An unusual case of bilateral retinal haemorrhage following snakebite

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Introduction

Snakebite is a serious community health problem in India. On an average, there are 200,000 people bitten by snakes annually and 30,000–40,000 of them die because of the ensuing complications [1]. In India 20,000 people die every year due to the same reason. Snake venoms are complex heterogeneous poisons with multiple effects. Venomous snakebites may result in haemostatic or neurological dysfunction. Ocular complications are very rare, but common ocular involvements are generally connected with neurological ones. The varied ophthalmic effects of envenomation are blepharoptosis, muscle palsies, haemorrhages into the conjunctiva, anterior chamber, vitreous or retina, lid oedema, conjunctival chemosis, retinal and optic nerve oedema, pupillary changes, optic neuritis and optic atrophy [2]. Bilateral retinal haemorrhage is an infrequent ocular effect caused by snakebite. In the current study, we describe a case that developed bilateral retinal haemorrhage following Indian Russell viper (*Daboia russelii*) snakebite.

Case history

A 22-year-old female from the Gangetic coastal area of Bengal presented with blurred vision in both eyes at the ophthalmic outpatient department. She gave a history of being bitten by a snake on her left leg 1 week earlier following which she gradually lost her vision. The snake was beaten to death by the locals and was identified as Indian Russell viper. She was

treated with anti-snake venom at the village rural clinic. The left leg on examination showed swelling and subcutaneous haemorrhage. Her best corrected visual acuity (BCVA) was perception of light in right eye and 20/200 in left eye. The intraocular pressures were 14 mmHg (right eye) and 16 mmHg (left eye). Anterior segment examination of both eyes showed few cells and flare in anterior chamber. Fundus examination of the right eye showed profound retinal haemorrhage (Fig. 1), and the left eye showed streak of haemorrhage involving the macula (Fig. 2). Blood tests revealed increased titers of fibrin degradation products and D-dimer. Fluorescein angiography was not advised as apart from blocked fluorescence, nothing else could have been elicited because of the extensive pre-retinal haemorrhage. No abnormality was revealed on external ocular examination. CT and magnetic resonance scan of brain revealed normal study. Her past blood reports records revealed no evidence of prior blood dyscrasias. The patient was followed up regularly and at the outpatient department at interval of 1 week. At the end of 8 weeks, her retinal haemorrhages had significantly regressed in both eyes with improvement of vi-

Fig. 1 Colour fundus photography of the right eye showing presence of extensive pre-retinal and retinal haemorrhage

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Fig. 2 Colour fundus photograph of the left eye showing presence of retinal haemorrhage extending to involve the macula

sion in both eyes (BCVA of right eye at last follow-up 20/200 and left eye 20/20).

Discussion

Snake venom consists of proteins, enzymes, substances with cytotoxic effects, neurotoxins, coagulants and anticoagulants. General manifestations of snakebites depend on specific toxins that constitute the venom. Antithrombotic factors of viper venoms can lead to acute fibrinolysis, severe reduction of platelet levels and damage to the vascular endothelium [3]. Viper venoms cause breakdown of permeability barriers provoking fluid extravasation and oedema. Initial haemoconcentration, a consequence of plasma extravasation, is followed by anaemia caused by bleeding or, more rarely, haemolysis. Hyaluronidase and collagenase, proteolytic enzymes that are also components of viper venoms, can cause disruption of retinal veins with resultant retinal haemorrhage.

Swelling and bruising of the bitten limb result from increased vascular permeability produced by proteases, phospholipases,

membrane-damaging polypeptide toxins and endogenous autotoxins released by venom. Ophthalmic manifestations of snakebite have rarely been reported in the literature. However, the common problem described after snakebites is a neurological disturbance in the form of ophthalmoplegia [4]. Other ocular disturbances observed as effects of snakebites range from keratomalacia to macular infarction, including haemorrhages into the conjunctiva, anterior chamber, lid oedema, conjunctival chemosis, retinal and optic nerve oedema, pupillary changes, optic neuritis, and optic atrophy, globe necrosis and visual loss due to cortical infarction [5, 6].

In this case, the patient developed visual loss after bilateral retinal haemorrhage following the snakebite. The visual loss in right eye was due to extensive pre-retinal haemorrhage, and in the left eye, visual loss was due to extension of a streak of haemorrhage to involve the foveolar region. Such bilateral retinal haemorrhage following snakebite alone has rarely been reported in literature.

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