Venom and Vision- Unilateral Subhyaloid Hemorrhage as an Unusual Snake Bite Sequela

Medha Rai[1], Shiva s[2], Shekhar Gupta[1], and Sanjiv Gupta[1]

[1]King George Medical College
[2]King George Medical University

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Key Clinical Message

We present a case of isolated unilateral subhyaloid hemorrhage secondary to snake envenomation, raise awareness about this potential for ocular involvement in systemic envenomation, emphasizing the importance of prompt diagnosis and management, and discussing the possible mechanisms underlying this condition and the importance of multidisciplinary management in such cases.

Introduction

Snake bites are a life-threatening medical emergency, with half of the global snake bite deaths happening in India, and have been included among the neglected tropical diseases of developing countries by the World Health Organisation [1]. The complications of snakebite, either neurological or hematological are attributed to its venom and usually include local tissue damage, systemic effects including shock, systemic bleeding, respiratory muscle paralysis, coagulopathy, neurotoxicity, and renal failure depending upon the type of toxin injected [2]. Ocular complications, however, are rare except for injury to the cornea or conjunctiva directly exposed to the venom [3]. We present a case of seldom reported isolated unilateral subhyaloid hemorrhage induced by a snake bite and illustrate the pathophysiological mechanisms that may link envenomation to retinal hemorrhage.

Case Report / Examination

A 32-year-old male patient presented to the outpatient clinic with the complaint of sudden onset, painless, non-progressive diminution of vision in the left eye following an unknown snake bite, six days ago. He was managed primarily at a primary health care centre, where supportive medical treatment and anti-snake venom were given.

At the time of presentation, he was conscious, oriented, with stable vitals and unremarkable systemic examination. His detailed past medical history revealed no co-morbidities or systemic illnesses. On ocular examination, his best corrected visual acuity was 6/6 in the right eye (RE) and finger counting up to one meter in the left eye (LE), with the perception of rays accurate in all quadrants. Pupillary reflex both direct and consensual were normal (OD and OS) in both eyes. Slit lamp biomicroscopy revealed a clear cornea, quiet anterior chamber, and clear lens with intraocular pressure of 14mmHg (on Rebound tonometry) in both eyes. Fundus examination of the RE was normal and LE showed the presence of a single sharply demarcated boat-shaped subhyaloid hemorrhage, occupying the lower half of the posterior pole including the macula (Figure 1).

Methods(Investigations and Treatment)

Fundus photo of the left eye showed the presence of a single sharply demarcated boat-shaped subhyaloid hemorrhage, occupying the lower half of the posterior pole including the macula(Figure 1). Optical coherence tomography (OCT) macula revealed attenuation of the underlying structures (Figure 2). His complete blood count, renal function test, hepatic function test, acute phase reactants, lipid profile, serum protein screened for coagulopathies, arterial blood gas, and serum creatine kinase levels were unremarkable. Electrocardiogram, echocardiography, and neuro-imaging revealed no abnormality. The patient was managed with vitamin C tablets 500 mg one tablet twice daily, topical non-steroidal anti-inflammatory drugs (NSAIDs) for two weeks, and was planned for laser hyaloidotomy. On follow-up after four weeks, his vision in the left eye improved to 6/36 with spontaneous clearing of the subhyaloid hemorrhage.

Conclusion

In conclusion, patients with ocular complications following snakebite should be followed up closely and carefully examined for retinal hemorrhages and neovascularization. This case serves as a reminder of the diverse and sometimes unexpected complications that can follow snake bites, particularly in the ocular domain. **It emphasizes the importance of post-snake bite ophthalmic monitoring, awareness, and timely intervention** including laser photocoagulation to prevent disastrous complications like tractional retinal detachment and irreversible damage **which can significantly impact the vision and thus the patient's quality of life.**

Discussion

Snakebite can present with a myriad of local and systemic complications depending on the nature of the toxin injected and can be either hematological or neurological. The toxins and enzymes in the venom include hydrolase, arginine, and esterase which leads to hypercoagulation added upon by hypovolemia, toxic vasculitis, and consumption coagulopathy (DIC) [2]. Any inherent deficiency of protein C, protein S, and antithrombin III can manifest as excessive bleeding. Viperidae snake venom contains hemorrhagins which may result in severe vascular spasm, endothelial damage, and increased vascular permeability via complement-mediated activation, leading to vascular occlusions throughout the body [4], [5]. Ocular disturbances resulting from snakebite, are rare and can range from, subconjunctival hemorrhage, hyphema, ptosis, ophthalmoplegia, keratomalacia, uveitis, central retinal artery occlusion, optic neuritis, macular infarction, vitreous hemorrhages, tractional retinal detachment, globe necrosis to cortical infarction [2], [3], [4]. Our patient is the first reported case of an isolated unilateral subhyaloid hemorrhage following a snake bite. Spontaneous reabsorption of the hemorrhage may occur in 1–2 months, but during this time the dispersion of this blood leads to hazy vitreous, formation of preretinal tractional membrane, and proliferative vitreoretinopathy which may irreversibly damage the retina and cause permanent visual loss, hence laser photocoagulation or a laser hyaloidotomy can be done, as done in the index case [6], [7].

Author Contributions

Medha Rai : conceptualization, formal analysis, writing original draft, review and editing

Shiva S : conceptualization, formal analysis, writing original draft, review and editing

Shekhar Gupta: conceptualization, formal analysis, writing origin draft, review and editing

Sanjiv Gupta : conceptualization, formal analysis, writing original draft, review and editing

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None

Conflict of Interest Statement

All authors have completed the ICMJE uniform disclosure form. The authors have no conflicts of interest to declare.

Ethics Statement

The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013).

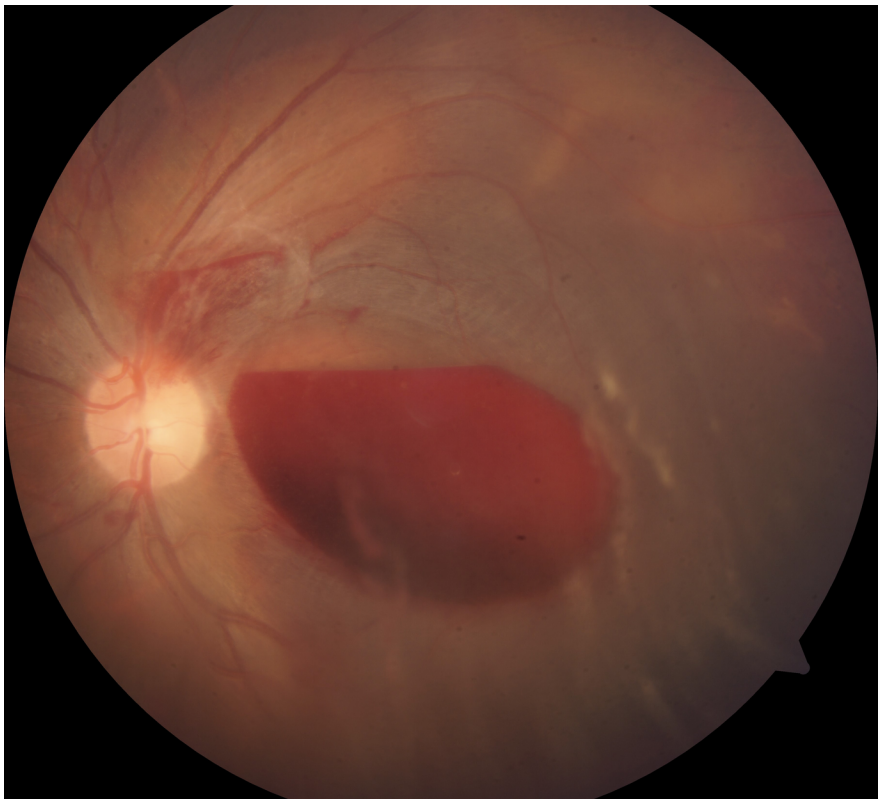
Consent

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

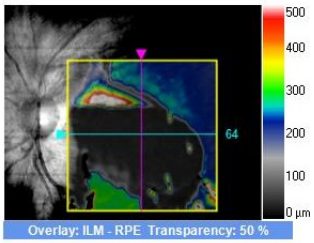
Figure Legends

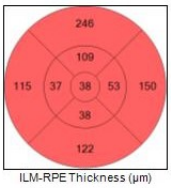
Figure 1 -Fundus photo of the left eye showing, a single, sharply demarcated boat-shaped subhyaloid hemorrhage, occupying the lower half of the posterior pole including the macula

Figure 2 - Optical coherence tomography (OCT) macula of the left eye showing attenuation of the underlying structures

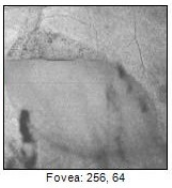


Macula Thickness : Macular Cube 512x128 OD ○ | ● OS

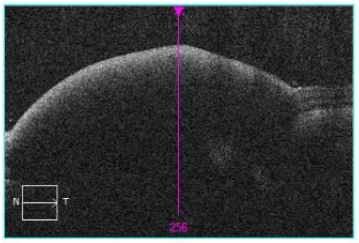


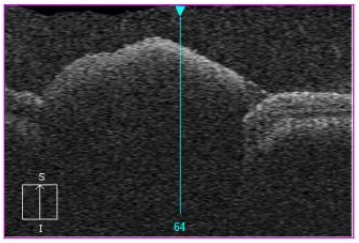


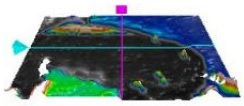
ILM-RPE Thickness (µm)



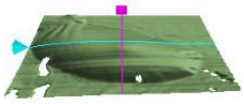
Fovea: 256, 64



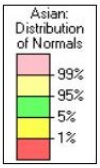


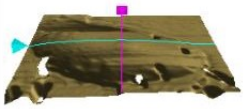


ILM - RPE



ILM





RPE

	Central Subfield Thickness (µm)	Cube Volume (mm³)	Cube Average Thickness (µm)
ILM - RPE	38	5.1	141

Comments

Analysis Edited: 8/6/2024 10:40 AM

Doctor's Signature

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