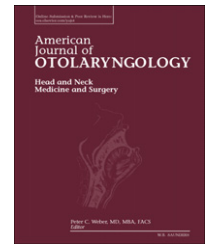


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Grand rounds

Grand rounds: Eyelid swelling after nose blowing ☆,☆☆,★



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1. Case presentation

A 58-year-old Caucasian woman awoke with a blocked nose. She experienced a sudden right eyelid swelling with diplopia when blowing one nostril while blocking the other with her finger (Fig. 1). Her medical and family histories were unremarkable except for chronic seasonal sinusitis. She denied history of smoking, alcohol consumption, and previous facial trauma and rhinosinusal surgery.

On examination, the patient had painful swelling and ecchymosis of the right eyelid, coupled with restricted ocular movements of the affected eye. Palpation revealed crepitus

over the right eyelid with no evidence of sensory abnormality. She was diplopic in upgaze. Visual acuity was normal bilaterally (both eyes: 0.8 Diopter), but the right visual field was reduced due to marked palpebral swelling. Pupils were equal and reactive to light with no afferent defect. Fundoscopy examination revealed no abnormality, and initial Hertel exophthalmometry result was 18-87-19.

Computed tomography (CT) showed large volume of air within the right eyelid and orbital cavity. There was also discontinuity of the right orbital floor with minimal prolapse of the orbital soft tissue into the maxillary antrum (Figs. 2-4).

What is your diagnosis?

* Ethical approval: Not required, and the patient consented to allow the use of her photographs for publication.

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Fig. 1 – Clinical picture showing swelling and ecchymosis of the right eyelid.

2. Diagnosis: Orbital floor fracture and emphysema (OFFE) caused by nose blowing

Orbital emphysema (OEm) refers to abnormal condition in which air is present within the fascial layers of the orbital and periorbital region. It is encountered in up to 50% of fractures involving paranasal sinuses and orbital walls [1,2]. A traumatic communication with the paranasal sinuses allows air to enter the orbit and accumulate within the soft tissues. Orbital tissue such as fat may occlude the bony breach and acts as a one-way valve across the fracture site permitting air to enter the orbit, but not to leave it [2,3]. However, sneezing, coughing, vomiting, nose blowing, and pressure change during air travel



Fig. 2 – Axial computed tomography showing air within the right periorbital region with a small ethmoidal fracture.

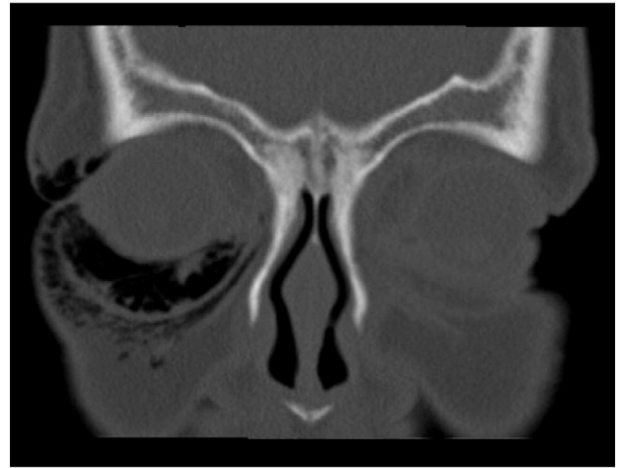


Fig. 3 – Coronal computed tomography showing large volume of air within the right eyelid.

can also cause OEm, even in the absence of mechanical trauma [1,3]. Rarer causes include necrotizing fasciitis and postseptal cellulitis caused by a gas-producing microorganism [4-6].

Our patient suffered from OFFE due to nose blowing without blunt trauma. To the best of our knowledge, there have been only six other similar reported cases [1,7-11]. Three theories commonly used to explain the mechanism of orbital fracture (OF) include (1) globe-to-wall contact theory, (2) hydraulic theory, and (3) bone conduction theory [8]. According to the hydraulic theory, nose blowing (“bushman’s hanky” in this case) increases intranasal pressure (INP), which is transmitted to the orbit through the dehiscent or broken lamina papyracea and/or lacerated orbital wall [1,8-10,12]. In normal subjects, the increased INP during nose blowing may be up to 9 times higher than during sneezing (75 vs. up to 8.4 mmHg), and very high in chronic sinusitis patients (up to 181.5 mmHg) [10,11].



Fig. 4 – Coronal computed tomography showing air within the right orbital cavity. Discontinuity of the right orbital floor with minimal prolapse of the orbital soft tissue into the maxillary antrum, and bleeding and thickening of the right maxillary antral mucosa are evident.

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