Tuesday, August 28

7:30 AM

Airsoft BBs: The Blinding Truth

- Timothy Saunders, MD
- Peter Reed Pavan, MD

OBJECTIVE To introduce a new mechanism of disastrous ocular injury by the popular toy projectile system, Airsoft.

PURPOSE Do Airsoft BB's have the potential to shatter when fired under close range conditions?

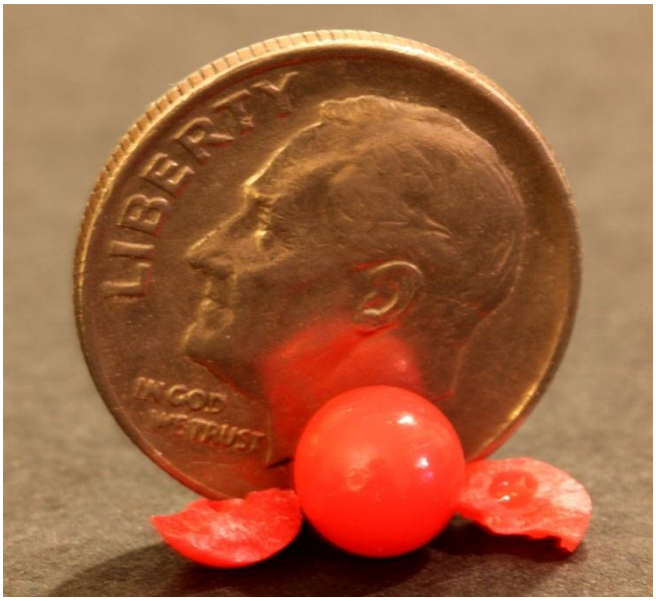
METHODS This is a retrospective case study of an open globe injury with an experimental design to replicate key circumstances and assess reproducibility. The patient sustained an open globe injury with intraocular foreign body pellet fragments from an Airsoft BB gun fired at close range. Using identical gun and BB specifications, 100 Airsoft plastic BB's, 6mm diameter, 0.12g, were fired from a spring action, Airsoft gun, at approximately 100m/s. The pellets were fired into an "L" shaped polyvinyl chloride (PVC) tube. The muzzle was placed at the ostium, 4cm from the inside corner, fired, and the ricocheted pellet was collected at the far end of the tube. The number of whole BB's was recorded.

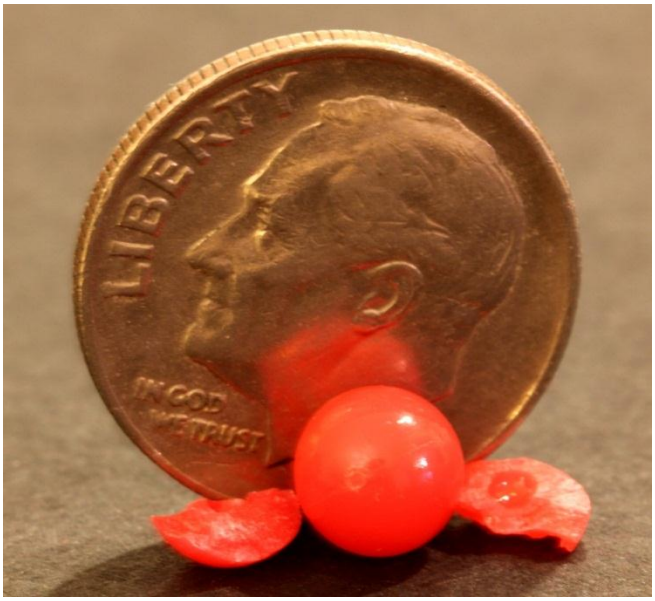
RESULTS A 14 year old boy was peering under a door when his friend fired an Airsoft gun under it from the opposite side at close range. Examination revealed an open globe, and a primary repair was performed. Imaging suggested a retinal detachment and intraocular foreign bodies. Four days later he underwent removal of several Airsoft BB fragments, and retinal detachment repair by pars plana lensectomy, vitrectomy, gas-fluid exchange, and retinopexy. One month later the retina re-detached due to proliferative vitreoretinopathy and was repaired with silicone oil tamponade. After 6 months, the retina remained attached, and the eye had count fingers vision. Of 100

successive BBs fired into the PVC tube, 98 (98%) shattered into fragments of varying size and shape.

CONCLUSION This is the first case report of an open globe injury due to an Airsoft BB. Prior studies indicate that when intact, these projectiles do not have enough energy per surface area to penetrate a human eye. However, we demonstrated that these BB's usually fragment when they ricochet at close range. The multiple fragments found in our patient's eye prove these shards easily penetrate a human eye.

TAKE HOME MESSAGE Airsoft BB's usually fragment when they ricochet at close range, these shards easily penetrate a human eye.





7:34 AM

Autofluorescence, OCT, EDI-OCT, and Management of Acute Subfoveal Hemorrhage Secondary to Blunt Trauma +/- Parafoveal Choroidal Rupture

- Pradeepa Yoganathan, MD, FRCS(C)

OBJECTIVE To characterize features of choroidal rupture evident on OCT, EDI-OCT, and autofluorescence, following the management of subfoveal hemorrhage from blunt trauma.

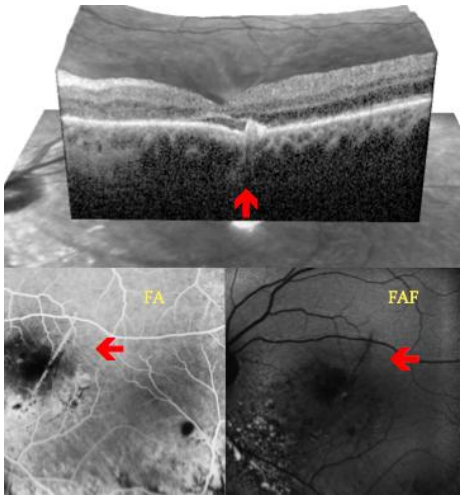
PURPOSE To perform Heidelberg autofluorescence, SD-OCT, and EDI images of acute subfoveal hemorrhage from blunt trauma +/- choroidal rupture. To discuss management options for subfoveal hemorrhage from blunt trauma.

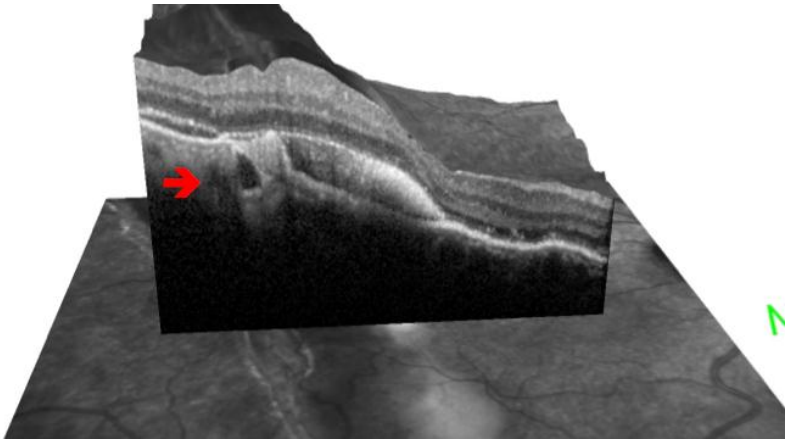
METHODS Retrospective case series of at least 6 consecutive patients from one institution who presented with subfoveal hemorrhage at the time of blunt trauma. SD-OCT, EDI-OCT, and autofluorescence images obtained at various intervals before and after surgical interventions by a single surgeon. Patients were followed for at least 6 months.

RESULTS Six consecutive patients presented with blunt trauma and acute subfoveal hemorrhage. Visual Acuity upon presenation ranged between 20/400 and HM. Management strategies included observation, intravitreal bevacizumab, vitrectomy/subretinal tPA injection/prone positioning, and vitrectomy/large retinecotmy/submacular hemorrhage evacuation. 3 patients were found to have para-foveal choroidal ruptures. Heidelberg Imaging with fundus autofluorescence, fluorescein angiography, SD-OCT, and EDI was performed. Post-operative visual acuity ranged from 20/40 to CF.

CONCLUSION 1. Imaging of parafoveal choroidal ruptures and resolving subfoveal hemorrhages has not previously been documented in the literature with the combination of Heidelberg SD-OCT, EDI-OCT, and autofluorescence. 2. Treatment strategies for subfoveal hemorrhage secondary to blunt trauma are controversial. Results of various techniques are discussed.

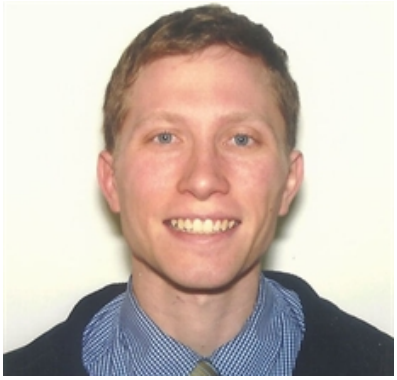
TAKE HOME MESSAGE To discuss the use of autofluorescence, SD-OCT, and EDI images of acute subfoveal hemorrhage from blunt trauma +/- choroidal rupture and respective surgical management options.





7:38 AM

Bacterial Susceptibility Profiles in Trauma-Associated Endophthalmitis



- Duncan A. Friedman, MD, MPH
- Richard M. Feist, MD
- Mark L Hill, MD
- Sejal Amin, MD
- Andrew Bartlett, MD
- John O. Mason, MD
- Martin L. Thomley, MD
- Michael A. Albert, MD
- Jacob J. Yunker, MD
- Tracy L Emond, MS

OBJECTIVE Susceptibility testing reveals most trauma associated endophthalmitis organisms are susceptible to vancomycin with no resistant strains.

PURPOSE Previous studies have pointed out the need for broad antibiotic coverage in endophthalmitis associated with recent ocular trauma. No specific guidelines exist as to which antibiotics would serve as adequate coverage for the most common bacteria seen in traumatic endophthalmitis.

METHODS A retrospective chart review of all cases of endophthalmitis associated with trauma was performed for all patients presenting to a Level 1 Eye Trauma Hospital between 2006 and 2010. Data included patient demographics, nature of injury, source of culture, and susceptibility profiles for positive bacterial cultures. Positive cultures were analyzed for specifics of mechanism of injury to characterize suspected pathogens. An antibiogram was contructed from all positive cultures.

RESULTS A total of 33 cases of trauma associated endophthalmitis occurred over the four year period observed. Fifty-six percent of all trauma associated endophthalmitis cultures

grew specific bacteria. Of the positive cultures, 39% grew multiple microbes. Ninety-three percent of these organisms were Gram positive bacteria. All Gram positive organisms were susceptible to vancomycin while all Gram negative organisms were susceptible to third generation cephalosporins.

CONCLUSION Endophthalmitis associated with recent trauma can be caused by Gram positive and negative organisms. Often these injuries result in multiple bacteria contributing to the overall inflammatory milieu. Susceptibility testing shows most organisms are susceptible to vancomycin with no resistant strains found. Adequate broad spectrum coverage can be achieved with intraocular vancomycin & ceftazidime.

TAKE HOME MESSAGE Broad spectrum antibiotic coverage can be achieved in patients with endophthalmitis associated with recent ocular trauma with the use of intraocular vancomycin and ceftazidime.