without amblyopia (n=15) (P=.09). The malformation was 2.81 times larger in the patients with amblyopia.

Comment. In this population-based cohort of children diagnosed as having periocular infantile hemangioma during a 40-year period, amblyopia with or without strabismus occurred in approximately 1 in 5 children. To our knowledge, this study is the first population-based report on periocular infantile hemangiomas in the United States. The rate of amblyopia of 19% in this population is significantly lower than the rates in prior studies, which range from 43% to 76%.1-3

As stated by Robb,1 it is likely that previous studies overreported the rate of amblyopia as it is often only the more severe cases that are referred to ophthalmic specialists. Given that only half of the periocular hemangiomas diagnosed at our institution were evaluated by an ophthalmologist,4 a recalculated rate that includes only those children seen by an ophthalmologist would yield an amblyopia rate of 37%, illustrating the artificial increase that occurs from reports arising solely from departments of ophthalmology. Because this study uses a population-based patient cohort, a 19% rate of amblyopia is likely to be a more accurate representation of the general population. However, assessing vision by the fixation method, the form of visual measurement used during this 40-year study, has been reported to overestimate the presence of amblyopia.5,6 This study is also limited by the small sample size, which, coupled with the predominantly white race of the study patients, may limit the generalizability of these findings to all children with periocular hemangioma.

Schwartz et al7 have reported that the size and location of the hemangioma (upper eyelid) are the most likely factors to be associated with the development of amblyopia. We similarly found that the majority (88%) of the patients with amblyopia had upper eyelid lesions. However, the majority of the 43-patient cohort (86%) had upper eyelid lesions,7 negating any direct association between upper eyelid lesions and the development of amblyopia. However, the association with size was confirmed in this study in which the hemangiomas among patients with amblyopia were nearly 3 times larger than those in patients without amblyopia. Owing to the small sample size, though, this finding was not statistically significant.

Amblyopia occurred in approximately 1 in 5 children with periocular hemangioma in this population-based cohort. Although the medical records were incomplete, lesion size appeared to be the most significant risk factor for amblyopia development.

Correspondence: Dr Mohney, Department of Ophthalmology, Mayo Clinic, 200 First St SW, Rochester, MN 55905 (mohney@mayo.edu).

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Penetrating Ocular Trauma From Airsoft Gun

Airsoft guns are recreational BB guns used for a variety of popular activities, such as combat games and target shooting, and as introductory guns for youths. They shoot plastic ammunition at comparatively low projectile energies, theoretically carrying less potential to cause harmful injury. We report the first documented case, to our knowledge, of globe penetration by a plastic BB shot from an airsoft gun.

Report of a Case. A 17-year-old girl sustained a penetrating globe injury while she and her brother were playing with an airsoft gun, unsupervised and without protective eyewear. An airsoft BB shot out of the gun, ricocheted off a rock, and struck her in the right eye. She was brought to the hospital with visual acuity of light perception OD. On slitlamp examination, there was a 3-mm limbal wound between the 7- and 9-o’clock positions with prolapsed uveal tissue. A computed tomographic scan revealed a radiopaque foreign body within the right globe, with surrounding vitreous hemorrhage. The globe laceration was repaired emergently.

Afterward, the patient’s visual acuity remained light perception with faulty projection. Adding to a very poor visual prognosis were persistent findings of a reverse afferent pupillary defect and hypotony, with intraocular pressures less than 2 mm Hg. Nevertheless, the patient and her family desired a final attempt to improve her ocular condition. Eight weeks after the original injury, she underwent pars plana vitrectomy. She was found to have extensive damage including a large cyclitic membrane, total retinal and ciliary body detachment with multiple...
large retinal breaks, and free-floating ciliary body processes. After hours of surgery, further measures to locate and remove the BB and to attempt repair of the retinal detachment were not felt to be justified given the gross posterior segment disorganization and grave visual prognosis. A month later, the patient began experiencing constant pain and had visual acuity of no light perception OD, so the eye was enucleated.

The BB was later identified at pathologic examination in the posterior segment of the enucleated globe (Figure 1). Histologic analysis showed total retinal detachment (Figure 2).

Comment. A review of the literature reveals a few case series and at least 2 experimental evaluations that document the ocular effects and damage from airsoft guns. In a series involving 9 patients, Swiss investigators detailed significant ocular injuries, including corneal abrasion and edema, angle recession, iridodialysis, cataract, hyphema, vitreous hemorrhage, and choroidal rupture. There were no penetrating injuries, however, and no eye had final visual acuity worse than 20/25.1 Another review of 50 cases from Japan did not uncover any examples of globe penetration; all but 1 patient had final visual acuity better than 20/32.2 From Canada, a report of 8 patients found only anterior segment injuries, the most common of which was hyphema.3 Israeli authors recently compiled a list of anterior and posterior segment injuries, similar to those previously reported, sustained by 59 patients. In addition, these researchers conducted airsoft gunshot tests on porcine and rabbit eyes. Using high-speed videography, substantial anterior segment deformation was observed but no ocular penetration was found. A characteristic doughnut-shaped corneal erosion was also described.4 Another experimental investigation was performed at the Virginia Tech–Wake Forest Center for Injury Biomechanics in which 26 airsoft pellet impact tests were conducted at close range on postmortem human and porcine eyes. Similar to clinical reports, the most common injuries were corneal abrasion and hyphema. No globe penetrations were recorded.3

Our case report illustrates that airsoft projectiles have the potential to cause eye injuries as devastating as those caused by metallic BBs, even by way of ricochet. We recommend that stronger cautionary warnings be given indicating the possibility of blinding injury, including from an indirect hit.

Author Affiliations: Department of Ophthalmology, State University of New York, Stony Brook.

Correspondence: Dr Chou, Department of Ophthalmology, State University of New York, Stony Brook, HSC L-2, Room 152, Stony Brook, NY 11794 (timothy.chou@stonybrook.edu).

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COMMENTS AND OPINIONS

Refractive Outcomes for Toric Intraocular Lenses

Two articles by Goggin et al1,2 give clinical results for toric intraocular lenses (IOLs). The toric IOLs implanted were of relatively low astigmatic power (1.5 diopters [D], 2.25 D, and 3 D at the