African Journal of Emergency Medicine 9 (2019) 106–107

Contents lists available at ScienceDirect

African Journal of Emergency Medicine

journal homepage: www.elsevier.com/locate/afjem

CASE REPORT

Traumatic ocular lens dislocation

Jason Arthur[a,*], Brett Schubert[b], Stephen S. Topp[b]

[a] University of Arkansas for Medical Sciences, Department of Emergency Medicine, Little Rock, AR, USA
[b] University of Florida College of Medicine – Jacksonville, Department of Emergency Medicine, Jacksonville, FL, USA

ARTICLE INFO

Keywords:
Ocular lens dislocation
Traumatic lens dislocation
Ultrasound
POCUS

ABSTRACT

Introduction: Ocular lens dislocation is a relatively rare and difficult to diagnose disorder. Computed tomography often confirms the diagnosis, however may be unavailable in resource limited settings. Bedside ultrasound offers an alternative method of diagnosis which is rapid, inexpensive, and relatively easy.
Case: A 59-year-old man presented with a complaint of decreased vision in his right eye after being assaulted. Exam was remarkable for decreased visual acuity and increased intraocular pressure. Maxillofacial and brain CT as well as bedside ultrasound demonstrated a posteriorly dislocated ocular lens. The patient's intraocular pressures were medically managed and he was discharged with close follow-up with ophthalmology.
Conclusion: Ocular lens dislocation may be easily diagnosed with ultrasound. Direction of lens dislocation dictates management, however posterior dislocations may be amenable to outpatient management.

African relevance

- Ocular lens dislocation is a rare diagnosis which is difficult to identify on exam alone.
- Ultrasound can easily diagnose lens dislocation rapidly and accurately without the need for computed tomography.
- Ultrasound is the preferred diagnostic imaging in resource limited settings.

Introduction

Ocular lens dislocation is relatively uncommon. Providers may be unfamiliar with the physical exam findings suggesting ocular lens dislocation, and for this reason computed tomography often is used to confirm the diagnosis. In resource limited settings computed tomography may be unavailable or financially unviable. Bedside ultrasound is commonly used in Emergency Medicine and offers a rapid, accurate, and inexpensive alternative to confirm this diagnosis.

Case report

A 59-year-old male with a history of schizophrenia, hypertension, and glaucoma presented with a complaint of decreased vision in his right eye after an assault in which he was reportedly punched and kicked in the face. He reported a history of glaucoma, but that this typically afflicts his left rather than right eye. Vital signs were normal. Exam was remarkable for swelling to the right orbit, laceration to the lateral aspect of the left orbital rim, and multiple abrasions over the arms and legs. Ocular exam was remarkable for visual acuity of 20/50 on the left and count fingers on the right. No hyphaema, hypopion, cataract, or peaked pupil were noted. Fluorescein staining showed no Seidel's sign and no uptake on the cornea. Intraocular pressures were 23 mmHg on the left and 50 mmHg on the right (normal < 20 mmHg).

CT scan of the head, maxilla/face, and cervical spine was obtained and showed a posteriorly dislocated right intraocular lens (Fig. 1). Ultrasound of the eye, performed in lieu of fundoscopy, revealed no vitreous haemorrhage or retinal detachment and confirmed the lens located in the vitreous (Fig. 2). Dynamic ultrasound of the eye showed that the lens was free floating in the vitreous (Videos 1 and 2). The patient was treated with topical timolol and acetazolamide drops with normalization of intraocular pressures. Ophthalmology follow up was arranged for the next day and the patient was discharged with a prescription for typical acetazolamide and timolol drops.

Discussion

Ocular lens dislocation occurs most commonly due to trauma [1]. Blunt trauma compresses the eye in the anterior-posterior direction causing expansion of the eye laterally, superior, and inferiorly, stretching the zonules which hold the lens [2]. Lens dislocation may

Peer review under responsibility of African Federation for Emergency Medicine.
* Corresponding author.
E-mail address: jarthur@uams.edu (J. Arthur).

https://doi.org/10.1016/j.afjem.2019.01.001
Received 24 February 2018; Received in revised form 7 December 2018; Accepted 4 January 2019
Available online 18 January 2019

Fig. 1. Axial cut CT demonstrating a right-sided posteriorly dislocated ocular lens (red arrow).

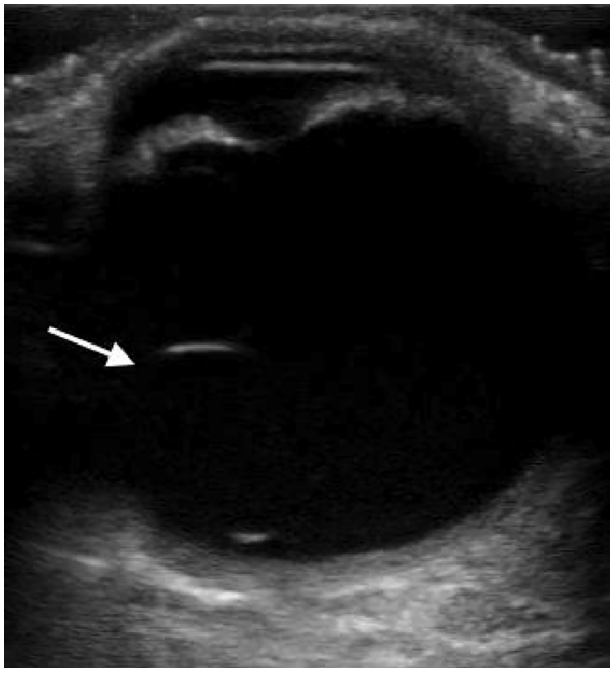

Fig. 2. Bedside ultrasound of the right eye in transverse view demonstrating the ocular lens within the vitreous (white arrow).

also occur due to underlying ocular disorders, connective tissue disorders such as Marfan Syndrome, genetic conditions, and iatrogenically [2,3]. Symptoms of lens dislocation include reduced visual acuity, poor near and/or distant vision, and monocular diplopia [4].

Bedside ultrasound of the eye has the potential to allow for rapid diagnosis of a multitude of traumatic eye injuries, including lens dislocation, retinal detachment, vitreous haemorrhage, and papilledema. Much like physical exam, ultrasound is operator dependent. Compared to CT of the orbit, ultrasound has similar test characteristics for detection of lens dislocation with a sensitivity of 84.6% and a specificity of 98.3%. Additionally, interrater reliability with ultrasound of the orbit is excellent with a Cohen's kappa of 0.83 [5]. The technique most commonly used involves placing a large amount of ultrasound gel over the closed eye. An adhesive barrier (such as a Tegaderm™) may be placed over the eyelid if the patient is unable to close the eye or if there are concerns for gel contamination such as in multi-use gel containers. A bag of intravenous fluids or a fluid filled glove may be used as a stand off pad to help attain a clearer view of the orbit. A high frequency transducer, most commonly a linear-array transducer, is then placed on the gel so that the probe does not touch the eye. The globe is evaluated in transverse and longitudinal planes and, if the patient is able, with extraocular movements to allow for maximal visualization of the posterior chamber and retina [6,7].

Direction of dislocation dictates management. Anterior lens dislocation requires lens removal. Refractory glaucoma, persistent uveitis, or corneal damage are indications for urgent or emergent intervention. Posterior dislocation may be managed conservatively by correction with aphakic contact lenses. Lens removal in posterior dislocations should be considered in patients that do not tolerate correction, suffer symptoms despite correction, or develop glaucoma or persistent uveitis. If the patient undergoes surgery for another posterior chamber pathology lens removal may also be considered [2].

Author contribution

ST, BS, and JA contributed to the conception the manuscript. JA and BS drafted the work. ST and BS revised the manuscript critically for important intellectual content. All authors approved the version to be published and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Conflict of interest

The authors declared no conflict of interest.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.afjem.2019.01.001.

References

[1] Jarrett WH. Dislocation of the lens: a study of 166 hospitalized cases. Arch Ophthalmol 1967;78(3):289–96.
[2] Salehi-Had H, Turalba A. Management of traumatic crystalline lens subluxation and dislocation. Int Ophthalmol Clin 2010;50(1):167–79.
[3] Vyas S, Krishna S, Kumar A, et al. 'Floating Lens Sign' in traumatic lens dislocations. Middle East African J Ophthalmol 2015;22(1):129–30.
[4] Bjerregaard R, Ringeisen AL, Patel AS, Hossain K. Ectopia Lentis. EyeWiki. http://eyewiki.aao.org/Ectopia_Lentis. Published March 10, 2015.
[5] Haghighi SHO, Begi HRM, Sorkhabi R, et al. Diagnostic accurary of ultrasound in detection of traumatic lens dislocation. Emergency (Tehran) 2014;2(3):121–4.
[6] Mallin M, Dawson M, Ockerse P, Tayal V. Introduction to Bedside Ultrasound: Volume 2.
[7] Sangil L, Hayward A, Bellamkonda VR. Traumatic lens dislocation. Int J Emerg Med 2015;8(1).