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Case Report

Orbital Emphysema Causing Syncope

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Orbital emphysema is an abnormal condition in which air is present within the orbit. We report a rare case of a 19-year-old man who suffered syncopic attacks caused by sniffles following orbital emphysema as a result of trauma. Treating rhinitis is important in patients with orbital emphysema, and patients with cardiac disorders in addition to those with this condition must be warned about the risks of sniffles, sneezing, or nose blowing.

Key words: emphysema, syncopic attack, sniffle, trauma, vagovagal reflex

Orbital emphysema results from fractures affecting the paranasal sinuses and orbital walls, and orbital trauma, sneezing, nose blowing, and pressure changes during air travel can all act as predisposing factors to this condition [1-7]. Most cases are otherwise asymptomatic and show good outcomes, although optic nerve damage can occur [4, 5, 8, 9]. The present case report describes a patient with orbital emphysema who suffered syncopic attacks when sniffing.

Clinical Presentation

A 19-year-old man presented to our department because of left eye injury incurred during boxing exercise. He complained of slight diplopia, left nasal bleeding, and a feeling of something wrong with the left eye when sniffing or blowing his nose. On arrival, his vital signs were stable and nasal bleeding had

already stopped. Examination revealed periorbital edema with ecchymosis and a marked limitation of eye movement. The nasal mucosa was pale and edematous, and allergic rhinitis was suspected. Examination by ophthalmologists revealed that visual acuity (right vision: 0.08 (1.2 × - 5.0 Diopter), left vision: (1.2 × - 4.50 Diopter, Cylinder -1.0, Diopter Axis 180)) and intraocular pressure (right: 13 mmHg, left: 12 mmHg) were normal, with no relative afferent pupillary defect. Although limitation of eye movement in all directions was apparent, the Hess screen test was almost normal. Computed tomography (CT) revealed a suspected fracture in the ethmoidal wall of the left orbit and extensive confluent orbito palpebral emphysema (Fig. 1), but no abnormalities in the brain. During these examinations, the patient suffered four episodes of syncope while sniffing, with recovery to full consciousness within a few seconds. The patient had never been treated for allergic rhinitis, and he could not seem to help from sniffing. He reported no previous history of loss of consciousness. The family history was negative for epilepsy. Electrocardiography yielded normal results. Although

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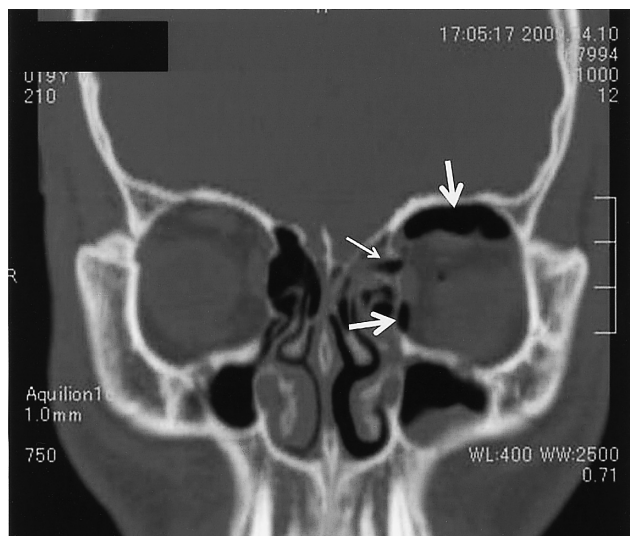


Fig. 1 A coronal CT scan showing a defect in the left lamina papyracea (narrow arrow) with left orbital emphysema (wide arrows).

each period of loss of consciousness lasted only a few seconds, he was admitted to our hospital. Prophylactic antibiotic therapy was administered for 5 days. He used fluticasone propionate spray and placed a tampon at the nasal vestibule to prevent sniffles or nose blowing. No episodes of syncope have since been noted. After 6 days of hospitalization, the patient was discharged. Vision gradually returned, and no ocular abnormalities were observed at the one-month follow up.

Discussion

The vast majority of patients with orbital emphysema due to traumatic or atraumatic causes are otherwise asymptomatic, with resolution of the emphysema occurring without adverse sequelae [4]. Rare but serious complications include retinal artery occlusion and optic nerve ischemia, leading to visual loss, so clinicians should not delay examination of the eyes [8]. Although the present case appeared with no visual problems but slight diplopia, a brief loss of consciousness occurred at the time of sniffing. The duration of the loss of consciousness was only a few seconds each time and no post-ictal confusion or headache was reported.

We identified three possibilities regarding the

pathophysiology behind this symptom. First, rectus muscle entrapment into the fracture of the lamina papyracea may have occurred, and the act of sniffing, which encourages upper air streams of inspired air into the olfactory groove [10], forced nasal air onto the impacted muscle and caused a vagal response, although CT did not clearly reveal impaction of the muscle. Second, sniffing causes negative intranasal pressure [11], and the pressure may have been strong enough to pull rectus muscle into the intranasal side [12] through the fracture of the lamina papyracea, thus triggering the vagovagal reflex. A number of intraoperative cardiac arrests from the oculocardiac reflex caused by traction on extraocular muscles have been reported in the literature, and some of them have been fatal [13]. Finally, the fracture of the lamina papyracea may have produced a valve effect that allowed air to enter but not leave the orbit, resulting in a high intraorbital pressure [14, 15]. Sniffing might then have extremely elevated the intraorbital pressure, causing a loss of consciousness via the vagovagal reflex. Eyeball pressure is known to produce bradycardia, and the ocular compression test is sometimes useful to distinguish epilepsy from syncope due to vagal hyperactivity [16]. Since ocular compression can sometimes trigger cardiac arrest, this test should be performed by a cardiologist in a specialized unit, particularly in the case of individuals with a history of severe cardiac disorder [16, 17].

Nasal diseases such as allergic rhinitis must be treated to avoid sniffles, sneezing, or nose blowing, which can cause changes in intranasal pressure, and special attention should be paid to the patients with orbital emphysema who have severe cardiac disorders.

Conclusion. We have reported a rare case of orbital emphysema causing syncope. Patients with orbital emphysema must avoid elevations of orbital pressure.

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