Moth hair in cornea in a case of seasonal hyperacute panuveitis

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Seasonal Hyperacute Panuveitis (SHAPU) is a seasonal and cyclic uveitic disease reported only from Nepal occurring every odd year. Untreated eyes go blind and phthisis within a week. Circumstantial evidence for the role of moths has been reported earlier. Herein for the first time, we describe a SHAPU case in a healthy young Nepalese patient where the exposure to white moth was followed by the development of the uveitis and the moth hair particles was detected in the corneal and presence was confirmed with anterior segment optical coherence topography.

Key words: Hypopyon, moth hair, Nepal, seasonal hyperacute panuveitis, unilateral red eye

Seasonal Hyperacute Panuveitis (SHAPU) is an uveitic eye disease of unknown etiology with poor prognosis, reported only from Nepal since 1975.[1] SHAPU is characterized by unilateral red eye associated with significant vision loss occurring in post monsoon season without prior history of surgery or trauma.[2] Hypopyon, fibrinous exudates in anterior chamber, a difficult to dilate pupil and inability to visualize retina because of massive exudation into vitreous producing a "White pupil in Red eye" with little or no pain are the other characteristic features of the disease.[2] It occurs in epidemic form beginning with end of monsoon (August–September) and usually ending with peaking of winter in December–January.[2-4] Association with white moth has been suspected and tiny hair parts possibly from moths have been identified in ocular structures of few affected patients.[5] However, herein we report the first case of SHAPU with moth hairs in cornea confirmed with anterior segment optical coherence topography. The written consent for the publication was obtained from the patient.

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Case Report

During October 2017, a 25-year-immunocompetent male presented with redness and diminution of vision in right eye since 5 days. The symptoms developed next day after he had rubbed his right side of forehead with the wall curtain from where a striated white moth fell down over his face. He developed rashes around the forehead same day and painless redness with decreased vision of right eye next day. He had consulted the local hospital where he was documented as acute anterior uveitis with fibrin and hypopyon and started with topical intensive steroid and was referred to us.

At presentation to us, vision was 20/50 N8 in RE and 20/20 N6 in LE. The right eye was diffusely congested [Fig. 1a], multiple striations noted in the different layers of cornea. On cautious evaluation, hair-like particles embedded in the corneal epithelium, stroma and endothelium was noted [Fig. 1b]. Few areas of punctuate corneal erosions seen. There was fine keratic precipitates, 3+ cells and 2+ flare in anterior chamber but hypopyon was already resolved. Pupil was dilated, lens clear, vitritis present with 3+ haze [Fig. 2]. LE findings were unremarkable.

Intraocular pressure in each eye was normal. Increased corneal thickness noted in the topography in RE (central thickness RE vs LE: 599 μm vs 493 μm) as shown in Fig. 3. The anterior segment optical coherence topography (AS-OCT) confirmed the presence of hair particles in different corneal layers in RE [Fig. 4].

With the diagnosis of SHAPU, the patient was managed with diagnostic aqueous and vitreous tap followed by intravitreal injection of vancomycin (1 mg/0.01 ml)+ ceftazidime (2.25 mg/0.01 ml), and dexamethasone (400 μg/0.01 ml) along with subconjunctival gentamycin (40 mg/0.4 ml) and dexamethasone (4 mg/0.4 ml).

The ocular fluid was negative for Gram stain and KOH mount and yielded no growth in bacterial and fungal culture medias. PCR was not performed due to unavailability in our hospital. The baseline blood investigations including CBC, ESR, RBS and serological tests were normal.

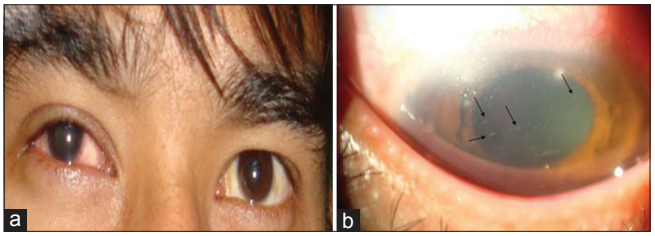

Figure 1: Unilateral red eye with greenish pupillary reflex (a) showing multiple hairs embedded in the cornea (b)

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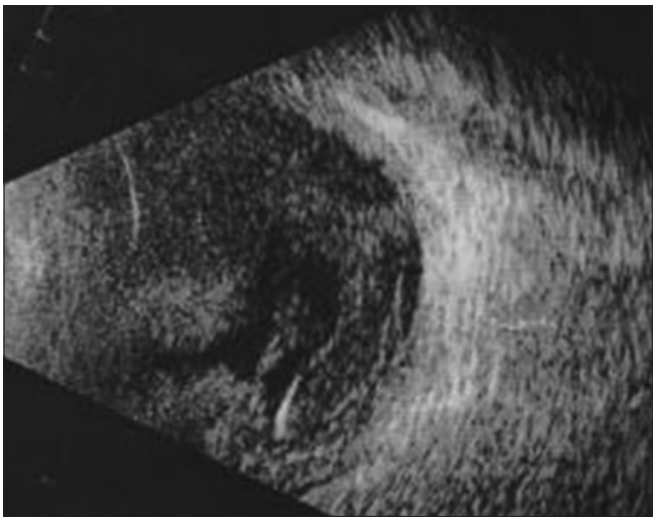

Figure 2: USG B-scan of RE showing multiple hyperechoic shadows in the vitreous, thickened chorioretinal complex but attached retina

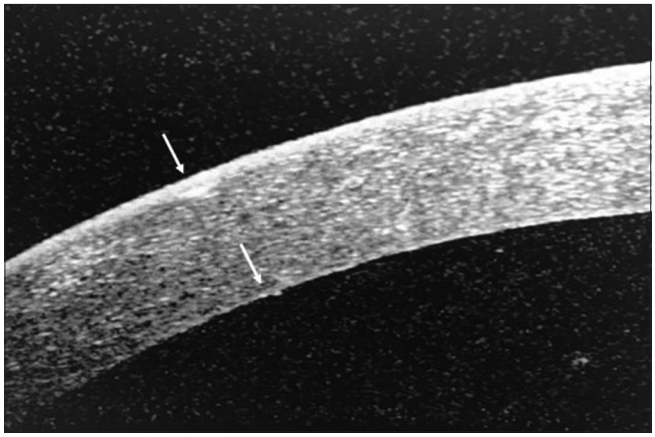

Figure 4: Anterior segment OCT demonstrating the hair particles in the various layers of cornea

The removal of hair particles attempted but was unsuccessful as they were very fine.

With treatment, the vision improved to 20/25, N6 in RE. Anterior chamber and vitreous inflammation decreased and fundus was visible and was normal [Fig. 5].

Discussion

SHAPU is a curious entity occurring in 2-year cycles in odd years beginning with the end of monsoon (August–September) and usually ending with peaking of winter in December–January like in this reported case.

The history of unusual increase in moths population near the habitants of this SHAPU victim and direct contact with these moths while rubbing forehead with the wall curtain is the strong linkage to point toward the vital role of moth in the SHAPU pathogenesis.

Definite history of exposure to moth and visible hair in the tissues of the eyes proven with the imaging technique like in this case is only half the answer to the problem of Moth-related SHAPU. A complete answer would require knowledge about how do moths cause this disease and which species of moths are responsible? Are moths acting as a vector of microbial agents, injecting venoms, toxins, or uveitogenic agents? It is well known that certain variant of white moths from Lepidoptera group carry toxic chemicals like histamine and cyanide which is known to be toxic to human body.

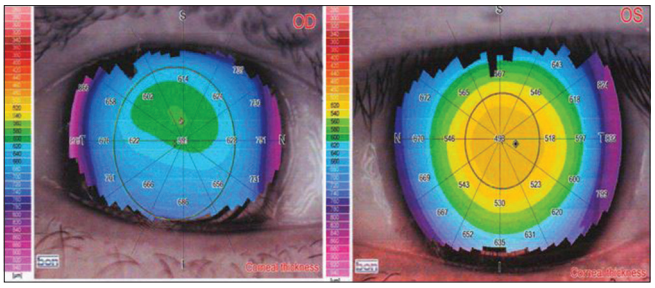

Figure 3: Corneal topography showing corneal thickness increased in RE compared to LE

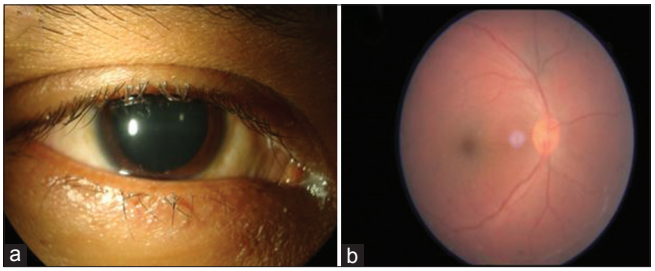

Figure 5: Decreased redness and visible retinal glow in RE (a) with possible view of fundus (b) after treatment

The further debate is about which moth Gazelina or Tussock as both have been reported earlier[2,6] but neither have been proven. Hopefully in the upcoming SHAPU outbreaks, the Moth saga mystery will be solved. At present, from the public health perspectives we are focused to increase awareness among the general population is to be away from the white moths, wash hands immediately after accidental moths contact, and to minimize the use of white lights where the moths get attracted.

In fact, female white moths of either Gazelina or Tussock are the suspected culprits as their spines and setae bear toxic materials for protection of their eggs. These toxic materials have been identified as histamine, acetylcholine, histamine-like substance, formic acid, venoms, pro-inflammatory products of cyclo-oxygenase; all these are capable of causing hypersensitivity reactions both immediate hypersensitivity reactions and delayed-type hypersensitivity in susceptible individuals.[7,8]

This SHAPU case history needs to be differentiated from Ophthalmia Nodosa where Frank endophthalmitis is very rare, although mild grades of vitritis have been more commonly reported.[9] Absence of history of trauma/surgery in apparently healthy persons without marked pain in the eye distinguish it from either exogenous or endogenous endophthalmitis cases.

Demonstration of hair particle in the ocular tissue of this SHAPU case provides a strong linkage between white moth and SHAPU.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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