



Watch Out for those Soccer Balls: A Case of Vision Changes following Blunt Trauma

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Introduction:

An 18-year-old female is referred for new visual symptoms and associated retinal changes. At the time of evaluation, she endorsed new onset blurry vision bilaterally with associated flashes and floaters. She notes symptom onset a few days prior, following blunt trauma from a soccer ball to the left eye.

Examination:

Visual acuity measured 20/20 bilaterally and intraocular pressure was 20 in the right eye and 13 in the left eye. Anterior segment examination was otherwise white and quiet. The posterior segment was notable for superotemporal retinal whitening without hemorrhage. On scleral depressed examination, no retinal tears or detachments were noted. Optical coherence tomography of the macula (OCTm) noted good foveal contour without outer retinal changes. The patient was diagnosed with commotio retinae. She was counselled to call with any worsening of flashes or floaters or if she experienced a curtain descending upon her visual field. At follow-up 1 month later, there was complete resolution of visual symptoms and superior retinal whitening.

Discussion:

Commotio retinae was first described in 1873 by Rudolf

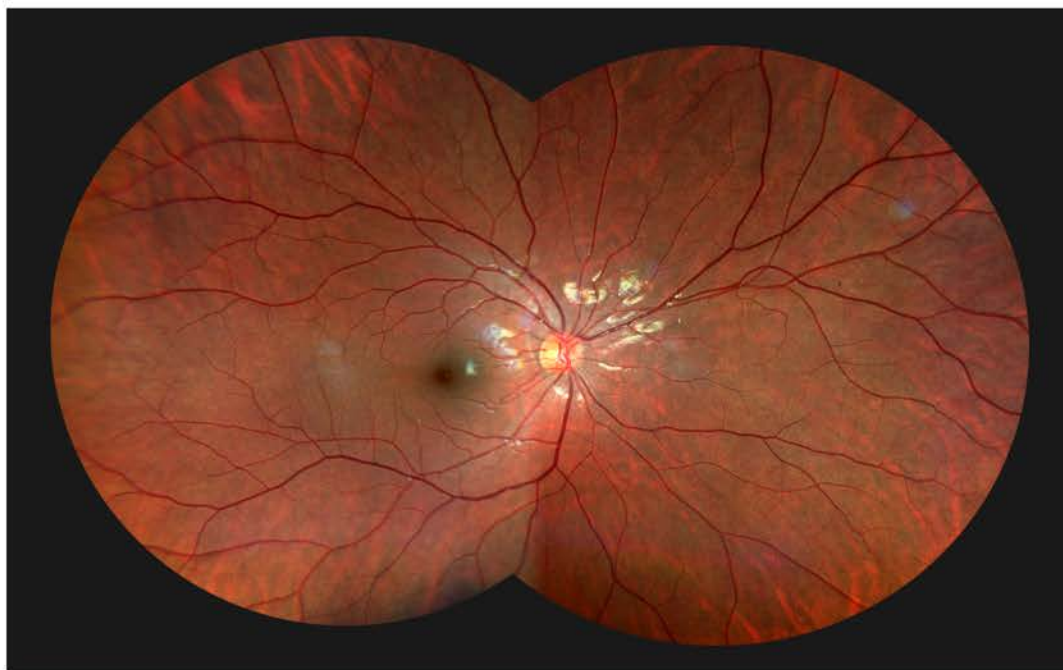


Figure 1: Montage fundus photo of the right eye without apparent retinal pathology.

Berlin. He suggested that extracellular retinal edema led to the opacification noted in this condition, hence commotio retinae received its name of “Berlin’s edema”.¹ Since this time, several studies have instead found that photoreceptor outer segment disruption is responsible and that it is the scattering of light by this photoreceptor disorientation that leads to the classic fundoscopic changes associated with the condition.²

Commotio retinae is a retinal condition caused by ocular injury, most commonly blunt trauma. Patients often present asymptotically, however, in more severe cases they may note blurry vision, scotomas, and metamorphopsias. Fundoscopically, the condition is characterized by retinal whitening in a contrecoup fashion, with changes noted opposite the site of impact.³ Retinal

changes may range from several small areas of involvement to more extensive whitening. If the macula is involved, the fovea is often spared resulting in an appearance resembling a “cherry red spot”.² Diagnosis is based on clinical examination, however, OCTm may be helpful. Given the pathophysiology involves photoreceptor outer segment disruption, changes in the outer retina are often noted, specifically changes in the external limiting membrane, ellipsoid zone, and cone outer segment tips. Ahn

et. al established a grading system evaluating outer retinal changes on OCTr to prognosticate visual and anatomic outcomes in cases of commotio retinae with more extensive changes being associated with worse outcomes.⁴

Most patients will have complete resolution of retinal opacification and symptoms within 1 to 4 weeks of injury, however, some will experience persistently reduced vision or paracentral scotomas.^{2,5} Specifically, 26% of macula-involving cases will experience permanent visual impairment compared to 3% of extramacular cases.⁶ Cases involving the macula are also at increased risk for lamellar holes, macular holes, and RPE atrophy. It is important to note that additional vision threatening complications related to the blunt trauma should also be assessed for including choroidal rupture, retinal tears, retinal dialysis, and anterior segment trauma.



Figure 2: Montage fundus photo of the left eye with superotemporal retinal opacification.

Another discussion to be highlighted is the ophthalmologic implication of soccer-related head injuries. In soccer, players are allowed to contact the ball with their heads, called “heading”. There is ongoing debate whether this recurrent head trauma can have neurologic implications particularly when executed with improper technique. The American Youth Soccer Organization does not recommend heading below the age of 10 due to this concern. As eye care providers, we have the unique opportunity of directly visualizing the effects of blunt trauma to the eye, such as in this case of commotio retinae. While these specific cases often resolve with full visual recovery, there may be more severe complications including hyphema, traumatic iritis, retinal tears, and retinal detachments that can have more long-lasting effects on visual outcomes. Accordingly, we should continue to be advocates for safe sports training and educate our patients on the risks of sports-related ocular trauma.^{7,8}

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Figure 3: Montage fundus photo of the left eye demonstrating resolution of previously noted superotemporal retinal opacification.

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