
CASE SERIES**A case series on prevalence of Ophthalmomyiasis externa in a tertiary care teaching hospital - An uncommon finding***Rajamanickam Venkata Laxmi^{1*}, Payala Vijayalakshmi²*¹*Department of Microbiology, Government Medical College, Wanaparthy-509103 (Telangana), India,*²*Department of Microbiology, GITAM Institute of Medical Sciences and Research, GITAM (Deemed to be University), Visakhapatnam-530045 (Andhra Pradesh), India*

Abstract

Myiasis is a zoonotic infestation. Very few cases of ophthalmomyiasis externa have been reported so far from India. The main objective of the present study is to report a prevalence of Ophthalmomyiasis externa in a tertiary care teaching hospital. Nearly 22 patients referred to the emergency department of the hospital and clinically diagnosed as ophthalmomyiasis externa, were included in the study. The larvae were removed using McPherson's forceps and mounted on a glass slide and sent to Microbiology department for identification. Wet mount examination was done and the most common symptom was foreign body sensation. Through microscopic findings, the larvae were identified as the first instar larvae of Oestrusovis. Early diagnosis and treatment prevent complications. The awareness program is essential in rural areas.

Keywords: Ophthalmomyiasis, Oestrusovis, Larvae, Cephalopharyngeal Skeleton

Introduction

Ophthalmomyiasis is a rare ocular disorder caused by an infestation of ocular tissue by larvae of flies of the Dipteran arthropod [1]. In humans, Oestrusovis is the most common cause of ophthalmic myiasis [2]. Based on the site of infestation, ophthalmomyiasis is classified as external ophthalmomyiasis, internal ophthalmomyiasis and orbital ophthalmomyiasis. Ophthalmomyiasis externa is the commonest presentation of ocular myiasis involving superficial external ocular structures followed by nasal and gastrointestinal mucus membranes [3]. Human ophthalmomyiasis is mainly seen in people who are in contact with animals, in particular sheep, goats, shepherds and farmers [4]. It is most commonly found in rural areas, may also occur in suburban and urban regions [5]. It is an obligate parasite of sheep and

goats and present in their nasal and paranasal cavities. Humans are accidental hosts in its life cycle [6]. The most important risk factors for acquiring myiasis are poor hygiene, low socio-economic status and unhealthy tissue (necrotic/gangrenous) [7]. Very few cases of Ophthalmomyiasis externa which were caused by Oestrusovis infestation have been reported so far from India [8]. Hence the present study was aimed to report a case series on very rare disease Ophthalmomyiasis externa in a tertiary care teaching hospital.

Case series

All 22 patients referred from the Emergency Department of hospital from January 2018 to December 2020 of all age groups, either sex and clinically diagnosed as Ophthalmomyiasis externa, were included in the study. The larvae

were mounted on a glass slide and sent to the Microbiology Department for identification. Wet mount examination was done with 0.9% normal saline and examined under 10× and 40×, and photographed under microscopy (Figure 1 - 4). The age group was in the range of 14- 51 years. They were 14 males and 8 females (Table 1). All 22 cases presented with varied symptoms like foreign body sensation, pain, itching, lacrimation, redness etc (Table 2). Slit-lamp examination revealed transparent white coloured larvae measuring 2–5 mm in length, and the larvae were 'photophobic,' moving away from the source of light. There was no evidence of corneal or intraocular involvement. The larvae were removed using Mcpherson's forceps after the application of topical anesthesia under aseptic conditions. The larva was mounted on a glass slide and sent to the Microbiology Department for identification through microscopy (Figure 1 to 4). The specimen showed a spindle-shaped skeleton with multiple segments and intersegmental spine bands on wet mount microscopic examination. At the anterior end, a

pair of sharply curved horn-shaped dark brown oral hooks were attached to the long internal cephalopharyngeal skeleton. Ventrally, the cephalopharyngeal zone had a dense collar of spines, and each segment was restricted by two or three rows of intersegmental spine bands. A pair of tracheal trunks terminated in the mid-ventral plane of the spine band at the caudal segment. These findings identified the larva as the first instar larvae of *Oestrusovis*. The rapid locomotion of the larva followed a sequence of holding onto the substrate with the anterior hooks, dragging the rest of the body to form a loop, holding on to the surface with the posterior hooks, and releasing the anterior hold to leap forward. All the patients were investigated for other systemic illnesses and, and all were found to be healthy. The symptoms of Ophthalmomyiasis externa are very similar to the symptoms of acute catarrhal conjunctivitis. But visualization of the larva concluded the diagnosis. Larva was removed, and topical antibiotics were given, and follow-up of patients were done.

Table 1: Age and gender-wise distribution of cases

Age (Years)	Number	Percentage	Male		Female	
			Number	Percentage (%)	Number	Percentage (%)
10-20	3	13.7	3	100	0	0
21-30	5	22.7	4	75	1	25
31-40	5	22.7	3	60	2	40
41-50	4	18.2	3	75	1	25
>50	5	22.7	1	20	4	80
Total	22	100	14	0	8	0

Table 2: Clinical features of ophthalmomyiasis patients

Clinical findings	Number	Percentage (%)
Foreign body sensation	16	72.7
Watery eyes	22	100
Pain	22	100
Redness	21	95.4
Swelling	5	22.7
Itching	10	45.4
Rhinorrhoea	01	4.5
Crawling of larvae	01	4.5

Figure 1 showing the larva of *Oestrusovis* showing cephalopharyngeal skeleton with (arrow “A”) sharply, curved, dark brown oral hooks, (arrow “B”) bow like hypopharyngeal sclerite (arrow “C”) dense collar, (arrow “D”) pharyngeal sclerite, (arrow “E”) with intersegmental spine bands.

Figure 2 showing the larva body divided into 11 segments, and each segment showing tufts of numerous brown appendages at the margins (arrow “F”).

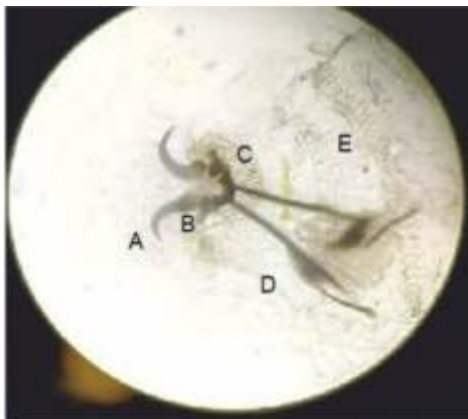


Figure 1: Saline wet mount, 40× magnification of *Oestrusovis* larva



Figure 2: Saline wet mount, 10× magnifications



Figure 3: Saline wet mount, 40× magnification showing tufts of brown appendages at the margins of larva

Figure 4 showing at the posterior end of larva, (arrow “G”) the caudal segment is terminated into two humps, and each hump bore 11-12 chitinous hooks, (arrow “H”) Pair of tracheal trunks in the mid-ventral plane.

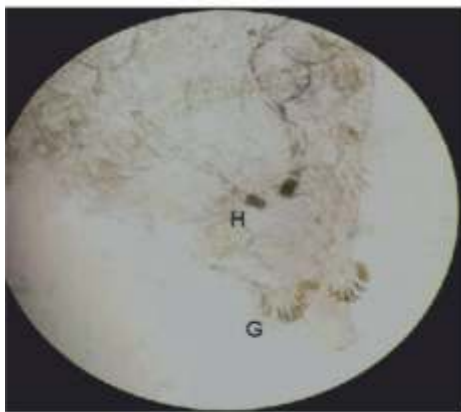


Figure 4: Saline wet mount, 40× magnification of caudal segment of larva

Discussion

Ophthalmic myiasis is caused by the deposition of fly larvae in the human eyes [2]. All the 22 cases of Ophthalmomyiasis externa in our series were manifested with acute catarrhal conjunctivitis and presented with varied symptoms like foreign body

sensation, pain, itching, lacrimation, redness. Similar clinical findings were reported by Choudhary *et al.* (2013)[8]; Khurana *et al.* (2010) [9]. Direct contact is not necessary for infestation between the fly and the host [2]. Occasionally, due to an aberration in the life cycle, man serves as an accidental host, with the eye being the infestation site. Human hosts hold on to mucus membrane through their pointed hooks but do not penetrate any deeper and remain confined to the conjunctiva as the *Oestrus ovis* larvae cannot secrete proteolytic enzymes and are so mostly confined to the outer membranes of the eye. Small conjunctival hemorrhages may be apparent at the sites where the larva clings with its mouth claws. *O. ovis* larvae do not survive beyond 10 days in a human host. An increase in the population of livestock in urban areas is increasing the incidence of Ophthalmomyiasis externa in accidental human hosts. As *O. ovis* lifecycle involves a pupal stage in the soil, collecting manure from host animals as fertilizer in urban fields that do not have livestock brings unhatched pupas into the proximity of human hosts. This unique source of infection can be considered a public health risk. Larva was removed, and topical antibiotics were given, and follow-up of all patients were done whereas Kaeley *et al.* (2017) [10] reported a case presenting with upper eyelid swelling, periorbital puffiness, tenderness, expulsion of pus and maggots and they removed the larva and used topical and oral antibiotic ivermectin as a part of the treatment.

References

1. Borade RR, Pradhan NS, Bhat PM. Ophthalmomyiasis externa: A case report. *Indian J Clin Exp Ophthalmol* 2019;5(2):260-261.
2. Sucilathangam G, Meenakshisundaram A, Hariramasubramanian S, Anandhi D, Palaniappan N, Anna T. External ophthalmomyiasis which was caused by sheep botfly (*Oestrusovis*) larva. *J Clin Diagn Res* 2013;7(3): 539-542.
3. Istek S. Ophthalmomyiasis externa from Hakkari, the South East border of Turkey. *BMJ Case Reports* 2014; 2014: bcr2013201226.
4. Jayavarthini M, Malini A, Ezhilvathani N, Amudha P. Ophthalmomyiasis externa caused by *Oestrusovis*: a case report from Puducherry. *Sch J App Med Sci* 2016; 4(5C):1662-1664.
5. Pal N, Majhi B. Unilateral conjunctivitis of unique etiology: A case report from Eastern India. *J Nat Sc Biol Med* 2016; 7(1):104-106.
6. Sreejith RS, Reddy AK, Ganeshpuri SS, Garg P. *Oestrusovis* ophthalmomyiasis with keratitis. *Indian J Med Microbiol* 2010;28(4):399-402.
7. Wong D. External ophthalmomyiasis caused by the sheep bot *Oestrusovis* L. *British J Ophthalmol* 1982; 66(12):786-787.
8. Choudhary P, Rathore MK, Dwivedi P, Lakhtakia S, Chalisgaonkar C, Dwivedi A. Red eye: rule out Ophthalmomyiasis too. *Indian J Ophthalmol* 2013; 61(6):293-295.
9. Khurana S, Biswal M, Bhatti HS, Pandav SS, Gupta A, Chatterjee SS *et al.* Ophthalmomyiasis: Three cases from North India. *Indian J Med Microbiol* 2010; 28(3):257-261.
10. Kaeley N, Kaushik RM, Rajput R, Dhasmana R, Bhargava A. Orbital myiasis with scalp pediculosis and buccal abscess-an uncommon presentation. *J Clin Diagn Res* 2017; 11(2):OD01-OD02.

*Author for Correspondence:

Dr. R. Venkata Laxmi, Department of Microbiology,
Wanaparthy Medical College, Wanaparthy, Telangana-
509103
Email:rajamanickamvenkatalaxmi123@gmail.com,
bavisettyvijayalakshmi2@gmail.com
Cell: +91-7794992668

How to cite this article:

Rajamanickam VL, Payala V. A case series on prevalence of Ophthalmomyiasis externa in a tertiary care teaching hospital – An uncommon finding. *J Krishna Inst Med Sci Univ* 2023; 12(1):126-130

Submitted: 26-Oct-2022 Accepted: 01-Dec-2022 Published: 01-Jan-2023