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## Oestrus Ovis External Ophthalmomyiasis Mimicking Acute Conjunctivitis

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### ABSTRACT

*Oestrus ovis is the most common cause of human Ophthalmomyiasis. In this study, we present a case of external ophthalmomyiasis caused by Oestrus ovis in a 10 year old rural boy following a fly hit on the right eye. Careful examination, accurate diagnosis and prompt removal of larvae with fine forceps is necessary to prevent complications.*

**Keywords:** *External Ophthalmomyiasis, Myiasis, Oestrus ovis, sheep botfly.*

### INTRODUCTION

Myiasis is the infestation of live human and vertebrate animals with dipterous larvae which, at least for a certain period, feed on the host's dead or living tissue, liquid body substances or ingested food.<sup>[1]</sup> The most common site of infestation is skin wound and the other less common sites are eyes, nose, paranasal sinuses, throat and urogenital tract.<sup>[2]</sup>

Ophthalmomyiasis occurs in about 5% of all cases of myiasis. External Ophthalmomyiasis occurs when the larvae attack the external surface of the

eye ie, lids, conjunctiva or lacrimal ducts and Internal Ophthalmomyiasis occurs when there is intraocular penetration of larvae.<sup>[3]</sup>

Ophthalmomyiasis is not uncommon but underestimated in many rural areas, because of under reporting and also often misdiagnosed as acute conjunctivitis. Here, we report a case of Oestrus ovis External Ophthalmomyiasis in a boy hailing from a rural region of Mysore district of Karnataka state, India.

## CASE REPORT

A 10 year old boy from a rural area presented to Ophthalmology OPD with foreign body sensation, burning, redness and excessive watering from his right eye two hours after his eye was struck by a fly while riding on a motorbike. There was no past history of ocular or medical problems.

On examination, the vision was 6/6 in both the eyes and the pupillary reaction was normal. The conjunctiva of right eye was congested with profuse lacrimation and the eyelids were mildly oedematous. Slit lamp examination revealed the presence of fifteen motile, tiny, translucent larvae 1-2 mm in size in the conjunctival sac and on the palpebral conjunctiva of upper eye lid. After administration of 4% xylocaine topical anaesthetic drops, the larvae were removed with fine forceps and thorough irrigation with physiological saline was given. Topical Gatifloxacin eye drops 0.5% was prescribed to prevent secondary infection. There was no evidence of corneal or intraocular involvement. During the follow up period after 2 days and after 5 days, the signs and symptoms had completely subsided and repeat slit lamp examination was normal. The larvae were sent to microbiology laboratory for identification.

On macroscopic examination, the larvae were translucent, white and measured 1-2mm in length and 0.3 mm in width. Microscopic examination revealed spindle shaped translucent segmented body with minute dark spines arranged as intersegmental spine bands. There were 22 to 25 terminal hooks arranged in two scallops in the terminal segment. A pair of sharp, large, horn-like

dark brown oral hooks was seen attached to the internal cephalopharyngeal skeleton. Based on these morphological features, the larvae were identified as first instar larva of *Oestrus ovis* fly.<sup>[4]</sup>

## DISCUSSION

*Oestrus ovis*, the Oestridae sheep nasal bot fly is the most common (90%) cause of ophthalmic myiasis in humans, as reported till now.<sup>[5]</sup> Ophthalmomyiasis due to *Oestrus ovis* was first described by James in 1947. It is more commonly reported from sheep rearing areas of Mediterranean region, Central America and Africa during cool winter and rainy seasons, where the standard of hygiene is low and abundance of flies around the locality. It is considered as an occupational disease among farmers and shepherds, who comes in close contact with sheep and goat. They are the natural hosts and man is infested accidentally. Our case hails from rural sheep rearing region and was affected during the winter season.

*Oestrus ovis* is the obligate parasite of the nasal and sinus cavities of sheep and goats. The female are larviparous, depositing a number of first instar larvae, while still in flight on the edge or just inside the nostrils of sheep and goats. The fly darts close to the eyes or nostrils and ejects a stream of larvae into the target area. The larvae migrate to the nasal and frontal sinuses where they undergo two moults. After 2 to 12 months, the fully grown third instar larvae are expelled and they pupate on the ground into an adult in three

weeks. The first stage larvae do not mature in the unnatural human hosts but they erratically wander the ocular sites and produce Ophthalmomyiasis.<sup>[6]</sup>

The larvae of *Oestrus ovis* are equipped with oral hooks and spines, which helps in burrowing into the lids and to penetrate the globe through the sclera causing internal ophthalmomyiasis, uveitis, optic atrophy and blindness.<sup>[7]</sup> Debilitated elderly people, previous eye infections, malignancy, alcohol abuse, poor personal hygiene and poorly nourished children, are at risk of developing internal ophthalmomyiasis.<sup>[2]</sup>

Various other species causing human Ophthalmomyiasis are *Musca domestica*,<sup>[5]</sup> *Dermatobia hominis*, *Hypoderma*,<sup>[2]</sup> *Chrysomya* and *Cochliomyia*.<sup>[8]</sup> Identification of the fly species is very important to estimate the risk of internal ophthalmomyiasis. The larvae of *Hypoderma bovis*, *Dermatobia hominis*, *Chrysomya bezziana* or *Cochliomyia hominivorax* are more dangerous as they burrow into the eye causing endophthalmitis and iridocyclitis and may even lead to blindness.<sup>[5], [8]</sup>

Misdiagnosis of External Ophthalmomyiasis is common, as the signs and symptoms of ophthalmomyiasis such as foreign body sensation, redness, burning sensation, lacrimation and odema of lids are also seen in acute conjunctivitis of other causes. As the larvae are tiny, translucent and photophobic moving away from the light of the slit lamp beam to hide in the depth of the conjunctival sac, they can be very easily missed on routine examination. Sometimes, the larvae may die in the host, giving rise to a permanent

nodule that macroscopically may resemble a hordeolum, leading to further misdiagnosis.<sup>[9]</sup> In our case, the patient's typical history of being struck in the eye by a fly and slit lamp examination of conjunctival sac and everted upper eyelid helped in identifying the motile larvae of *Oestrus ovis*.

Treatment is based on removal of larvae after instillation of anaesthetic drops followed by topical antibiotics and steroids. Anaesthetic drops anaesthetize the eye and immobilize the larvae, thereby facilitating removal of larvae. Irrigation of the conjunctiva with normal saline is usually not successful in washing out the larvae because they are firmly attached to the conjunctiva with their oral hooks and body spicules.<sup>[10]</sup> Also care should be taken to prevent any laceration of the larva, because the left out portion of the larva in the tissue causes undesirable inflammatory response. Hence removal with forceps or cotton swab sticks is the preferred method, which was followed in our case. Instillation of petroleum jelly or turpentine oil in the conjunctival sac can also be used as they arrest larval breathing by hypoxia and then larvae run out of cul de sac in search of fresh air.<sup>[5]</sup> Local antibiotics and topical corticosteroids further prevent secondary bacterial infection and reduce inflammation. Our patient recovered uneventfully with early and prompt removal of larvae.

## CONCLUSION

*Oestrus ovis*, the most common cause of human Ophthalmomyiasis has to be considered when a

patient from a rural area presents with signs and symptoms of acute conjunctivitis with typical history of being struck by a fly. As the larvae are tiny and photophobic, they can be easily missed on routine examination. Initiation of early, prompt and effective treatment with removal of larva by forceps can prevent the potential complication of Internal Ophthalmomyiasis.



**Figure 1**-Oestrus ovis larva in conjunctival cul de sac



**Figure 2**-First instar larva of Oestrus ovis with oral hooks and multiple spiny projections



**Figure 3** - Anterior end of Oestrus ovis larva with oral hooks connected to internal cephalopharyngeal skeleton

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