

CASE OF OPHTHALMOMYIASIS BY LARVAE OF CHRYSOMYIA BEZZANIA

Dr Hariharan Swami

Associate Professor, AMU, India

Corresponding author: Dr Hariharan Swami, hariclinical2025@gmail.com

ABSTRACT

Unique features of myiasis affects the eye, a rare disease caused by infestation of tissues by the larvae (maggots) of diptera (two-winged) flies. The condition though well recognised in animals is less frequently reported in humans. Our cases point to the importance of having high index of suspicion and early detection of Ophthalmomyiasis, as it is amenable to simple and effective treatment.

Keywords: Ophthalmomyiasis, Maggots, Myiasis

INTRODUCTION

Cases of human myiasis have been reported from various parts of the world. Myiasis of the face is extremely rare (1%), probably due to the rich vascular supply and increased awareness and better care of even minor injuries and wounds of the face [1].

Case report

An 85 year old lady bedridden with old age and dementia was brought with history of foul smelling discharge and a raw area over left eyelid infested with maggots, noticed during regular grooming care. She was disoriented, malnourished, anaemic (Hb 5 gm %), had hypoalbuminemia (total protein 4.6 gm %) with pedal oedema, metabolic encephalopathy and pressure sores over the elbow and back. The right eye was normal except for nuclear cataract; left eye showed lid oedema, 0.5 x1 cm area of ulcer in the upper eyelid and 0.5 x0.5 cm area of ulcer in the lower eyelid filled with maggots. The worms were yellowish white in color with only blackish tips visible at the surface of the lesion. They were

immobilized using turpentine oil and manually extracted. The size ranged from 10 to 20 mm. A total of 11 worms were obtained from the lesion. The wound healed with supportive treatment of her general condition and the patient was sent for domiciliary care. The maggots were identified as larvae of *Chrysomya bezzania*, old screw worm.



Fig 01



Fig 02

DISCUSSION

Myiasis is a potentially destructive disease characterized by larval hatching, their growth by feeding on the host and final destruction of the tissue harboring the worms. This entity is commonly described among livestock and other domestic animals, the presence of a cavernous lesion often considered as lethal, if not intervened in time [2].

All agents of myiasis are flies and members of the order Diptera. They include insects with only a single pair of functional wings (Kingdom Animalia; Phylum Arthropoda; Subphylum Uniramia; Class Insecta; Order Diptera) [3]. The larvae of these flies can infest animal and human tissue as obligate, facultative, or accidental parasites. Specific myiasis refers to obligate parasites which require a living host for completion of larval development e.g. *Chrysomya bezzania*. Semispecific myiasis is caused by facultative parasites. They usually lay eggs in decomposing animal tissue or vegetable matter, though live hosts can also serve as hosts e.g. bottle fly. Accidental myiasis is caused by flies that do not require a host for larval development and do not opportunistically seek wounded/dead tissue. Eggs or larvae are inhaled, ingested or enter the body through openings in the genitourinary tract and if the conditions are favourable they feed and destroy host tissue e.g. *Musca domestica*. Cases of Myiasis among human are typically reported among demented and debilitated patients, mostly sufferers of malignancy [4]. The associated immunosuppression, malnutrition, anaemia and poor hygiene increase the risk of such parasitic infestation. Limited number of case reports regarding Ophthalmomyiasis in English literature is indicative of the rare involvement of ocular tissue by flies. Most of those cases were subjects with chronic eye diseases such as eyelid tumours [5] [6] [7]. Based on the extent of involvement ophthalmomyiasis can be grouped as external, internal or orbital ophthalmomyiasis. External ophthalmomyiasis involves the eyelid and conjunctiva, orbital ophthalmomyiasis the orbital content, and internal ophthalmomyiasis, the intraocular spaces.

Chrysomya bezzania (old Screwworm) is known to cause primary myiasis among animals, because they are the first flies to colonize injuries [8]. They do not pierce or damage the intact skin of their hosts but deposit their eggs on minute injuries such as tick bites, fencing injuries, procedures like dehorning and tail docking. *C. bezziana* differs from other fly species in that tissue infestation can occur in the absence of necrotic tissue. In livestock, *C. bezziana* maggots may cause serious and permanent tissue damage [9].

The female fly usually lays her eggs on a superficial wound. However eggs may be laid on unbroken skin which is smeared with blood or mucous discharge. Eggs are deposited in batches of 150 to 500 and hatch in about 15 hours. The larval bodies measure 10 to 15mm and are armed with broad, encircling bands of spines. Upon hatching, the maggots penetrate deep into the tissue (healthy or necrotic) aided by their sharp mouth hooks and anchoring inter-segmental spines [10]. The screw-like movements of the maggots has contributed to the name “screwworm” for the larvae of the fly *Chrysomya bezzania*. The caudal ends of the maggots with their blackish tips which project out of the wound surface helps in breathing.

Other screw worm flies are attracted towards the wound by the virtue of the offensive smell arising from the infested area. In animals, the larvae leave the wound after a period of 5 days and fall to the ground where they burrow and pupate for about one week to emerge as adult flies. Whether similar stages of completion can occur in man is not well understood. All the case reports deal with successful removal of all the larvae and healing of the primary wound. Fatalities have not been reported in human cases [11] [12].

Removal of larva is time consuming and tedious. The screw worms can burrow themselves into the host's tissues as deep as 15 cm. Turpentine oil is one of the modalities suggested in literature to suffocate the worms so that the posterior tip appears in the wound. The worm should be held with a non toothed thumb forceps or artery forceps and teased out by slow side to side movements. Hydrogen peroxide aids to clean the necrotic area and Metronidazole ointment helps to reduce the inflammation. However care should be taken to prevent instillation of these agents into the ocular surface as they are potentially toxic to the cornea.

Chrysomya bezzania infestation is potentially dangerous as the eggs can be carried to newer sites by subject's fingers and areas like pressure sore are at great risk for subsequent involvement. Meticulous care and hygiene is the only preventive option available [13] [14].

CONCLUSION

This case of ophthalmomyiasis is described for its interesting presentation and rarity. Though the patient had disabling comorbid factors, specific myiasis in her suggest the need for high index of suspicion among at risk cases even with no apparent external injuries. The importance of ensuring good hygiene among immunosuppressed or bed ridden cases in an attempt to prevent such morbidities are highlighted. In affected cases, removal is simple and effective, though requires multiple patient and time consuming sessions.

REFERENCES

- [1] Amann, R. I., Ludwig, W., & Schleifer, K. H. (1995). Phylogenetic identification and in situ detection of individual microbial cells without cultivation. *Microbiological Reviews*, 59, 143–169.
- [2] Anderson, J. M., Preston, J. F., Dickson, D. W., Hewlett, T. E., Williams, N. H., & Maruniak, J. E.(1999). Phylogenetic analysis of *Pasteuriapenetrans* by 16s rDNA gene cloning and sequencing.*Journal of Nematology*, 31, 319–325.
- [3] Atibalentja, N., Noel, G. R., & Domier, L. L. (2000). Phylogenetic position of the North American isolate of *Pasteuriapenetrans* that parasitizes the soybean cyst nematode, *Heterodera glycines*, as inferred from the 16S rDNA sequence analysis. *International Journal for Systematic and Evolutionary Microbiology*, 50, 605–613.
- [4] Bishop, A. H., Gowen, S. R., Pembroke, B., & Trotter, J. R. (2007). Morphological and molecular characteristics of a new species of *Pasteuria* parasitic on *Meloidogyne arenaria*. *Journal of Invertebrate Pathology*, 96, 28–33.
- [5] Bishop, A. H., & Ellar, D. J. (1991). Attempts to culture *Pasteuriapenetrans* in vitro. *Biocontrol Science and Technology*, 1, 101–114.
- [6] Brown, S. M., & Smart, G. C. (1984). Attachment of *Bacillus penetrans* to *Meloidogyne incognita*. *Nematropica*, 14, 171–172.

- [7] Carneiro, R. M. D. G., Randig, O., Freitas, L. G., & Dickson, D. W. (1999). Attachment of endospores of *Pasteuriapenetrans* to males and juveniles of *Meloidogyne* spp. *Nematology*, 1, 267–271.
- [8] Cetintas, R., & Dickson, D. W. (2004). Persistence and suppressiveness of *Pasteuriapenetrans* to *Meloidogynearenaria* Race1. *Journal of Nematology*, 36, 540–549.
- [9] Channer, A. G. De R., & Gowen, S. R. (1992). Selection for increased host resistance and increased pathogen specificity in the *Meloidogyne*-*Pasteuriapenetrans* interaction. *Fundamental and Applied Nematology*, 15, 331–339.
- [10] Charles, L., Carbone, I., Davies, K. G., Bird, D., Burke, M., Kerry, B. R. et al. (2005). Phylogenetic analysis of *Pasteuriapenetrans* by use of multiple genetic loci. *Journal of Bacteriology*, 187, 5700–5708.
- [11] Chen, Z. X., & Dickson, D. W. (1998). Review of *Pasteuriapenetrans*: biology, ecology and biological control potential. *Journal of Nematology*, 30, 313–340.
- [12] Chen, Z. X., Dickson, D. W., McSorley, R., Mitchell, D. J., & Hewlett, T. E. (1996). Suppression of *Meloidogynearenaria* race 1 by soil application of endospores of *Pasteuriapenetrans*. *Journal of Nematology*, 28, 159–168.
- [13] Costa, S., Kerry, B. R., Bardgett, R. D., & Davies, K. D. (2006). Exploitation of immunofluorescence for the quantification and characterisation of small numbers of *Pasteuria* endospores. *FEMS Microbiology Ecology*, 58, 593–600.
- [14] Darban, D. A., Pembroke, B., & Gowen, S. R. (2004). The relationship of time and temperature to bodyweight and numbers of endospores in *Pasteuriapenetrans*-infected *Meloidogyne javanica* females. *Nematology*, 6, 33–36.