CASE REPORT

Ophthalmomyiasis in a case of basal cell carcinoma of eyelid

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SUMMARY

Ocular myiasis is a rare disease with invasion of the lids, conjunctiva, cornea and, rarely, orbit or globe of the mammalian eye by dipteran larvae.

We report a case of a 74-year-old woman with chronic, infiltrating, ulcerative lesion of the left lower eyelid, which was confirmed as basal cell carcinoma subsequently, having ophthalmomyiasis.

She was a destitute, living in unhygienic environmental conditions and having poor general health. She developed permanent blindness as a result of ophthalmomyiasis of the left eye. Proper wound care, hygiene and adequate nutrition helped her recover from the illness.

BACKGROUND

Ophthalmomyiasis is an uncommon but a devastating cause of blindness, caused by the invasion of the eye by maggots. Eyelid tumours are the most common predisposing factors for orbital myiasis. Among the cutaneous tumours, basal cell carcinoma and squamous cell carcinoma are the most common skin malignancies to be associated with myiasis.

CASE PRESENTATION

A 74-year-old woman, a destitute, with a history of suspected untreated basal cell carcinoma of left lower eyelid, was brought to the emergency department by a social worker in debilitated condition. She appeared dehydrated. She had mild tachycardia with a pulse rate 106/min, blood pressure 100/60 mm Hg and normal respiratory rate and oxygen saturation on room air. She was conscious, verbalising relevantly and oriented to time, place and person.

There was an extremely foul smelling odour to her. Her left orbital socket was filled with greasy, slimy, black-coloured necrotic material with multiple maggots (day 1 image in [figure 1](#) collage).

The routine blood work-up showed mild leucocytosis. Patient was started on intravenous ampicillin-sulbactam (3 g every 6 hourly) for 7 days and single dose of tab ivermectin (200 µg/kg/day). CT scan of brain and orbit showed necrotic debris in the left eye with loss of normal anatomical left orbital structures in the left orbital socket ([figure 2](#)).

After reduction in the swelling and death of the larvae, the left orbital area was locally infiltrated with 2% lignocaine. The site was then irrigated with turpentine oil; wound debridement with

enucleation of the left eye was done. Around 100 maggots (larvae) were removed from the site with the help of forceps.

To confirm the presence of basal cell carcinoma, 4 mm punch biopsy was taken from the lesion. Histopathological examination showed palisading pattern of tumour cells confirming the presence of infiltrating basal cell carcinoma ([figure 3](#)).

Daily dressing of wound was done. Entomological assessment of the extracted larvae confirmed it to be *Cochliomyia hominivorax* ([figure 4](#)). Daily sterile dressing of surgical wound was done for the next 2 weeks.

At 2 weeks, granulation tissue was evident at the site of debridement (day 14 image in [figure 1](#)). Patient was discharged subsequently and followed up after 1 month (day 30 image in [figure 1](#)). She was later referred to a tertiary cancer centre for further treatment of her basal cell carcinoma. Unfortunately, she was lost to follow-up subsequently.

INVESTIGATIONS

As mentioned above.

DIFFERENTIAL DIAGNOSIS

No other differential diagnosis other than ophthalmomyiasis was thought in view of visible maggots in the left orbital socket along with necrotic tissue.

TREATMENT

As described above.

OUTCOME AND FOLLOW-UP

Patient was discharged subsequently and followed up after 1 month. Post enucleation, the left orbital socket mucosa comprised healthy granulation tissue. She was later referred to a tertiary cancer centre for further treatment of her basal cell carcinoma. Unfortunately, she was lost to follow-up subsequently.

DISCUSSION

The word 'myiasis' is derived from a Greek word 'myia', meaning fly. Ophthalmomyiasis refers to the infestations of the eye and/or orbital adnexa.

The incidence of ophthalmomyiasis is less than 5% of human myiasis.¹

Basal cell carcinoma is one of the common skin malignancies. The incidence of basal cell carcinoma

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Figure 1 Collage showing three images taken on days 1, 14 and 30, respectively, depicting the site of ophthalmomyiasis (left orbital socket) prior to and after the treatment.

is between 0.00281% and 0.05%, and the age-adjusted mortality rate is estimated to be 0.12 per 100 000.²

A pre-existing ocular lesion such as basal cell carcinoma of periocular tissue may predispose to ophthalmomyiasis by attracting flies. In patients who have low personal hygiene and care, fly larvae have potential to destroy the orbital tissue and can give rise to secondary bacterial infection and marked inflammation. Some fly larvae have the potential to penetrate through the conjunctiva and sclera and cause internal ophthalmomyiasis of the parasitic dipterous larvae. In such a case, a single larva usually gains access into the eye. Severe visual loss may occur in these cases. In the present case, the predisposing factor was basal cell carcinoma.³ Orbital myiasis is the least common form of ophthalmomyiasis.

Ophthalmomyiasis may result in minor ocular irritation, disfigurement, complete vision loss and in some cases even death.

Cattle, sheep, deer, horse and rodents are the natural hosts. Man is an accidental host.^{4,5}

Ophthalmomyiasis is caused predominantly by three major categories of flies, that is, blowflies (Calliphoridae), flesh flies

Figure 2 CT scan of brain and orbit showed necrotic debris in the left eye with loss of normal anatomical left orbital structures in the left orbital socket.

Figure 3 Histopathological examination showing the palisading pattern of tumour cells, confirming basal cell carcinoma.

(Sarcophagidae) and botflies (Oestridae, Gasterophilidae, Hypodermatidae, Cuterbridae). Other families of flies such as Muscidae and Phoridae are also known to cause these symptoms.⁶

Cochliomyia hominivorax is the most common cause of ophthalmomyiasis in the western world and in many parts of India. It thrives in areas roughly 1500 m above the sea level and where the temperature is near and above 20°C throughout the year. It is known that *C. hominivorax* demonstrates the ability to causes orbital myiasis especially in patients with malignancy of underlying skin. It is more likely to occur in the subsection of the population who face social isolation and especially in those consuming alcohol regularly.⁷⁻⁹

Ophthalmomyiasis is termed as external, when the involvement is limited to the superficial periocular tissues including the palpebral and conjunctival myiasis without sclera or conjunctival penetration. Once it penetrates the conjunctiva or sclera and migrates to the subretinal space, it is termed as internal ophthalmomyiasis.¹⁰

The extent of initial involvement and gravity of underlying predisposing conditions are the two most important parameters deciding the end result of the treatment of myiasis.¹¹ There seems to be no antiparasitic therapy that could dislodge the larvae.

Figure 4 Image of the extracted larvae, later confirmed to be *Cochliomyia hominivorax* on entomological examination.

Hence, mechanical extraction of maggots still remains the main treatment modality in myiasis. Prompt surgical debridement prevents affection and destruction of the vital structures of the orbital cavity.^{12 13}

Antiparasitic medication acts as an adjunct treatment. Ivermectin is used as a neoadjuvant medication prior to the surgical debridement. The usual recommended dose of ivermectin is 2060 µg/kg. It helps reduce the difficulty in mechanical removal of the larvae.^{14–16}

Severe internal ophthalmomyiasis may require exenteration. Use of laser photocoagulation and pars plana vitrectomy has also been mentioned in some case reports.¹⁷

Treatment options for basal cell carcinoma consist of imiquimod, surgery and radiotherapy. Surgical excision using Mohs micrographic surgery or wide surgical excision with frozen section margin control is the treatment of choice in periocular basal cell carcinoma.¹⁸

Learning points

- ▶ Ophthalmomyiasis in humans is a rare but devastating cause of blindness.
- ▶ It usually occurs in low socioeconomic population with poor hygiene and those in this subgroup who consume alcohol.
- ▶ Underlying skin malignancy is one of the common predisposing factors for infestation of maggots.
- ▶ Manual removal of the maggots after ivermectin pretreatment seems to be the gold standard of treatment for this condition.

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