Original Research Paper

Volume - 12 | Issue - 05 | May - 2022 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Ophthalmology

BILATERAL CENTRAL SEROUS CHORIORETINOPATHY FOLLOWING ELECTRIC SHOCK- "A RARE CASE REPORT"

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ABSTRACT A 39 years old male patient reported in our hospital with complaint of decreased vision in both eyes. He gave history of an electrical shock injury at his workplace 12 days back after which he developed the visual deterioration. Fundus examination and further confirmation on optical coherence tomography bilateral central serous chorioretinopathy was found, which underwent gradual spontaneous resolution and complete recovery of vision with conservative management. This is a unique case report of bilateral central serous chorioretinopathy following direct electric shock injury.

KEYWORDS : central serous chorioretinopathy, electric shock injury, spontaneous.

Introduction

Ocular complications secondary to electrical shock are widely reported and can range from burns on eyelid skin, uveitis, cataract and optic neuropathy to macular hole, macular edema, macular cyst, retinal pigment epithelium changes, retinal detachment, occlusions, and coagulative necrosis of the retinal and choroidal vasculature.[1-5] Although there is a wide range of posterior segment complications secondary to electrical shock, the literature search did not reveal any case report of central serous chorioretinopathy following electric shock injury. We report a unique case of bilateral central serous chorioretinopathy secondary to electric shock.

Case report

A 39 years old male patient suffered an electrical injury at his work place when an electrical wire suddenly fell on a machine with which the patient was in contact and the patient remained unconscious following the shock injury for 15-20 mins. He was admitted to the hospital for emergency care and was discharged later. No major injuries were reported. Five days after the accident, he noticed diminution of vision in both eyes, which slowly progressed, and he reported to our outpatient department 12 days post-injury for the evaluation of his complaints. He denied any other visual complaints and his systemic history was nil. His past ocular, systemic and medical history were also unremarkable. He denied history of steroid use in any form, tobacco, or alcohol use. His general examination revealed an entry wound scar on the left arm. On ocular examination, best corrected vision was 20/40 (p), N36 in the right eye and 20/50, N36 in the left eye. Intraocular pressure and anterior segment examination were normal bilaterally.

Fundus examination revealed subretinal fluid at macula in both eyes (figure 1a & b). Optical coherence tomography (OCT) of the macula (figure 2 a & b)and fundus fluorescein angiography revealed a typical central serous chorioretinopathy- like pattern in both eyes (ink blot pattern) (figure 1 c & d). The patient was conservatively managed and the subretinal fluid completely got resolved after medical management (figure 2 c & d). On the one and half month follow up visit patient's best corrected visual acuity improved to 20/40 in the right eye and 20/20 in the left eye.To our knowledge, this is the first and rare case of bilateral central serous chorioretinopathy after an electrical shock injury with spontaneous recovery.

Discussion

Despite advances in imaging technologies, the pathophysiology of central serous chorioretinopathy remains unclear. Various theories have been proposed to explain the pathophysiology. One of the mechanisms highlights the role of the hyperpermeable choroid due to ischemia, increased hydrostatic forces, and stasis. Another mechanism is focal defects in the retinal pigment epithelium, leading to the accumulation of fluid in the subretinal space. Increased corticosteroids levels are also strongly associated with central serous chorioretinopathy by causing choroidal vasculopathy.[6]

The electric shock can cause tissue damage by different mechanisms, including thermal damage to the tissues, mechanical injury from the shock, direct transmission of electric current to the tissues, and ischemia induced due to choriodal and retinal vasculature vasoconstriction.[2,4] The macula is highly susceptible to electric shock related damage due to foveal avascularity and high concentration of melanin pigments at the level of macula, leading to increased chance of thermal damage at the macula. Strong vitreoretinal adhesions at macula also increase the chance of damage due to mechanical injury.[3-5]

In our case, the hypothesis explaining the possible mechanisms causing central serous chorioretinopathy after electric shock may be a hyperpermeable choroid due to choroidal vasculature ischemia or focal defects in the retinal pigment epithelium due to mechanical injury or thermal injury due to high concentration of melanin at the macula, leading to more heat generation. One study has also shown that electric shock is a stress factor that can lead to elevated corticosteroids levels in the body.[7] Raised serum cortisol levels can also lead to the development of central serous chorioretinopathy.[6] Thus, it seems reasonable that these different mechanisms can lead to the development of central serous chorioretinopathy following the electric shock.

Our patient developed a diminution of vision about 5 days post electric shock, which gradually progressed. The patient had no visual complaints before the electric shock injury. The bilateral serous chorioretinopathy found in our patient was multifocal in origin, indicating tissue damage and leakage at different sites in the macula. However, our patient recovered spontaneously after conservative management. Although electric shock maculopathy has been reported in the literature but to our knowledge, central serous chorioretinopathy after electric shock has not yet been reported.

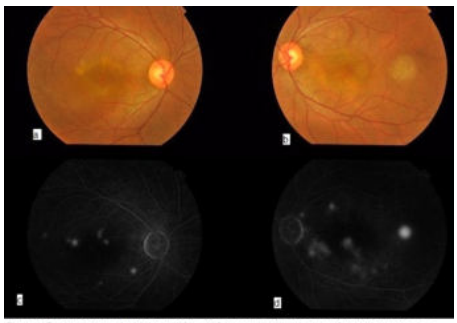

Figure 1: Fundus photograph of right and left eye(a & b respectively) at the time of presentation showing subretinal fluid in macula.
Late phase fluorescein angiogram showing leakage at multiple sites(ink blot pattern) in macula bilaterally (c & d respectively)

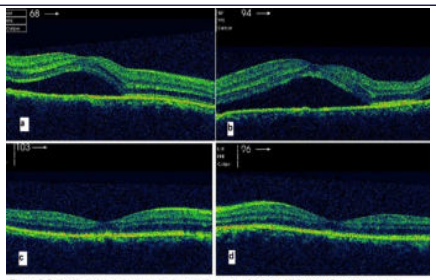

Figure 2 Optical coherence tomography image of macula of right and left eye at first visit showing subretinal fluid(a,& b respectively). At one and half month follow up visit, optical coherence tomography image showing resolution of subretinal fluid in both eyes gradually on conservative management (c &d respectively).

Conclusion

We describe a first and rare case of bilateral central serous chorioretinopathy following an electric shock with spontaneous resolution. One must be aware of the different forms of maculopathy following the electric shock injury, and the history of electric shock injury must be ruled out in every case of central serous chorioretinopathy.

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