emphysema.

Case

Our patient was a 35 years old male. He presented with sudden and painful onset of left periorbital swelling following a powerful blowing of the nose (Figure 1A, 1B). There was history of no facial trauma.

There was a non-sensitive periorbital swelling, ptosis

and minimal conjunctival congestion of the left eye. His visual acuity, biomicroscopic and fundus examination was normal. The ocular movements, pupillary reactions were within normal limits. CT scan of the paranasal sinuses showed fracture which included the lamina papyrcea. Compressive or tension orbital emphysema can lead to serious vision loss but this situation was not present in our patient. Therefore we decided not to perform needle aspiration. His physical and rinolaringolojik examination was normal. This examinations were accompanied by CT which revealed submassive subcutaneous emphysema, extraconal air in the superior orbit without extension to the optic foramen, and a fracture of the medial wall of the left orbit (Figure 2A, 2B).

There was no significant ocular damage. Therefore, outpatient treatment was arranged and ice application, empirical antibiotics, nasal decongestants and nonsteroidal anti-inflammatory drugs were recommended. After 24 hours, nasal discharge was decreased and ocular evaluation was normal, orbital emphysema was completely resolved after two weeks.

Discussion

Orbital emphysema has been rarely reported with indirect trauma or in the absence of trauma. The clinical signs of orbital emphysema, accompanied by vision impairment require an emergency computerized tomography (CT) scan to

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Figure 1A: It was observed that the patient had swelling around the left eye and there was no finding to suggest a bone fracture.



Figure 1B: The right eye was normal

determine the cause and to assess the extent of the intraorbital air. The medial orbital wall (lamina papyrea) which is known theoretically to be the weakest point of the orbital wall, has been reported as the most common site of pure orbital fractures and passage of air from paranasal sinuses in most reports, trauma is the most common underlying etiology in orbital emphysema and reported injuries were usually unilateral, rarely bilateral^{1,6}.

Other causes include powerful nose-blowing, infection after surgery, sneezing, pressure changes during air travel,

extreme accidents, and sport^{2,3,4}.

While blunt trauma resulting in disruption of the medial orbital wall is the most common cause of OE, there are an additional 25 underlying etiologies reported in the current literature. The pathophysiology of OE is somewhat dependent on the underlying etiology but usually involves a one-way ball valve mechanism so that air can enter orbit. When enough air enters the orbit, complications secondary to increased intraocular pressure can occur, including central retinal artery occlusion and constricting optic neuropathy. Typically mild cases of OE are observed and most resolve within 7 to 10 days. Moderate cases are usually treated by cantolysis with lateral canthotomy and possible needle decompression¹².

Similar to the literature in this presented case report, the patient presented the usual type of blow-out fracture in the medial orbital wall without any direct trauma history^{5,7,10}.

Heerfordt described three types of ocular emphysema. Type 1, called palpebral or preseptal emphysema, is caused

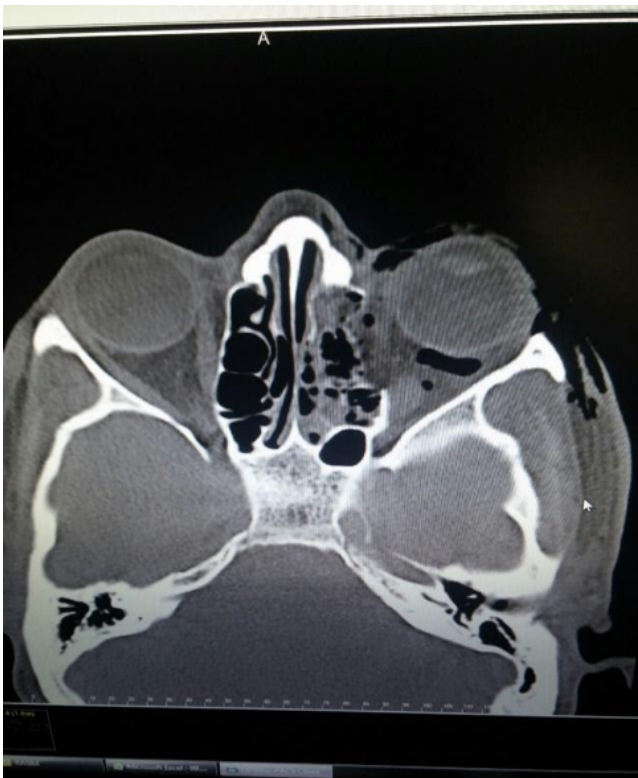


Figure 2A: CT scan of the paranasal sinuses showed fracture which included the lamina papyrea.

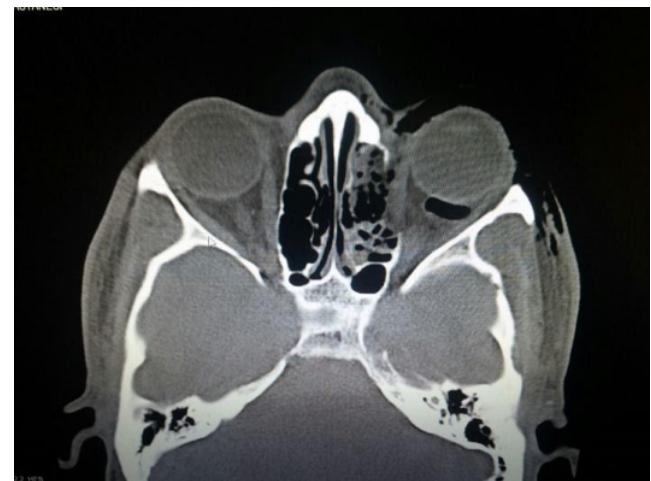


Figure 2B: Right eye was normal. Left globe and retrobulbar area were normal

by fracture of the lacrimal bone and secondary rupture of the lacrimal sac. Type 2: It is called true orbital emphysema in which the septum is intact but the bony orbital wall is broken. Type 3 is orbito-palpebral emphysema. High intraocular pressure is more of a concern than subconjunctival emphysema in the orbit.

A prolonged increase in intraocular pressure can cause optic nerve damage. Intraocular pressure approaches ophthalmic artery perfusion pressure, and ischemia similar to compartment syndromes may develop in 1-2 hours. Orbital emphysema is usually not severe but can present a visual hazard and requires constant monitoring. It should be kept in mind that it may have high intraocular pressure and visual complications¹⁵. If air has accumulated in the orbit and the orbital pressure is increased, surgical intervention is definitely required. The clinical signs of orbital emphysema, accompanied by vision impairment require an emergency computerized tomography (CT) scan to determine the cause and to assess the extent of the intraorbital air. If orbital emphysema is noted, the patient should be told to avoid blowing, sneezing, coughing, or any Valsalva maneuver. There is no consensus on antibiotic prophylaxis or the use of nasal decongestants. Antibiotic prophylaxis is indicated only in contaminated lesions, in the presence of sinusitis, or in immunocompromised patients¹¹. Prophylactic antibiotics should be used to prevent infection.

Most orbital emphysema does not require any special treatment. Since the process is self-limited, it is approximately duration 2 weeks. Care should be taken to avoid compressive optic neuropathy and exposure keratopathy. Although a good visual result is common, severe vision-threatening sequelae have been reported¹⁰. Intraorbital pressure can damage blood flow. Optic nerve leads to optic atrophy and poor vision¹³ or central retinal artery occlusion¹⁴. Surgical treatment of orbital emphysema includes lateral canthotomy or cantolysis, orbital decompression with needle aspiration, and bone decompression¹⁵. Therefore, any type of periocular emphysema after blunt trauma should raise suspicion for orbital burst fracture and necessitate orbital computed tomography with careful follow-up of the patient.

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