

Devastating ocular injury by a rice black bug: a case report

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Abstract

• A 59-year-old female farmer presented with left painful swollen eye for 1 week after being stung by a rice black bug (*Scotinophara sp.*). It was associated with acute progressive blurring of vision. On examination of the left eye, there was a marked periorbital swelling with proptosis and complete ptosis. The extraocular movements were restricted in all the directions. The cornea was hazy with large epithelial defect. Fundoscopy showed combined features of both central retinal vein and artery occlusions with swollen optic disc and ischaemia of the macular area. CT scan and MRI of orbit and brain showed evidence of orbital soft tissue inflammation. Patient was diagnosed with left orbital cellulitis, keratouveitis and central retinal vein and artery occlusions. The periorbital swelling and proptosis were improved after treatment with systemic and topical antibiotics. However, the vision remained no perception of light (NPL) and limitation of ocular movements persisted. The potential ophthalmic insults by *Scotinophara sp.* can be severe and permanent. Awareness of the debilitating insults by *Scotinophara sp.* to human eye should be instilled timely especially in its prone areas.

• **KEYWORDS:** ocular injury; bug; chemical injury; orbital cellulitis; CRAO; CRAO

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INTRODUCTION

Insects may cause eye injuries with mild discomfort to severe irritative symptoms which are often aggravated by the poisonous effects of the fluid released during the attack, sting or bite. It can lead to cellulitis and complicated with

keratoconjunctivitis, keratopathy, uveitis or even optic neuritis^[1]. However, eye injury caused by bugs is an extremely rare condition and not commonly reported^[1].

CASE REPORT

A 59-year-old female farmer presented with history of left painful swollen eye for 1 week duration. It was associated with acute progressive blurring of vision. She was injured by a small pungent bug named 'Posisang' (*Scotinophara sp.*) (Figure 1). It started with mild pain and redness of the left eye. However, the condition worsened and she developed eye discharge. There was no other history of trauma. She was diagnosed with hypertension recently and was on treatment. There were no other systemic problems such as diabetes or chronic sinusitis. On examination, her visual acuity was no perception of light (NPL) in the left eye and 6/10 in the right eye. There was a marked left periorbital swelling with complete ptosis and mild proptosis (Figure 2). The extraocular movements (EOM) were restricted in all the directions. Slit-lamp examination revealed lost of eyelashes (Figure 3A) with severe chemosis (Figure 3B). There was a total corneal epithelial defect (Figure 3B) with stromal oedema and 1/4 of limbal ischaemia inferiorly (Figure 3C).



Figure 1 *Scotinophara species.*

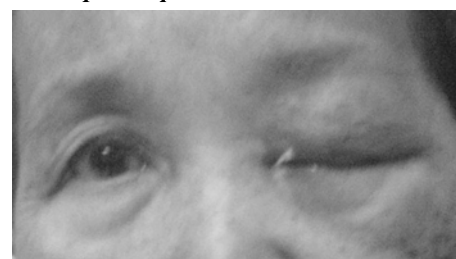


Figure 2 Complete ptosis with proptosis and periorbital swelling.

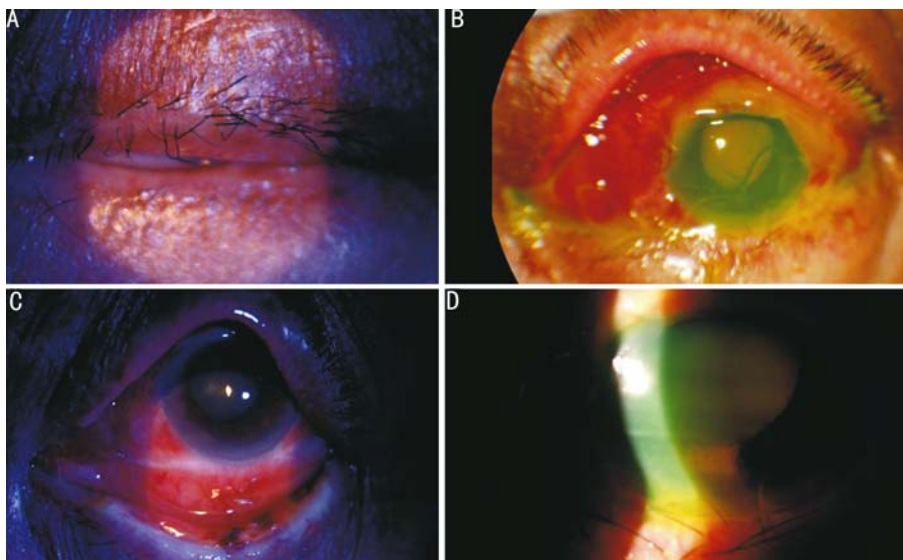


Figure 3 A: Loss of lashes in the lower lid; B: Total corneal epithelial defect; C: Inferior limbal ischaemia; D: Moderate AC inflammation.

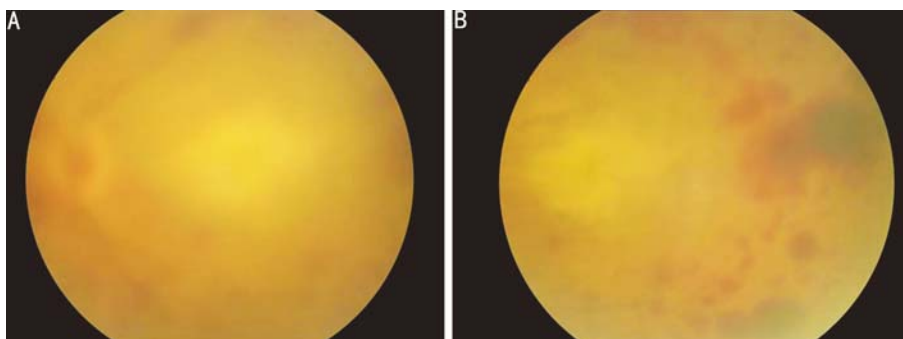


Figure 4 Hazy fundus views showed features of CRVO and CRAO A: CRVO with swollen optic disc; B: CRAO with ischaemic retina at macula.

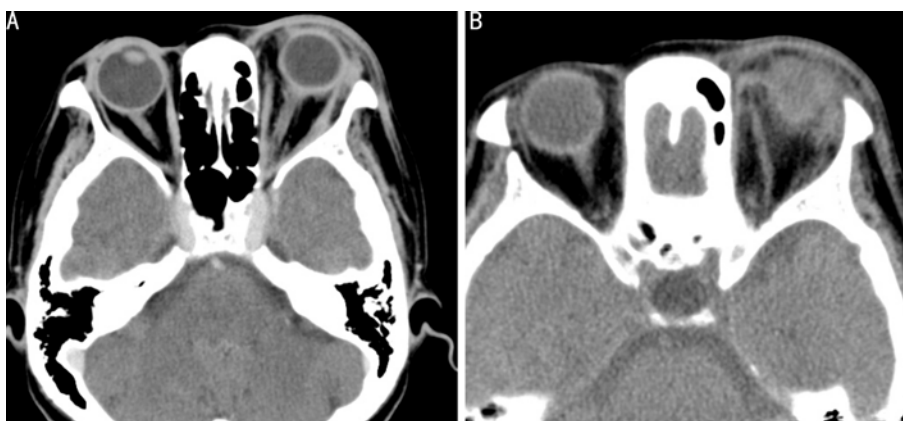


Figure 5 A: Fluid collection around the left eye ball and symmetrical enlargement of carvenous sinuses; B: Marked oedema of the eyelids, peri-ocular soft tissues and retrobulbar fat.

The anterior chamber(AC) reaction was moderate and the iris details were visible (Figure 3D). The relative afferent pupillary defect was positive in the left eye. The fundus view was slightly hazy. There were features of both central retinal vein as well as artery occlusions with swollen optic disc and ischaemic retina at the macular area (Figure 4). On general examination patient was afebrile with stable vital signs. There was no lymphadenopathy or any organomegaly. Neurological examination revealed reduced sensation at the left trigeminal nerve distribution (V_1, V_2). However, examination of the other cranial nerves was normal.

Blood investigations revealed raised white cell count ($13.1 \times 10^9/L$) with a normal fasting blood sugar. Chest radiograph and blood culture were unyielding. CT scan of the brain and orbit showed fluid collection around the left eye ball (Figure 5A) and marked oedema of the eyelids, peri-ocular soft tissues and retrobulbar fat suggestive of preseptal and orbital cellulitis (Figure 5B). The extraocular muscles were normal. Both carvenous sinuses are mildly enlarged but symmetrical(Figure 5A). No intra-sinus thrombus was seen. MRI/MRV, which was done later showed left orbital tissues oedema (Figure 6A) with enhancement of mainly the retro-bulbar fat (Figure 6B) and

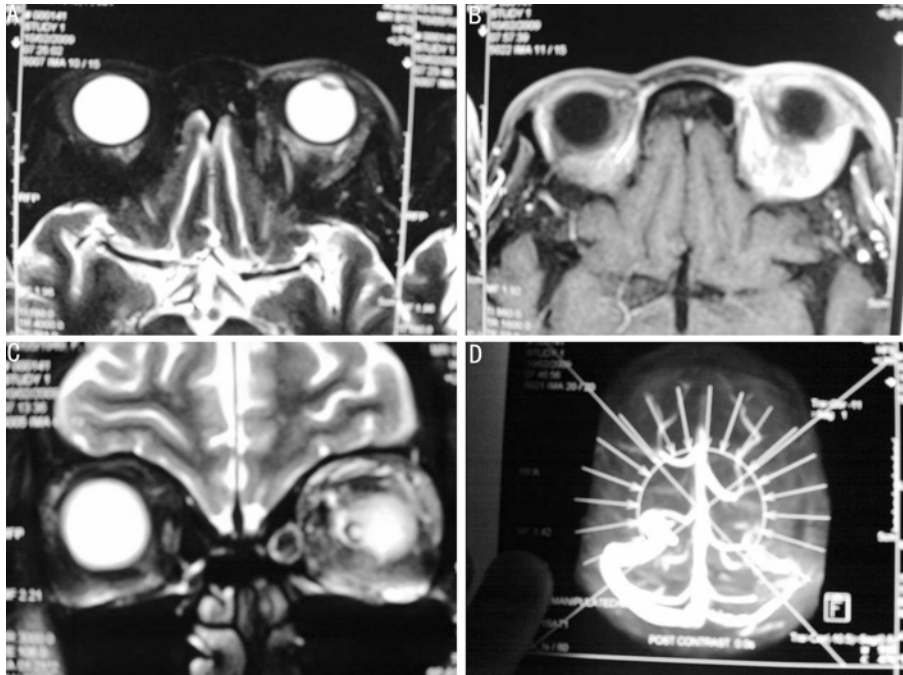


Figure 6 A: Left orbital tissues oedema; B: Enhancement of the left retro-orbital fat; C: Enhancement of the extraocular muscles in the left orbit; D: Normal MRV.

extraocular muscles (Figure 6C). No features suggestive of cavernous sinus thrombosis were seen and the MRV was normal (Figure 6D).

A diagnosis of left orbital cellulitis with keratouveitis complicated with both central retinal vein as well as artery occlusions was made. She was treated with intravenous ceftazidime, cloxacillin and metronidazole. Topical ciprofloxacin and chloramphenicol ointment were given besides cyclopentolate and intensive preservative free artificial tear eye drops. Patient was also given oral vitamin C and doxycycline. Bethamethasone eye drops were added when patient showed some improvement and after the eye swab culture showed no organism grow.

The lid swelling and proptosis resolved after 1 month. However, the ptosis and EOM restriction persisted even after 2 months of follow-up. Vision in the left eye remained NPL with a similar fundus finding.

DISCUSSION

The rice black bug (RBB), is locally called 'Posisang' in Sabah, a state in Malaysia. It is a small four-winged insect of the Order *Heteroptera* and Genus *Scotinophara*. It is a serious pest that attacks rice plants causing crop loss [2]. It is regarded as a noisome insect with a pungent smell [2] from liquid released by the insect, which serves as a defensive mechanism to enemies. RBB does not bite, but it can inflict pain by inserting its beak into the skin, which can cause minor bleeding occasionally. However, this rarely occurs. Bugs injuries to the eye can cause severe iridocyclitis and keratitis secondary to mechanical insult or chemical injury by toxic fluid produced by the insects as a defence mechanism. Bugs can produce a toxic fluid containing cantharidin crystalline anhydride of cantharidic acid, which may cause severe vesicular skin reaction and when instilled into the eye,

it may cause necrotic conjunctivitis and keratouveitis. However, the fluid released by *Scotinophara sp.* has not been studied before. Thus, the keratopathy and uveitis in this case were probably secondary to the toxic fluid released by the RBB while the orbital cellulitis was inflicted by mechanical injury caused by the insect. Radiology evaluation is an important modality in the diagnosis of orbital cellulitis and associated life-threatening complication such as cavernous sinus thrombosis. Although CT scan of the orbit and brain revealed bilateral enlargement of the cavernous sinus, MRI had confirmed absence of cavernous sinus thrombosis. In orbital cellulitis complicated with cavernous sinus thrombosis, contrast-enhanced CT scan may reveal thickening of the superior ophthalmic vein, and irregular filling defects within the cavernous sinus. However, findings may be normal early in the disease course. In comparison, MRI provides a precise anatomy of the complex structures in cavernous sinus. The MRI findings may include deformity of the internal carotid artery within the cavernous sinus, and an obvious signal hyperintensity within thrombosed vascular sinuses on all pulse sequences. MRI also provides important diagnostic information concerning the flow status in the cavernous sinus and the involutional process of both thrombus formation and its disintegration [3]. Thus, the flow parameters and MR venogram are more sensitive than CT scan, and are the imaging studies of choice to diagnose cavernous sinus thrombosis. Cerebral angiography can be performed, but it is invasive and not very sensitive. Orbital venography is difficult to perform, but it is excellent in diagnosing occlusion of the cavernous sinus.

Topical betamethasone was started for this patient after both topical and systemic antibiotics coverage. In cases of insects associated ocular injury, topical corticosteroids are often prescribed for the treatment of ocular inflammation especially

in iritis although there was concerns exist on the possibility of increased susceptibility to infection with their use^[4]. Corticosteroids have been used alone, or in conjunction with antibiotics, in cases of corneal bee stings, but should be used cautiously after consultation with an ophthalmologist^[5]. Topical or systemic antibiotics are indicated because insects' related ocular injuries such as corneal bee sting have been associated with infectious complications including mucopurulent keratoconjunctivitis and hypopyon^[5]. Although coagulase-negative *Staph. aureus* may be the most commonly cultured bacteria associated with ocular foreign bodies, *Pseudomonas sp.* infection also has been reported following corneal bee sting, suggesting that broad-spectrum antibiotics should be considered in insect related ocular injuries^[6] such as a fluoroquinolone as in this case.

Our patient had permanent visual loss although keratopathy and uveitis had resolved. Irreversible visual loss was due to both central retinal vein as well as artery occlusions^[7] secondary to severe orbital cellulitis. Severe orbital inflammation with vascular compromise to 3rd, 4th 5th (V_1, V_2) and 6th cranial nerves had inflicted a permanent ptosis and EOM restriction with sensory abnormality over the ophthalmic and maxillary distributions of the trigeminal nerve.

Ocular trauma caused by bugs are rarely reported environmental injuries that have the potential for ophthalmic insult ranging from minor to severe and permanent consequences. The potential ophthalmic insults by *Scotinophara sp.* can be severe and permanent. Awareness of the debilitating insults by *Scotinophara sp.* to human eye should be instilled especially in its prone areas.

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黑色谷物昆虫导致的严重眼部创伤 1 例

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摘要

患者,女,农民,59岁,左眼被名为 *Scotinophara* 菌的黑色谷物昆虫蜇伤后疼痛肿胀1wk,表现为急性进行性视物模糊。左眼检查发现有明显的眼球突出、眶周肿胀和上睑下垂,眼球各个方向运动均受到限制。角膜浑浊伴上皮大片缺损。眼底检查发现视网膜中央动、静脉闭塞,视盘水肿和黄斑区缺血等特征。CT扫描和脑与眼眶MRI检查发现眼眶软组织炎症。患者诊断为左眼眶蜂窝织炎、角膜炎(角膜葡萄肿)和和视网膜中央动静脉闭塞。全身和局部抗菌素治疗后,眼眶周围肿胀,眼球突出明显改善。但是视力仍为无光感,此外,仍存在持续性眼球运动障碍。*Scotinophara* 菌产生了严重的和长久的潜在眼部刺激。*Scotinophara* 菌所致可觉察的轻微人眼伤害尤其在易发部位应该及时给予滴眼液治疗。

关键词:眼损伤;昆虫;化学损伤;眼眶蜂窝组织炎;视网膜中央静脉阻塞;视网膜中央动脉阻塞