

Missed Eye Injury: The Importance of the Visual Examination

Case

A 61-year-old woman presented to the ED for evaluation of left-side facial pain following a fall. The patient stated that she lost her balance as she was getting out of her car and fell to the ground, striking her left face and head. She denied any loss of consciousness, and complained of primarily left periorbital pain and swelling. She also denied neck or extremity pain, and was ambulatory after the fall. Her medical history was significant for hypertension and gastroesophageal reflux disease, for which she took medications. She admitted to a modest use of alcohol but denied tobacco use.

On physical examination, the patient's vital signs were: blood pressure, 148/92 mm Hg; heart rate, 104 beats/min; respiratory rate, 18 breaths/min; and temperature, 98.8°F. Oxygen saturation was 98% on room air. Examination of the head and face revealed marked left periorbital bruising and swelling, and abrasions to the left forehead and anterior temporal area. The left eye was swollen shut. The right pupil was round and reactive to light, with intact extraocular muscle movement. The patient was tender to palpation around the

left periorbital area, but not on any other areas of her face or cranium. The neck was nontender in the midline posteriorly, and the patient's neurological examination was normal. Examination of the lungs, heart, and abdomen were likewise normal. No measurement of visual acuity was obtained.

The emergency physician (EP) ordered a computed tomography (CT) scan of the head and face without contrast. Because the patient could not remember the date of her last tetanus shot, a tetanus immunization was administered. The EP made several attempts to open the patient's left eye to examine the pupil and anterior chamber, but was unable to do so because of the marked swelling and the patient's discomfort.

Radiology services reported that the CT scan of the head was normal, while the CT scan of the face revealed a left orbital floor fracture. The patient was discharged home with instructions to place ice on the areas of swelling and to avoid blowing her nose. She was also given a prescription for hydrocodone/acetaminophen and instructed to follow-up with an ophthalmologist in 1 week.

Unfortunately, the patient suffered permanent and complete loss of sight in the left eye. She sued the hospital and the EP for failure to perform a complete physical examination and consult with an ophthalmologist to determine the extent of her injuries. In addition, an overread of the CT scan of the face revealed entrapment of the left inferior rectus muscle, which the original radiologist did not include in his report. The jury returned a defense verdict.

Discussion

This case is unfortunate because the critical injury, entrapment of the inferior rectus muscle, was missed by two physicians—the EP and the radiologist. While this injury can sometimes be detected on CT, most clinicians agree that orbital muscle entrapment is a clinical diagnosis. The



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Author's Disclosure Statement: The author reports no actual or potential conflict of interest in relation to this article.

DOI: 10.12788/emed.2017.0032

most significant omission in this case is that the EP neither examined the affected eye nor tested the extraocular muscles. If the EP had done so, then in all likelihood this injury would have been identified and ophthalmology services would have been consulted.

Visual acuity should be considered a sixth vital sign in patients who present with an eye injury. This test can be performed using a wall, pocket, or mobile-app Snellen chart.¹ If the patient is unable to perform an eye examination, the EP should assess for light and color perception.¹ A complete loss of vision implies injury to the optic nerve or globe.¹

When possible, it is best to attempt to examine the eyes prior to the onset of significant eyelid swelling. In the presence of significant swelling, lid retractors (eg, paper clip retractors) can be used to allow proper examination of the eye. The pupil, sclera, anterior chamber, and eye movement should all be assessed. Limited vertical movement of the globe, vertical diplopia, and pain in the inferior orbit on attempted vertical movement are consistent with entrapment of the inferior rectus muscle.² The presence of enophthalmos (posterior displacement of the globe within the orbit) and globe

ptosis (downward displacement of the globe within the orbit) should be noted because these often indicate a significant fracture.²

The majority of orbital floor fractures do not require surgical repair. Most are followed for 5 to 10 days to allow swelling and orbital hemorrhage to subside.² Prednisone (1 mg/kg/d for 7 days) can decrease edema and may limit the risk of diplopia from inferior rectus muscle contractions and fibrosis. However, the presence of tight entrapment of the inferior rectus muscle, or CT scan demonstration of the inferior rectus muscle within the maxillary sinus, is an indication for immediate surgical intervention.²

As physicians, it is imperative that we thoroughly examine the area of primary complaint which, as this case demonstrates, is not always easy.

References

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