

Diagnosis of ophthalmomyiasis externa by dermatoscopy

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ABSTRACT Ophthalmomyiasis in humans caused by the larvae of the sheep nasal botfly (*Oestrus ovis*) and is a rare phenomenon in Israel. We describe the utilization of the dermatoscope as a diagnostic tool for the facilitation of early diagnosis of conjunctivitis due to the infestation of the eyes by the sheep nasal botfly in two patients. After the physical removal of the larvae with the help of a cotton swab applicator under a slit lamp examination and the topical use of antibiotics, the clinical symptoms improved within 1-2 days. Undoubtedly the dermatoscope played a crucial role leading to the definitive diagnosis and immediate therapeutic intervention.

Introduction

Ophthalmomyiasis, also known as ocular myiasis, is the infestation of the eye or periorbital tissue by larvae of the insect order Diptera. When larvae remain outside the eye it is called ophthalmomyiasis externa, while penetration of the eye is termed ophthalmomyiasis interna. The latter is caused by the larvae of *Dermatobia hominis*, which can cause also blindness. Ophthalmomyiasis externa in humans is often caused by the larvae of the sheep nasal botfly, *Oestrus ovis*, and the Russian botfly, *Rhinoestrus purpureus*, which are found in sheep farming communities. Often the victims have

the sensation of being struck by a foreign body or insect. Soon thereafter a painful inflammation develops, causing an acute catarrhal conjunctivitis [1,2].

Oestrus ovis is a cosmopolitan fly whose females are larviparous, depositing a number of first instar larvae on the edge of, or just inside the nostrils of sheep and goats, while still in flight, whereas infestation in humans is rare [3].

Ophthalmomyiasis produced in humans by *O. ovis* larvae is restricted to conjunctivae, sclera, eyelids, and lacrimal duct (external ophthalmomyiasis) or the eyeball (internal ophthalmomyiasis). Hallmarks of this condition are a typical history associated with severe local conjunctival inflammation with

a foreign body sensation, photophobia, lacrimation, erythema and marked periorbital edema. The patient may have the rare complaint of a sensation of motion within the eye [4-6].

In Israel, cases of ophthalmomyiasis caused by *O. ovis* have been reported [7-9]. In addition, Yeruham et al. [10] reported the case of a pharyngeal myiasis, while Mumcuoglu and Eliashar [11] reported a case of nasal myiasis caused by the larvae of this species.

We describe the utilization of the dermatoscope as a diagnostic tool for the facilitation of early diagnosis of conjunctivitis due to the infestation of the eyes by the sheep nasal botfly in two patients.

Case reports

Case 1

A 27-year-old male was standing outdoors when suddenly he felt an insect hit his left eye at high velocity. Soon afterwards he complained of a stinging sensation, pain and uncontrollable tearing. Upon arrival at the clinic an hour after this incident, the patient seemed anxious. His eye was covered with his hand. Physical examination disclosed a red left eye with swollen and erythematous palpebra and profuse epiphora. The conjunctivae were fiery red and the bulbar conjunctiva demonstrated significant flushing with ciliary injection. At first, with unassisted examination any trigger or cause leading to this condition was hardly discernible. However, after administering topical anesthetic drops and applying polarized dermatoscopic inspection, a number of larvae were observed escaping the light shone across the eye surface and crawling into the conjunctival fornices (Figure 1). A smartphone was mounted onto the eyepiece of the dermatoscope and the zoom photography mode enabled further magnification. With a cotton swab applicator under the illumination of the device, six larvae were removed and placed in formalin. The abundance

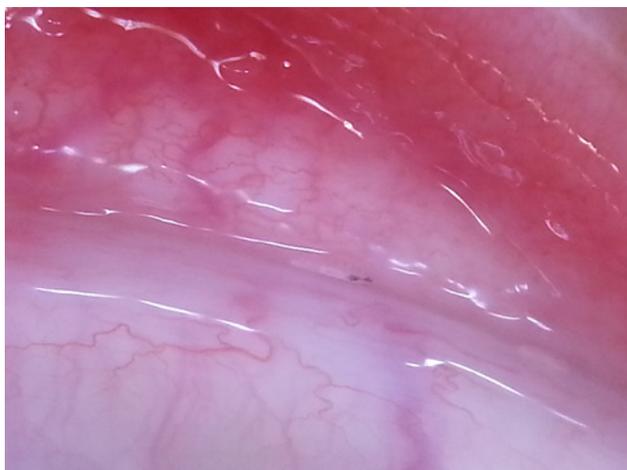


Figure 1. Solitary horizontal *Oestrus ovis* larva in the conjunctival fornix of the left eye. Zoom photography from smartphone mounted over a DermLite 3 (trademark) polarized dermatoscope. (Copyright: ©2014 Naimer et al.)

of the organisms precluded their removal under these conditions and therefore the patient was referred for a slit lamp examination at the emergency department of Beilinson Hospital, where 14 additional larvae were removed from the eye. The patient was released after application of chloramphenicol eye ointment with ocular covering.

The following day he reported a sensation of something moving in the left posterior nasal region later migrating to the back of his throat. After intensive water gargling, all symptoms resolved and the eye recovered without any further sequelae.

Case 2

A 17-year-old teenager arrived at the clinic after spending the prior night and day hiking the Hevron mountains. He recalled that previous day he had the sensation of suddenly being struck in the face by a fly. His left eye gradually became more and more irritated and he felt something moving around inside his eye. The findings were similar to those in the patient in Case 1, except that in this patient, the time lapse between the infestation and diagnosis led to substantial accumulation of purulent secretion which hindered clear visualization of the complete conjunctival surface. Upon examination with the dermatoscope, the smartphone screen displayed a number of larvae wriggling over the cornea and bulbar surface trying to evade discovery (Figure 2). At the Kedumim Family Health Center, 15 larvae were manually removed with the tip of a



Figure 2. Group of larvae gathered in the inner canthus of conjunctiva. Notice the streak of pus accumulated to in the gutter to the left. (Copyright: ©2014 Naimer et al.)

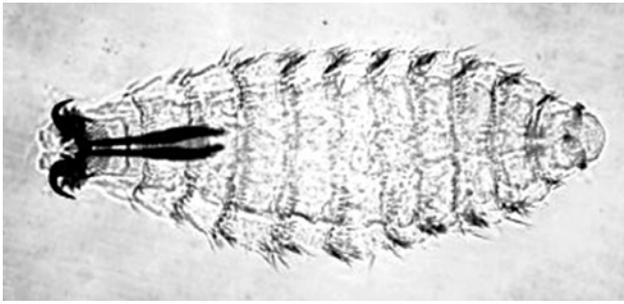


Figure 3. First instar larva of the sheep nasal botfly (*Oestrus ovis*). (Copyright: ©2014 Naimer et al.)

cotton wool applicator using a full scale slit lamp. Again an occlusive ocular dressing was left in position after antibiotic ointment application. The following day the patient reported that his symptoms had improved significantly.

In both cases the larvae were examined under a stereo microscope and using morphological characteristics [12] they were identified as the first instar larvae of the sheep nasal botfly, *Oestrus ovis* (Figure 3).

Discussion

Despite its original indication for use in delineating and characterizing pigmented skin lesions, the recent introduction of the polarized dermatoscope allows thorough examination with full illumination of the eye. The further advantage of a convenient portable device, which can, in selected instances, be used instead of the slit lamp in these remote rural locations where such infestations most commonly opportune. Dermatoscopy for use over the various surfaces of the body holds a vast number of advantages. In particular, the numerous uses of polarized dermatoscopy in ophthalmology have been reported [13,14]. For instance, a portable utensil in its format, as opposed to the slit lamp which is static and demands the patient sit in front of the examiner, will enable patient examination while lying on a bed. This is a great benefit specifically for subjects who react with fear to discomfort and eye manipulation and procedures with vasovagal syncopal reactions [15]. This is the first report of dermatoscopic use in diagnosis of this condition. Slit lamp is the rule for diagnosis of ophthalmomyiasis in all reports in the past [16]. The consequences of a late and delayed diagnosis are obvious, therefore the clinical approach noted in previously reported cases highlight the importance of prompt diagnosis and speedy intervention. In our patients this is exemplified by the relatively mild clinical presentations before the onset of complications and their rapid recovery. Furthermore a unique characteristic witnessed in the present cases was the staggering number of larvae involved after a very brief exposure to the fly itself. The largest recently reported series from Libya

summarizing 21 cases in which the maximum number of organism found were seven [17].

In conclusion, the observed cases represent one of several reports of ophthalmomyiasis in the Middle East caused by *O. ovis*. However, we have introduced a novel, readily available tool to facilitate diagnosis and treatment. Inhabitants and visitors in endemic regions are all vulnerable to eye infestation by fly larvae, and health care providers need to include this condition in their differential diagnosis of anterior segment inflammatory disorders. The dermatoscope can serve as a loyal companion to assist treating such cases especially in remote areas.

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