CASE REPORT

Central serous chorioretinopathy after ocular trauma in the fellow eye during a water-polo game

Marilita M Moschos,¹ Nikolaos Stefanos Gouliopoulos²

¹Department of Ophthalmology, University of Athens, Athens, Attiki, Greece
²Department of Ophthalmology, Athens Medical School, Athens, Attiki, Greece

Correspondence to
 Professor Marilita M Moschos,
 moschosmarilita@yahoo.fr

Accepted 3 September 2015

SUMMARY

A 35-year-old water polo player was struck in his right eye during a water polo game. At presentation to our hospital, his visual acuity, intraocular pressure, fundus examination and neurological examination were normal. He received the appropriate treatment (no corticosteroids were applied), but 1 week later he reported blurred vision in his left eye. Visual acuity in the left eye was 6/10 Snellen chart, fluorescein angiography showed a focal retinal pigment epithelium leakage, while optical coherence tomography through the macula revealed mild neurosensory retinal detachment with an increase in retinal thickness. Two weeks later, the situation improved, and 1 month later no signs or symptoms of central serous chorioretinopathy were present. Currently, 9 months later, the situation remains unchanged. Post-traumatic stress was recognised as the key factor for development of central serous chorioretinopathy in our patient, since it was followed by excessive release of catecholamines and increased endogenous cortisol levels.

BACKGROUND

Central serous chorioretinopathy (CSCR) is a common idiopathic condition, characterised by serous detachment of the posterior pole of the retina, with focal areas of leakage of the retinal pigment epithelium (RPE). CSCR usually affects young and middle-aged men (20–50 years old), and the typical symptoms include visual acuity (VA) decrease, metamorphopsia, micropsia and central scotoma.¹

Its exact cause remains unknown; however, it has been associated with steroid use, type-A personality, emotional stress, pregnancy, renal failure, sildenafil citrate and conditions characterised by increased levels of corticosteroids (such as Cushing syndrome, or after systemic corticosteroid therapy).

To the best of our knowledge, we report the first case of CSCR development after ocular trauma in the fellow eye, during a water polo game, and we describe its spontaneous resolution.

CASE PRESENTATION

A 35-year-old Greek man was admitted to our hospital after being struck in his right eye (OD) during a water polo game. At presentation, his VA was 10/10 sc in both eyes. Intraocular pressure, eye movements and fundus examination were normal bilaterally.

INVESTIGATIONS

CT scan and neurological examination were normal. Optical coherence tomography (OCT)

scans were performed in both eyes, which were normal, without any signs of retinal detachment (figure 1). We also evaluated the blood levels of cortisol after the trauma (at around 21:00). They were 15.85 µg/dL (normal range for our laboratory: 3–16 µg/dL).

TREATMENT

Under local anaesthesia, sutures were placed in the patient's right palpebra. For the first three post-operative days he received antibiotics and antifungal intravenous treatment, while antibiotic drops were applied topically. No corticosteroids were used.

OUTCOME AND FOLLOW-UP

One week later, our patient experienced onset of blurred vision in his left eye (OS). His VA was 6/10 sc in OS with metamorphopsia, while in OD it was 10/10 sc. Fundus examination revealed a well-delineated serous elevation of the macula, and fluorescein angiography (FA) showed a focal RPE leakage. The OCT sections through the macula of OS depicted mild neurosensory retinal detachment with an increase in retinal thickness equal to 549 µm (figure 2), whereas the OD was normal (figure 3). Cortisol levels were increased after the development of CSCR (21.91 µg/dL, normal range for our laboratory: 3–16 µg/dL, at around 21:00). Two weeks later, without any treatment, a gradual improvement of the symptoms was assessed. One month after the trauma in the right eye, VA of OS

Figure 1 At presentation, optical coherence tomography images of both eyes were normal, without any signs of serous retinal detachment.

To cite: Moschos MM, Gouliopoulos NS. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2015-210779

Figure 2 One week after the trauma, fluorescein angiography showed leakage of the retinal pigment epithelium within the macular avascular zone in the left eye (A). Optical coherence tomography (OCT) sections through the macula depict an increase in retinal thickness (B).

returned to 10/10 sc and the neurosensory retinal detachment resolved. Also, FA revealed the resolution of the RPE leakage and the retinal thickness of the macula, measured with OCT, was 196 μm . No treatment was given and the patient was subsequently reviewed 3 months later. His vision had returned to 10/10 sc in OS and the macula was flat and dry, with no evidence of intraretinal or subretinal fluid (figure 4). Currently, 9 months later, the situation remains unchanged.

DISCUSSION

CSCR is a multifactorial disease of unknown aetiology, and has been associated with type A personality, great emotional stress, pregnancy, hypertension, psychopharmacological medication

Figure 3 One week after the trauma, the optical coherence tomography scan of the right eye was still normal, and no sign of serous retinal detachment was present.

Figure 4 Three months after the ocular trauma, the leakage of the retinal pigment epithelium in the left eye disappeared (A). Optical coherence tomography sections through the macula depict a decrease in retinal thickness (B).

and increased levels of corticosteroids.² The increased adrenergic and steroidal stimulation may cause dysfunctional degeneration of RPE cells as a result of hyperpermeability of the choriocapillaris.³

This is the first reported case of CSCR associated with trauma in the fellow eye. The pathophysiology of CSCR is not fully understood. FA demonstrates dye leakage from the RPE and subretinal dye pooling, while indocyanine green imaging demonstrates choroidal vascular abnormalities suggesting hyperpermeability.⁴ It has been suggested that disruption of the choroidal circulation with subsequent decompensation of the RPE allows exudates from the choroidal circulation to pass into subretinal space, giving the classic OCT appearance of a sensory detachment of the retina.⁵

It has been suggested that increased levels of corticosteroids (either endogenous or after corticosteroid treatment) cause the development of CSCR when susceptibility of the posterior blood–retinal barrier is present.⁶

Emotional stress has been recognised as an important risk factor for the development of CSCR. Many studies have found stressful events occurring prior to the development of CSCR.⁷ Furthermore, both psychological stress and type-A personality have been associated with the activation of the hypothalamic–pituitary–adrenal axis, which results in increased endogenous levels of corticosteroids, and is possibly the reason for the frequent development of CSCR in this group.¹

Our patient was fit (he was a water-polo player) and well, with no medical problems, and was taking no medications. He denied any increase in stress levels in the preceding months and

was a non-smoker with an alcohol intake of <30 units a week. Our patient did not receive corticosteroids during his treatment and did not have a history of increased endogenous levels of glucocorticoids. Post-traumatic stress probably played a major role in the development of CSCR, since it is followed by excessive release of catecholamines.

Furthermore, our patient had a type-A personality, which possibly played a key role in the development of CSCR, since people with type-A personality are associated with increased endogenous cortisol levels.⁸

Learning points

- ▶ Ocular trauma during a sports game can result in central serous chorioretinopathy.
- ▶ Central serous chorioretinopathy may develop in the fellow eye after ocular trauma.
- ▶ Optical coherence tomography and fluorescein angiography are useful in detecting and monitoring central serous chorioretinopathy.
- ▶ A type-A personality and post-traumatic stress are most likely the two main risk factors for developing central serous chorioretinopathy.

In summary, we present a case of CSCR after trauma in the fellow eye during a water polo game. To the best of our knowledge, a similar case has not been previously reported. This case shows a possible association between post-traumatic and post-operative stress and CSCR, and widens the spectrum of conditions occurring with the disease.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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