

## Ophthalmomyiasis externa by *Musca domestica* in a case of orbital metastasis

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Infestation of the living tissues of the eye, ocular adnexae or orbit by larvae of flies of the order Diptera is known as ophthalmomyiasis. Ophthalmomyiasis externa is a limited superficial infestation of external ocular structures such as conjunctiva and adnexae. A case of follicular carcinoma thyroid with orbital metastasis presenting as ophthalmomyiasis externa is reported. The patient presented with foul smelling ulcers of the medial and lateral orbital walls of the right eye extending into the lids and nose, teeming with maggots. Computerized Tomography (CT) showed widespread

bone destruction with extension into surrounding sinuses. Over 200 maggots were manually removed after immobilisation with turpentine oil instillation. Entomological examination showed it to be a case of accidental myiasis caused by the common housefly *Musca domestica*. The patient was managed conservatively and the ulcer cavities filled up with healthy granulation tissue. This case is presented on account of its rarity.

**Key words:** Accidental myiasis, maggot, *Musca domestica*, ophthalmomyiasis, turpentine oil

A case of follicular carcinoma thyroid with orbital metastasis presenting as ophthalmomyiasis externa is reported. Over 200 *Musca domestica* larvae were removed after turpentine oil instillation. The debilitated state of the orbital tissues coupled with close proximity to housefly infestation are speculated to have resulted in ophthalmomyiasis. Infestation of the living tissues of the eye, ocular adnexae or orbit by larvae of flies of the order Diptera is known as ophthalmomyiasis. Myiasis of the face occurs in 1% of cases.<sup>[1]</sup> Ocular myiasis being still fewer, is reported here for its rarity

### Case Report

A 70-year-old male presented with a foul smelling and discharging ulcer around the right eye of seven days duration. He complained of a crawling sensation over the area for the past two days.

A diabetic, he was diagnosed with follicular carcinoma thyroid one year ago. He refused therapy, but came back after four months of alternative medicine treatment. In view of widespread metastasis then, he underwent chemotherapy. During the chemo, he developed painful swelling of the right eye with loss of vision and was subsequently lost to follow-up. He remained largely symptom free till the present complaints.

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On examination of the right eye [Fig. 1], lids were thickened and inflamed; medial and lateral orbital walls showed deep ulcer cavities teeming with maggots; eye was proptosed down and out; exposure keratitis was present. He had no perception of light and the corneal haze precluded any fundus view.

Left eye anterior segment and fundus were within normal limits with a Best Corrected Visual Acuity (BCVA) of 20/20.

He was started on intravenous antibiotics and insulin doses adjusted to control his high glycaemic values. Under sedation, turpentine oil was instilled into the ulcer cavities and the maggots were manually picked out. The ulcers extended into the lids and inferomedially into the nose. Few maggots were caught wriggling out of the nostrils. Over 200 maggots ranging from three to ten mm size were retrieved in multiple sittings over the next three days. Sterile dressings were given. The fellow eye was thoroughly irrigated and antibiotic-steroid drops were applied following each maggot retrieving session.

The maggots were identified by the entomologist as those of the common housefly, *Musca domestica*. The patient was a coastal area inhabitant and he acknowledged that his neighbourhood with its fish markets were notorious for housefly infestation. ENT consultation showed extensive crusting of the nasal cavity, but no evidence of maggots. CT scanning [Fig. 2], showed a moderately enhancing soft tissue density encasing the recti and orbital apex structures, with widespread bony destruction extending to the infratemporal fossa, maxillary sinus, nasal cavity and through the lamina papyracea to the ethmoidal sinus, suggesting the possibility of metastasis from follicular carcinoma thyroid. Over the course of one week, the patient's general condition improved and the ulcer cavities filled up with healthy granulation tissue [Fig. 3]. He was referred for palliative care.

## Discussion

A case of ophthalmomyiasis externa caused by *Musca domestica* is reported.

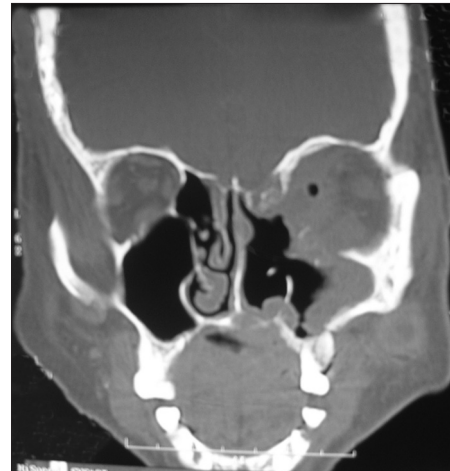
The term 'Myiasis', derived from the Greek word, "μύγα" meaning fly, was first proposed by Reverend Frederick William Hope in 1840. Myiasis has since been defined as "the infestation of live vertebrate animals with dipterous larvae, which, at least for a certain period, feed on the host's dead or living tissue, liquid body substances, or ingested food", (Zumpt 1965). It is an infrequent pathology, found mostly in tropical regions and places with low standards of hygiene.<sup>[2]</sup> When the infestation involves the eye, it is called ophthalmomyiasis.

Ophthalmomyiasis may be of varying severity ranging from simple irritation to complete destruction of the orbit, blindness and even death.<sup>[1-4]</sup> Depending on the site of infestation, it is divided into external, internal and orbital myiasis.<sup>[5]</sup> Ophthalmomyiasis externa is a limited superficial infestation of external ocular structures such as conjunctiva and adnexae. Ophthalmomyiasis interna and orbital myiasis are deep infestations which invade and destroy the eye and orbital structures, respectively.

There are five families which cause ophthalmomyiasis- *Oestridae*,<sup>[3,6,7]</sup> *Calliphoridae*,<sup>[1,3,4]</sup> *Sarcophagidae*,<sup>[6]</sup> *Cuterebridae*,<sup>[8]</sup> and rarely *Muscidae*.<sup>[5,9]</sup> Amongst these, the sheep nasal botfly; *Oestrus ovis*,<sup>[3,7]</sup> the hornet fly; *Hypoderma bovis*<sup>[6,7]</sup> (*Oestridae*) the New World screwworm; *Cochlyomyia hominivorax*<sup>[1,3]</sup>, the Old World screwworm; *Chrysomya bezziana*,<sup>[4]</sup> (*Calliphoridae*),



**Figure 1:** Ophthalmomyiasis externa of right orbit. Medial and lateral orbital walls show suppurative ulcer cavities with maggots



**Figure 2:** Computerized Tomography image of right orbit shows moderately enhancing soft tissue density causing bone destruction and extending into surrounding sinuses and fossae



**Figure 3:** Post treatment-ulcers fill up with healthy granulation tissue

the flesh fly; *Wohlfahrtia magnifica*,<sup>[6]</sup> (*Sarcophagidae*), the human botfly; *Dermatobia homini*,<sup>[8]</sup> (*Cuterebridae*) are the commonly reported ophthalmomyiasis infestations.

Entomologically, myiasis is classified as specific or obligatory, semi-specific or facultative and accidental myiasis.

In obligatory myiasis, the parasites are dependent on the host for its life cycle. Flies of genera *Oestrus*, *Hypoderma*, *Chrysomyia*, *Dermatobia*, and *Wohlfahrtia* are obligate parasites whose larvae can survive only on warm-blooded live vertebrates. Penetrating through the intact skin or conjunctiva, they invade deep causing globe, bone, and soft tissue destruction. Orbital invasion may first cause proptosis, which eventually subsides as the maggots emerge out.<sup>[6]</sup>

In facultative myiasis, the parasites are usually free living but can initiate myiasis in a live host and invade the surrounding living tissues; flies of the *Sarcophagidae* genus being the prototype.<sup>[6]</sup>

In accidental myiasis, the parasites are usually free living on dead and decaying organic matter. They cause gastrointestinal myiasis when contaminated food is ingested or ocular, oral, or genito-urinary myiasis when the gravid female flies come in contact with the open body cavities and reproduce. The larvae eat through the tissues causing widespread destruction. Flies of the families *Muscidae* and *Calliphoridae* are involved.

*Musca domestica* is an uncommon cause for ophthalmomyiasis despite the housefly being so common. Review of world literature showed two reported cases of *Musca domestica* ophthalmomyiasis, both from the Indian subcontinent.<sup>[5][9]</sup> Maggots were retrieved from the conjunctiva in both instances.

The only treatment modality is manual removal after immobilising the maggots with topical chloroform, ether, ethanol, turpentine, oily drops or hydrogen peroxide and use of either local or oral antibiotic therapy. Oral ivermectin (single oral dose (200 µg/kg)) is also described.<sup>[1]</sup> The extracted maggots preserved in 70% alcohol should be sent to the entomologist for species identification.<sup>[5]</sup>

Compromise of periorbital tissues by malignant disease, surgery, ischaemia or infection predisposes to ophthalmomyiasis. Crowded conditions, low socio-economic status, poor personal hygiene and abundance of insect fauna

in the locality are other contributing factors.<sup>[1]</sup> The debilitated state of the orbital tissues ravaged by metastases coupled with close proximity to housefly infestation might have resulted in accidental ophthalmomyiasis in this patient.

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