

Concomitant Carotid-Cavernous Fistula, Chorioretinitis Sclopetaria, and Optic Nerve Transection

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Abstract

A 15-year-old boy with history of BB gun injury to his left eye was referred to our center. His visual acuity was no light perception in the left eye. Ocular findings were severe proptosis, conjunctival injection, and conjunctival vascular tortuosity. Fundus examination revealed an extensive inferior chorioretinal scar compatible with chorioretinitis sclopetaria. A distinct bruit was detected by left orbital auscultation. Orbital and brain CT-scan showed transected optic nerve by the BB gun pellet which lodged at the left parasellar area. Cerebral angiography showed a high flow direct carotid-cavernous fistula that was successfully treated by endovascular embolization. This patient is the first reported case of concomitant carotid-cavernous fistula, optic nerve transection, and chorioretinitis sclopetaria due to BB gun injury.

Keywords: fistula, chorioretinitis, sclopetaria, optic nerve transection

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Introduction

Chorioretinitis sclopetaria is an uncommon consequence of a non penetrating eye trauma secondary to the path of a projectile between the globe and the orbital walls. A dual injury mechanism is proposed. One of them is directly due to the path and the other is indirectly due to the shock waves transmitted to the globe.¹ It is the result of full thickness chorioretinal dehiscence followed by marked fibrovascular proliferation and scar formation with no retinal detachment.²

Carotid-cavernous fistulas (CCF) are spontaneous or acquired connections between the carotid artery and the cavernous sinus and can be classified as direct or indirect. The direct ones are mostly the result of trauma. They are differentiated from indirect ones by a high flow.³ Orbital trauma may also

cause traumatic optic neuropathy and optic nerve transection.

Metallic orbital foreign bodies such as BB gun pellets may cause the above noted injuries,⁴ however, concomitant optic nerve transection, chorioretinitis sclopetaria, and carotid-cavernous fistula has not yet been reported. Here we report a patient who developed all of these signs simultaneously following orbital trauma.

Case Report

A 15-year-old boy with history of BB gun injury to his left eye was referred to our center. His visual acuity was no light perception in the left eye with 4+ relative afferent pupillary defect (RAPD). Other ocular findings were severe proptosis, conjunctival injection, and conjunctival vascular tortuosity (Figures 1, 2).

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Fundus examination revealed an extensive inferior chorioretinal scar compatible with chorioretinitis scleroperetaria (Figure 3). A distinct bruit was detected by left orbital auscultation.

Orbital and brain CT-scan showed transected optic nerve by the BB gun pellet which lodged at the left parasellar area (Figure 4). Based on severe proptosis, orbital bruit and the BB location, neurosurgical consultation was requested. Cerebral angiography showed a high flow direct CCF. Concurrently endovascular embolization by glue was performed successfully.

Patient's proptosis improved shortly after treatment. Control cerebral angiography 2 months later showed the obliterated fistula and no recurrence. Due to total visual loss and severe optic nerve damage and BB pellet location no other surgical intervention was planned for the patient.



Figure 3. Fundus examination showing an extensive inferior chorioretinal scar compatible with chorioretinitis scleroperetaria.



Figure 1. Severe proptosis, conjunctival injection, and conjunctival vascular tortuosity of the left eye could be seen.



Figure 2. Conjunctival injection and conjunctival vascular tortuosity of the left eye with dilated pupil

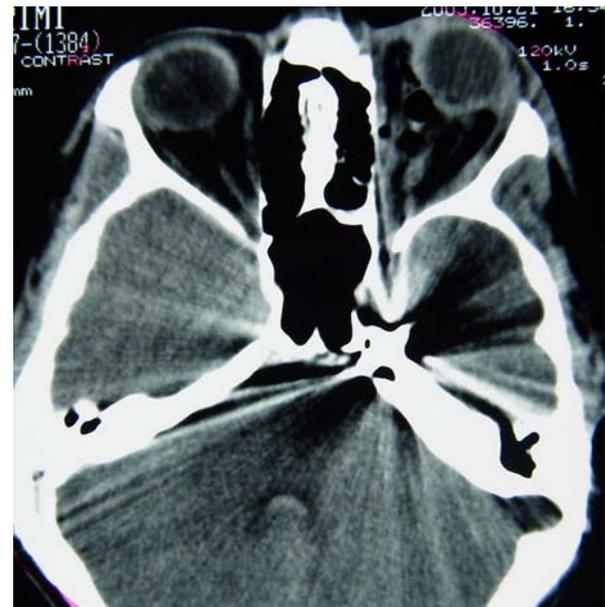


Figure 4. Orbital and brain CT-scan showing transected left optic nerve by the BB gun pellet which lodged at the left parasellar area.

Discussion

Retained intra-orbital metallic foreign bodies may accompany chorioretinitis scleroperetaria, vitreous hemorrhages or may be innocent.⁵ There are considerable reported cases with chorioretinitis scleroperetaria due to BB gun injury.^{6,7} In the case of BB gun pellet injury, management is conservative due to the inert nature of this type of metallic foreign bodies.⁴

Conclusion

The optic nerve may be transected by direct or indirect trauma. The diagnosis of traumatic optic neuropathy is not always straightforward. It is established only based on clear objective findings, presence of RAPD and pathological flash-evoked visual response.⁸ In the case of complete optic nerve transection there is no definite treatment and it generally leads to permanent visual loss.⁴

For direct CCFs, endovascular embolization is a well-established therapeutic option.⁹ In our case it was done successfully with significant improvement of proptosis.

To the best of our knowledge, this patient is the first reported case of concomitant carotid-cavernous fistula, optic nerve transection, and chorioretinitis sclopetaria due to BB gun injury.

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