

Bouncebacks

The Case of a 10-Year-Old Male with Eye Pain

Bouncebacks appears semimonthly in JUCM. Case presentations on each patient, along with case-by-case risk management commentary by Gregory L. Henry, past president of The American College of Emergency Physicians, and discussions by other nationally recognized experts are detailed in the book *Bouncebacks! Emergency Department Cases: ED returns (2006, Anadem Publishing, www.anadem.com)*.] Also available at www.amazon.com and www.acep.org.

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This article is the third in a series in which we will sequentially answer the following questions:

- I. What is the incidence of bouncebacks?
- II. What is the incidence of bounceback admissions?
- III. What is the incidence of death in patients recently discharged from the ED?
- IV. What percent of bouncebacks occur because of medical errors?
- V. How can we use this information to improve patient safety?

This month, we will discuss Question IV: What percent of bouncebacks occur because of medical errors?

A 2006 case control study performed by Nunez et al compared 250 unscheduled ED returns over a four-month period with 250 similar visits in which patients did not return to the ED. The authors discovered a prognostic error in 20% of the ED returns, a diagnostic error in 20%, and a follow-up error in 26% in the un-

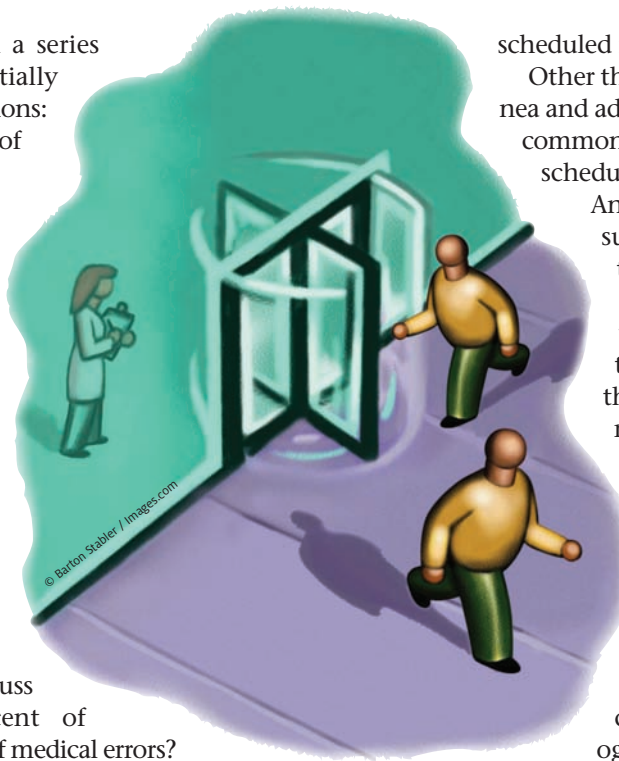
scheduled returns.

Other than these medical errors, dyspnea and advanced age were the two most common factors associated with an unscheduled return visit.

Another study looking at this issue was published in 1990 in the *Annals of Emergency Medicine* by Pierce et al. During the three-month study period, there were 17,214 new visits to their ED with 569 unscheduled returns (defined as ED return within 48 hours), equating to a bounceback rate of just over 3%.

The researchers concluded that over 18% were due to physician-related factors (e.g., misdiagnosis, treatment error, inappropriate discharge on initial visit, radiology over-reads, or lack of outpatient analgesics when indicated).

Finally, we revisit a recent study by Sklar et al published in the *Annals of Emergency Medicine* in 2007. This study analyzed unanticipated death in patients discharged home from the ED. Out of the 387,334 visits considered from 1994-2004, 117 patients died within



seven days of an ED discharge. The authors determined that 35 of these 117 (30%) had a possible medical error.

Common characteristics of Sklar's possible medical error cases included:

- atypical presentation of unusual problem
- chronic disease with decompensation. (e.g., congestive heart failure)
- abnormal vital signs (note: tachycardia occurred in 25 out of 35 (71%) of "possible error" cases)
- mental disability, psychiatric problem, or substance abuse making it less likely the patient would return for worsening problems

A 10-Year-Old Male with Eye Pain

Initial Visit

(Note: The following is the actual documentation of the providers, including punctuation and spelling errors.)

CHIEF COMPLAINT (at 20:19): Eye pain

Time	Temp	Pulse	Resp	Syst	Diast
20:30	97.5	69	16	133	85

HISTORY OF PRESENT ILLNESS (at 21:21):

This pt is a 10 y/o male who presents with OS pain s/p direct, blunt trauma to eye approx 1pm this afternoon. The pt reports playing "rubber" darts with friends at home when one accidentally struck him in OS centrally from direct throw. Now experiencing mod pain, photophobia, and tearing in OS. He does have redness and blurred vision. The pt reports no previous h/o eye injury or trauma. Denies any other ROS

PAST MEDICAL HISTORY (PER TRIAGE RN):

Medications: None

Allergies: No known allergies.

PMH: None

PSH: none

SocHx: Tobacco use: (-), Alcohol use: (-)

Visual acuity (at 20:38): Left eye: totally blind; Right eye: uncorrected 20/20.

Immunizations: The infant/child's immunizations are current.

EXAM (at 21:26)

General: Well-appearing; well nourished; A&O X 3, in no apparent distress.

Head: Normocephalic; atraumatic.

Skin: Normal for age and race; warm and dry; no apparent lesions

Eyes: Fundoscopic exam attempted, unable to visu-

alize anything. No pupillary constriction on exam.

Visual acuity 20/20 OD, contrary to triages notes, vision was 20/30 after alcaine eye drops instilled to OS; Visual fields are abnormal by confrontation. Extraocular muscles are intact. Pupils are unequal and OS is nonreactive to light. The irises are abnormal. Unable to visualize the Retina and disc margins due to injury. Lids, lashes and puncta are normal. Everted lids are normal. Cornea is not clear with abrasion noted and no foreign bodies. The anterior chamber is not clear with abnormal depth. Conjunctiva and sclera are abnormal with injection. Slit lamp exam with Fluroscein stain reveals no foreign body, increased dye uptake, abrasion w/o rust ring. ? sidels sign. Noted in ant chamber clear and bloody fluid intermixed.

RESULTS:

CT OF THE BRAIN AND CT OF THE ORBITS, TWO PROJECTIONS (at 22:36): Dedicated thin sections through the orbits obtained in the coronal and axial projection show no evidence of bone injury in the orbits or sinuses. Several small bubbles are seen in the anterior space of the orbits, presumably due to eye examination. The globes themselves appear to be intact, at least as far as morphology and internal architecture. The extraocular muscles and lacrimal glands are normal in appearance.

IMPRESSION:

Normal CT examination of the orbits.

PROGRESS NOTES (at 23:06):

This patient presented after a rubber dart struck his left eye—dart thrown by his sibling. His acuity is 20/30. His eye does reveal a hyphema. EOMI. CT reveals no globe rupture. I discussed this with the ophthalmologist on call who recommends Homatropine, Ocuflax, Predforte, analgesics, eye shield, head elevation, no anticoagulants. I gave him the patient's home phone number—he will call him tomorrow to be seen tomorrow in his office.

DIAGNOSIS:

Eye injury, contusion

Eye pain

Corneal abrasion

Visual disturbance

DISPOSITION (at 00:04):

Discharged to home ambulatory for ophthalmologist ex-

amination the next day. Sent home with homatropine drops. Prescriptions for predforte 1%, ofloxacin drops, and Tylenol elixir with codeine. Aftercare instructions for hyphema. Eye patch applied to the left eye.

Follow-up with Ophthalmology the Next Day

PROGRESS NOTES (the next day):

Patient was seen by the ophthalmologist the next day in his office and was diagnosed with a complete globe rupture with partial retinal detachment. At that point, the visual acuity in the left eye was “light perception” only, suggesting the nursing documentation of the visual acuity was more accurate than the physician’s—the documented OS 20/30 visual acuity was probably because he was “peeking” from his other eye.

He was taken to surgery that same day and the corneal laceration was repaired and he underwent a partial lens resection. He was then sent to a retina specialist who performed a complete lens removal and vitrectomy.

On the last office check, his visual acuity had improved to 20/100 in the left eye.

Per the ophthalmologist; if he has no further improvement, then he may be a candidate for a corneal transplant.

Documentation and Risk Management Issues at Initial Visit

Error 1

Error: Discrepancy in visual acuity. The visual acuity at triage noted the left eye was totally blind and the right eye was 20/20. However, according to the physician documentation, the acuity was 20/20 in both eyes and 20/30 in the affected eye after proparacaine eye drops, contrary to the triage note.

When the patient was evaluated the next morning by ophthalmology, it was noted that the patient had light perception only in the affected eye.

Discussion: Although the medical record does state that the physician documentation was different than the triage note, the physician’s assessment of the acuity was inaccurate. It appears that the physician did not correctly examine the eye to determine this acuity and that the acuity reading of 20/30 was likely aided by “peeking” from his unaffected eye.

One of the primary risk management issues is discrepancies in documentation and the ability of a plaintiff lawyer to pit different providers against each other. In a legal setting, this discrepancy may make the rest of the physician documentation less believable to the jury.

Teaching point: Visual acuity is the “vital sign” of the eye; hence, an accurate measurement of a patient’s acuity with any eye injury is essential in order to avoid medical error and minimize the physician’s medico legal exposure. Discrepancies on the chart need to be explained in a progress note or confirmed with additional history or examination.

Error 2

Error: Misdiagnosis of a closed globe injury.

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Discussion: The chart documented blurry vision with a pupil that did not react to light and pupils that were unequal in appearance. It also noted hyphema with a possible Seidel sign and a retina that could not be visualized. These findings are screaming *ruptured globe*, but the patient was ultimately diagnosed with a contusion and corneal abrasion.

Teaching point: As the old adage goes, if it looks like a duck and sounds like a duck, then it must be a duck! Blunt trauma to the eye with a hyphema, blurred vision, and an irregular-appearing pupil is a globe rupture.

Error 3

Error: Reliance on a normal orbital CT to rule out a globe rupture.

Discussion: The physician considered a ruptured globe but was inappropriately reassured by a CT scan that was interpreted as “normal.” However, a normal CT scan has a negative predictive value of only 74% when ruling out an open globe injury.

Teaching point: A globe rupture is a clinical diagnosis, as up to one in four patients with a ruptured globe will still have a normal CT.

Error 4

Error: No emergent bedside consultation by ophthalmology.

Discussion: Given the constellation of signs and symptoms previously discussed, it is clear that the patient had a significant eye injury. The physician appropriately consulted ophthalmology by telephone, but was talked out of a bedside consult in the ED.

Instead, the patient was sent to the office the next day. Only then was the patient discovered to have an open globe injury.

This probably didn’t affect the outcome, but emergent bedside consultation during the initial visit would have been most appropriate and would have avoided any potential medical legal exposure.

Another acceptable alternative with ocular injuries, and one frequently used in the urgent care, is to have the patient seen in the ophthalmologist’s office the same day.

Teaching point: The treating physician is not “off the hook” by simply talking with the consultant by phone. If the first consultant is not meeting the patient’s expectations, explore other options, keeping the patient’s best interest in mind, even in the middle of night.

DISCUSSION OF GLOBE RUPTURE

A globe rupture is a full thickness injury to the eye, in

which a force to the eye wall leads to a rapid increase in intraocular pressure and subsequent full-thickness disruption of the eye wall from an “inside-out” force (may or may not occur at the site of injury). It is believed that 1% to 2% of the million pediatric eye injuries seen in the U.S. every year are open globe injuries.

This injury occurs most often after blunt trauma to the eye, and the patient usually presents with significant eye pain.

The exam is facilitated with topical anesthetic drops. The classic appearance of an open globe rupture is an irregularly shaped pupil, hyphema/hemorrhagic chemosis, and an obvious visual disturbance; for example, the patient may only be able to count fingers or may only have light perception. Checking visual acuity with all eye complaints seems obvious, but may be overlooked in a busy urgent care clinic.

Seidel’s sign

When fluorescein is applied to an intact, closed globe, it leaves a dull yellow color to the surface of the eye. With an open globe, however, the aqueous fluid draining through the corneal laceration causes fluid to change to a brighter green color; this bright green fluid will continue to flow as the aqueous leaks through the cornea.

This is a positive Seidel’s sign and an indication of open globe rupture.

Summary

The most important lesson to be learned from this case is that when a provider has a clinical suspicion of a serious illness, the sensitivity and negative predictive value (NPV) of a test needs to be considered. The NPV of CT scan for globe rupture is 74%; missing one in four diagnoses is not acceptable.

Time is of the essence when managing an open globe. As one awaits ophthalmology, it is important to keep the intraocular pressure low; the patient should not strain or exert himself.

In the case described here, the physician was inappropriately reassured by an incorrect visual acuity, an insensitive diagnostic test, and by a specialist who had not laid eyes on the patient.

In the end, a few hours may have had no effect on the ultimate outcome, but a falsely reassured patient who left the center and did not follow up as instructed could have led to a devastating result.

For Suggested Readings associated with this report, visit www.jucm.com. ■