



OPHTHALMOMYIASIS EXTERNA DUE TO OESTRUS OVIS: CASE SERIES AND REVIEW OF LITERATURE

Ophthalmology

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ABSTRACT

Objective: To report a case series of Ophthalmomyiasis externa along with review of literature highlighting the common epidemiological factors and treatment. **Material and Methods:** A presentation is made of five (05) clinical cases of patients with Ophthalmomyiasis externa caused by *Oestrus ovis* larvae. **Results:** Ocular myiasis is a parasitic infection by larval stages of flies. It can affect the ocular globe externally and / or internally, with the former being the most frequently affected. The organism that mainly affects the eyes is the *Oestrus ovis* larvae. **Conclusion:** Ophthalmomyiasis is rare clinical entity that can occasionally occur in humans. It is most prevalent in regions with humid and warm climates. Shepherds and farmers in rural areas are most commonly affected. An early diagnosis and prompt management is of paramount importance in preserving normal vision.

KEYWORDS

Ophthalmomyiasis externa, Parasitic infection, *Oestrus Ovis*, larvae

INTRODUCTION

The name Myiasis is derived from ancient Greek word myia (μυία) meaning "fly".¹ Most common site of infection is skin followed by ocular tissue, nose and nasal sinuses.²⁻⁴ Ocular involvement is seen in less than 5% of all cases of Human Myiasis.⁵ Ocular myiasis is generally caused by various species of flies which include *Oestrus ovis*, latrine fly (*Fannia*), house fly (*Musca domestica*) and cattle botfly (*Hypoderma*).^{6,7} *Oestrus ovis* is the most common cause of ophthalmic myiasis in man.⁸

We report a series of cases of External Ophthalmomyiasis and discuss the epidemiology, clinical features and management.

Case 1 A 34 years old male, a dog handler, presented to the Ophthalmology department with complaints of pain, irritation, foreign body sensation and watering of the right eye for one day. He complained that something had entered in his right eye, when he was walking with the dog and stood under a tree and something fell in his eye following which the symptoms started. The medical history was not contributory. Ocular examination revealed visual acuity of 6/6 in both eyes. The lids were normal. The cornea was clear and conjunctiva was congested, with profuse lacrimation in the right eye. The intraocular pressure was normal in both the eyes. The lacrimal sac was clinically patent. Multiple mobile and translucent insect larvae were seen moving over the palpebral and bulbar conjunctiva in the right eye (Figure 1). The larvae were sensitive to light and were moving towards the medial canthus and superior fornix when light was shown. Left eye examination was normal. The eye was thoroughly washed with ringer lactate and multiple insect larvae were removed from the right eye using a sterile plain fine forceps under topical anaesthesia. Lids were everted and thorough examination was done to ensure that all the insect larvae were removed. On microscopy, the larvae measured about 2 x 0.5 mm and were motile. They had characteristic dark brown oral hooks connected. Their body was divided into 11 segments, each being covered by numerous brown hooks. The larvae were thus identified as *Oestrus Ovis* (sheep nasal botfly) (Figure 2). After the removal of the larvae, the patient was treated with topical moxifloxacin 0.5% with Fluorometholone (FML), artificial tears, anti-inflammatory drugs along with topical antibiotic ointment at bed time. The next day, the individual complained of foreign body sensation in the right eye. On examination, multiple insect larvae were seen in the right eye. The eye was washed and again multiple insect larvae were removed under topical anaesthesia using forceps. Thorough examination was done after everting the lid. Next day patient was examined and there no insect larvae in both eyes. The individual was kept on follow-up and remained asymptomatic. Out of the 5 patients 02 were working in poultry farm, 02 were cooks and 01 dog handler.

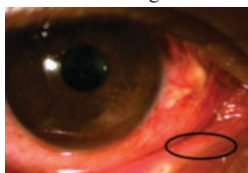


Figure 1: Slit Lamp Photograph Showing Multiple Mobile Insect Larvae)



Figure2: Microscopic Examination

DISCUSSION

Ophthalmic myiasis in human beings, which is caused by the first larval stage of *Oestrus ovis* and was described for the first time in 1947 by James.⁹ *Oestrus ovis*, the common sheep nasal botfly breeds in the nasal cavity and the sinuses of sheep.¹⁰ Ophthalmomyiasis is broadly classified into 3 types – (i) external where the larvae get deposited on the ocular surface. (ii) internal where the larvae penetrate the globe and reach the vitreous cavity or the subretinal space. (iii) orbital is the most dangerous variety the larvae reach the orbital structures and if not treated immediately can leading to potential devastating complications.¹¹

Ophthalmomyiasis shows greater prevalence in regions with humid and warm climates. It commonly occurs in rural areas especially in shepherds and farmers.¹²⁻¹⁴ However, cases have been reported in urban areas and without animal contact.⁵

The patients of Extra-ocular myiasis presents with complaints of pain, itching, redness, and watering in the affected eyes, along with foreign body sensation seen in 04 of our patients).¹⁵⁻¹⁶ The various signs seen in External Ophthalmomyiasis are eyelid and conjunctival edema, haemorrhages and chemosis.¹⁷

Internal ophthalmomyiasis presents with features of photopsia, pain, and floaters.¹⁸ The larvae reach the vitreous cavity by penetrating the retina and inciting significant vitritis. Disc edema can also be seen in cases of ophthalmomyiasis interna.⁹ The most dangerous out of the 3 types of Ophthalmic myiasis is Orbital myiasis with a potential for intracranial spread. This can be seen in debilitated patients with uncontrolled diabetes mellitus, old age, and poor general health.^{20,21} The differential diagnosis of ophthalmomyiasis externa is allergic/viral conjunctivitis. The key diagnostic feature thus rests on manual removal of larva and positive identification of larva by microscopic examination. The larvae of *Oestrus ovis* tend to hide in the fornices as they are photophobic. A good slit-lamp examination often reveals the diagnosis. In our patients the disease was limited to conjunctiva as the patient approached the health facility within a day after the onset of symptoms and was diagnosed early. Manual removal of these larvae with forceps remains the ideal treatment.²² Topical application of antibiotics needs to be given to prevent secondary infection and topical steroids can be given to reduce the inflammation.²³ A follow up examination is recommended to rule out the existence of additional larvae and prevent possible complications. Inability to correctly diagnose and treat Conjunctival myiasis can lead to devastating

complications like iridocyclitis, endophthalmitis (Ophthalmomyiasis interna), invasion of orbit sometimes even leading to blindness. In our cases meticulous removal of the larvae and follow-up resulted in prevention of devastating complications.

CONCLUSION

Ophthalmomyiasis is a rare clinical entity and is occasionally seen in humans. However, if not diagnosed and treated immediately it can lead to devastating complications in the eye. Awareness regarding the incidence of larval conjunctivitis during summer and early rainy season especially in rural areas, can lead to a prompt diagnosis. This coupled with timely management by meticulous removal of all visible larvae is of paramount importance to prevent globe penetration and orbital spread.

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REFERENCES

1. Kataria U, Siwach S, Gupta S. Myiasis in female external genitalia. *Indian J Sex Transm Dis AIDS*. 2013 Jul;34(2):129-31.
2. Katz SI, Taylor R. Cutaneous myiasis. *South Med J*. 1971;64:759-60.
3. Amr ZS, Amr BA, Abo-Shehada MN. Ophthalmomyiasis externa caused by *Oestrus ovis* in the Ajloun area of northern Jordan. *Ann Trop Med Parasitol*. 1993;87:259-62.
4. Al-Dabagh C, Al-Mufti N, Shafiq M, Rawas AL, Al-Saffar S. A second record from Iraq of human myiasis caused by larvae of the sheep botfly *Oestrus ovis*. *Ann Trop Med Parasitol*. 1980;74:73-77.
5. Keller AP, Keller AP. 3rd Myiasis of middle ear. *Laryngoscope*. 1970;80:646-50.
6. Mandell GL, Douglas RG, Bennett JE, Mandell Dolin R., Douglas, Bennett, Dolin. *Principles and Practice of Infectious Disease*. 5th. Philadelphia: Churchill Livingstone; 2000.
7. Vaughan DG, Asharg T, Riardan EP. *General Ophthalmology*. 5th. Stamford: Appleton and Lange; 1999.
8. Grammer J, Erb C, Kamin G, Wild MR, Riedinger C, Kosmidis P, et al. Ophthalmomyiasis externa due to the sheep botfly *Oestrus ovis* in South-West Germany. *Gev J Ophthalmol*. 1995;4:188-95.
9. Fraser CM, Berveron JA, Asamays DU, Aiello SE. *A hand book of diagnosis and therapy for the Veterinarian*. 7th. U.S.A.: Merck and Co, INC; 1991. The Merck Veterinary Manual. 1792
10. Cameron JA, Shoukrey NM, Al Garni AA. Conjunctival Ophthalmomyiasis caused by sheep nasal botfly (*Oestrus ovis*). *Am J Ophthalmol*. 1991;112(3):331-4.
11. Patel SJ. Extraocular myiasis due to the larva of *Oestrus ovis*. *East Afr Med J*. 1975;52:167-69.
12. Gupta VP, Baveja UK. Ophthalmomyiasis externa caused by sheep nasal botfly. *Oestrus ovis*. *Indian Jr. of Ophthalmol* 1988; 36; 41-42.
13. Pather S, Botha LM, Hale MJ, Jena-Stuart S. Ophthalmomyiasis Externa: Case Report of the Clinicopathologic Features. *Int J Ophthalmic Pathol*. 2013 Feb 18;2(2)
14. Padhi TR, Das S, Sharma S, Rath S, Rath S, Tripathy D, Panda KG, Basu S, Besirli CG. Ocular parasitoses: A comprehensive review. *Surv Ophthalmol*. 2017 Mar-Apr;62(2):161-189.
15. Akdemir MO, Ozen S. External ophthalmomyiasis caused by *Oestrus ovis* misdiagnosed as bacterial conjunctivitis. *Trop Doct*. 2013 Jul;43(3):120-3.
16. Verstrynge K, Foets B. External ophthalmomyiasis: a case report. *Bull Soc Belge Ophtalmol*. 2004;(294):67-71.
17. Istek S. Ophthalmomyiasis externa from Hakkari, the south east border of Turkey. *BMJ Case Rep*. 2014 Feb 14;2014.
18. Rodger DC, Kim EL, Rao NA. Ophthalmomyiasis Interna. *Ophthalmology*. 2016 Feb;123(2):247.
19. Syrdalen P, Stenkula S. Ophthalmomyiasis interna posterior. *Graefes Arch Clin Exp Ophthalmol*. 1987;225(2):103-6.
20. Khataminia G, Aghajanzadeh R, Vazirianzadeh B, Rahdar M. Orbital myiasis. *J Ophthalmic Vis Res*. 2011 Jul;6(3):199-203. Wong D. External ophthalmomyiasis caused by the sheep bot *Oestrus ovis* L. *Br J Ophthalmol*. 1982 Dec;66(12):786-7.
21. Huang YL, Liu L, Liang H, He J, Chen J, Liang QW, Jiang ZY, He JF, Huang ML, Du Y. Orbital myiasis: A case report and literature review. *Medicine (Baltimore)*. 2020 Jan;99(4):e18879.
22. Smillie I, Gubbi PK, Cocks. Nasal ophthalmomyiasis: a case report. *J Laryngol Otol*. 2010;124(8):934-5.
23. Pandey A, Madan M, Asthana AK, Das A, et al. External ophthalmomyiasis caused by *Oestrus ovis*: a rare case report from India. *Korean J Ophthalmol*. 2009;47(1):57-9