

External ophthalmomyiasis: case reports of two cases associated with agrarian practices

Abstract

The most common cause of ophthalmomyiasis worldwide is *Oestrus ovis* (Sheep botfly) larvae. Infestation by *Oestrus ovis* commonly cause external ophthalmomyiasis (EOM), but there is also a risk of internal ophthalmomyiasis, in which larvae may penetrate the ocular globe. The condition commonly presents as foreign body sensation, watering & redness of the eye. The condition is often misdiagnosed as an acute conjunctivitis. We describe here two cases of ophthalmomyiasis, who presented with symptoms of foreign body sensation, lacrimation, pain and redness the eye. The larvae were observed in the conjunctival sac. Following their removal, the symptom of eye inflammation improved in a few hours. Both the cases reported here were linked to agrarian practices (husking paddy & tilling of soil) & the patients were farmers from rural areas. This underscores the importance of incorporating the preventive awareness programme of External/Internal ophthalmomyiasis for our farmers.

Keywords: ophthalmomyiasis, oestrus ovis, agrarian practices

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Introduction

Myiasis, the infestation of humans with dipterous fly maggots, is common in the tropical countries with a large fly population.¹ Ophthalmomyiasis refers to the infestation of the eye and the ocular adnexa by the larval form of dipterous flies. Based on the parts of the eye which are involved, there are three types of Ophthalmomyiasis. The first type is the Ophthalmomyiasis externa in which only conjunctiva is involved. This condition, if it is not managed in time, can lead to two other of its dreaded types, such as Ophthalmomyiasis interna (the larvae invades the ocular globe and they are found in the sub-retinal space and the vitreous cavity) and orbital Ophthalmomyiasis (invasion of the orbit).^{2,3} Ocular involvement or ophthalmomyiasis is seen to occur in about 5% of all cases of myiasis.² Larvae, most commonly, attack the external surface of the eyes or ocular adnexa, e.g. the lids, conjunctiva or lacrimal ducts (external ophthalmomyiasis, EOM). Ophthalmomyiasis externa is mainly caused by sheep bot fly (*Oestrus ovis*). Therefore, this is more common in the farming communities.³ Very few cases of Ophthalmomyiasis externa which were caused by *Oestrus ovis* infestation have been reported so far from India.

Case 1

A fifty two years old female presented to the ophthalmic OPD of Dr. Ram Manohar Lohia Combined Hospital with complaints of mild pain & ocular discomfort and watering of right eye for one day. She was apparently well a day before when something fell into her eye while she was husking rice. After that she complained of irritation, watering and pain from the affected eye. No other significant medical history was given. An ophthalmic examination revealed a visual acuity of 6/9 in both the eyes. Rest of the ocular examination was within normal limits. The conjunctiva was mildly congested, with profuse lacrimation in the affected eye.

On slit lamp examination, approximately 1-2mm long translucent multiple organisms with black heads were seen, moving over the conjunctiva in the affected eye. The wormlike organisms were present in bulbar and forniceal conjunctiva. About 5-6 maggots were removed

from the conjunctiva under topical anaesthesia.

On macroscopic examination, the worms were milky white maggots of about 2mm in size. Microscopy revealed spindle shaped skeleton with multiple segments. A pair of sharp, dark brown oral hooks was attached to the internal cephalopharyngeal skeleton and tufts of numerous brown hooks were on the margins of each body segment. They were identified as the first stage larvae of *O. ovis*, the sheep nasal bot fly.

The patient was given topical anti inflammatory and antibiotic drops. When the patient returned for follow up after five days, she was completely relieved of her symptoms of foreign body sensation and lacrimation. A repeat slit lamp examination was normal.

Case 2

A seventy five years old male presented to the ophthalmic OPD of Dr. Ram Manohar Lohia Combined Hospital with complaints of mild pain, redness and watering of both the eyes for one day. He was hit in both of his eyes with soil particles, while digging in a field. On ocular examination he had visual acuity of 6/60 in his right eye & 6/12 in left eye. The conjunctiva of both the eyes were mildly congested with profuse lacrimation. He had cataract in his right eye & Intra Ocular Lens was implanted in left eye.

On slit lamp examination, approximately 1-2mm long translucent multiple organisms with black heads were seen, moving over the conjunctiva in both the eyes. The worm like organisms were present in conjunctival sac of both the eyes. About 10-12 maggots were removed from the right eye & 1-2 from the left eye, under topical anaesthesia under slit lamp examination.

On macroscopic examination, the worms were milky white maggots of about 2mm in size. Microscopy revealed spindle shaped skeleton with multiple segments. A pair of sharp, dark brown oral hooks was attached to the internal cephalopharyngeal skeleton and tufts of numerous brown hooks were on the margins of each body segment. They were identified as the first stage larvae of *O. ovis*, the sheep nasal bot fly.

The patient was given a combination of topical anti-inflammatory and antibiotic drops as in the first case. When the patient returned for follow up in the next week, he was completely relieved of the symptoms. Slit lamp examination was performed and no maggots were seen.

Discussion

Ophthalmic myiasis is caused by the deposition of fly larvae in the human eyes. Various species of flies are able to provoke ophthalmomyiasis, which include *Oestrus ovis*, latrine fly (*Fannia*), house fly (*Muscadomestica*) and cattle botfly (*Hypoderma*).^{4,5} *Oestrus ovis* by far, the most common cause of ophthalmic myiasis in man.⁶ Sheep bot fly (*Oestrus ovis*) is a cosmopolitan parasite of sheep and goats. It is important to identify the species as some of

these are ectoparasites are prone to cause complications like ocular globe penetration. Therefore prompt diagnosis and management is mandatory to prevent blindness.

The ophthalmic myiasis in human beings, which is caused by *Oestrus ovis*, was described for the first time in 1947 by James.⁷ More scattered cases were reported since then from the Mediterranean area, like Italy, and also from Russia, Serbia (previous Yugoslavia), Africa, America, and Oman (Figure 1).^{8,9} Many cases have been reported recently from various parts of India. Myiasis is more common than what has been indicated by the previously published reports.^{10,11} We attempted a review of few case reports of Ophthalmomyiasis externa from various parts of India (Table 1). Human myiasis mostly occurs in the rural areas, where man lives in close contact with small ruminants.

Table 1 Clinical and biochemical variables of individuals with overweight-obesity

S. no	Study and references	Age (Year)	Mode of injury	Causative species	Outcome
1	Nandita Pal. 2016 Kolkata (case report)	36	Dust entering the eye while boarding a roadside cab.	First instar larvae of <i>O. ovis</i>	Completely relieved of symptoms
2	K.Mohan Raj et al. 2015. Chennai (Case report)	23	Exposure to dust which fell into his eye while walking on the road close to a sugarcane juice vendor's shop	<i>Drosophila Melanogaster</i> . Fruit fly or vinegar fly	Completely relieved of symptoms
3	P. Maurya et al. 2011 Varanasi (Case report)	1.5 urban slum	Superimposed infection on injured eye	Flesh Fly, <i>Wohlfahrtia magnifica</i>	Completely relieved of symptoms
4	Pankaj Choudhary et al. 2012 (case series of 6 cases) Rewa	14 - 25	Not mentioned	<i>Oestrus ovis</i>	Completely relieved of symptoms
5	Mahesh Kumar Shankar et al. 2012 Hubli (Case report)	50	Something fell in the eye while working at fields	First stage larvae of <i>O. ovis</i>	Completely relieved of symptoms
6	Punit K. Singh et al. 2012 Jodhpur (case report of 3 cases)	i. 11 ii. 45 iii. 25	i. Playing in fields ii. Working in fields iii. Working in fields	<i>Oestrus ovis</i>	Completely relieved of symptoms
7	S Khurana et al. 2010 Chandigarh (case report) 3 cases	i. 80 ii. 30 iii. 17	i. Case of squamous cell carcinoma of the eyelid skin ii. Unknown iii. insect forcibly striking the eye	i. larva of the fly <i>C. hominivorax</i> . ii. <i>Oestrus ovis</i> iii. <i>Oestrus ovis</i>	i. patient failed to appear for follow-up ii. cases completely relieved of symptoms
8	Anita Pandey et al. 2009. Meerut (Case report)	25	Something falling in the eye while resting under a tree	First stage larvae of <i>O. ovis</i>	Completely relieved of symptoms
9	Shubhangi Nigwekar, 2009 Loni, Maharashtra - (Case report)-	35	Contact with farm animals	First stage larvae of <i>O. ovis</i>	Completely relieved of symptoms
10	Gajiwala Uday R et al. 2009 Bharuch, Gujarat, (case report) 4 cases	i. 25 ii. 30 iii. 35 iv. 60	i. Working in the field ii. Working in the field iii. Traveling on a bike iv. While Grazing Goats/Sheeps in the field	First stage larvae of <i>O. ovis</i>	Completely relieved of symptoms

SD, standard deviation; BMI, body mass index; WC, waist circumference; AC, abdominal circumference; HC, hip circumference; RER, respiratory exchange ratio; HR, hear rate.



Figure 1 *O. ovis* larvae showing segments with intersegmental spine bands (1), tufts of brown hooks on the margins of each body segment (2), oral hooks(3), and oral hooks seen attached to the internal cephalopharyngeal skeleton (4).

Conclusion

Both the cases reported here were linked to agrarian practices (husking paddy & tilling of soil) & the patients were farmers from rural areas. External Ophthalmomyiasis should be considered as an occupational disease among farmers and shepherds. Use of protective eye wear during husking and tilling soil, can prove useful in preventing injuries to eyes from such insects. This underscores the importance of incorporating the preventive awareness programme of External/Internal ophthalmomyiasis for our farmers.

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Conflict of interest

The author declares no conflict of interest.

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