

## Orbital Myiasis: Case Report

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**Background:** Orbital myiasis cases are very rare worldwide. We are reporting this case caused by *Hypoderma bovis* because invasive parasitic larvae can cause massive destruction.

**Case:** An 85-year-old female patient was admitted to the Department of Ophthalmology of the Dicle University School of Medicine with the complaint of a wound in her right eye for over one year. Larvae had been in the same eye for one week.

**Observations:** The clinical examination showed no light perception in her right eye. The eyelid was thickened and there was a necrotic lesion 3 × 4 cm in diameter, invading inferiorly into the upper side of the maxilla, superiorly to the roof of the orbita, medially to the lateral part of the nose, and laterally to the ossa zygomatica. Pathological examination of orbital tissue specimens confirmed basal cell carcinoma.

**Conclusions:** Orbital exenteration, total maxillectomy and graft repair were conducted in the right eye. During the six-month follow-up period, orbital tomography was performed. No recurrence or metastasis was observed. **Jpn J Ophthalmol 2003;47:412–414** © 2003 Japanese Ophthalmological Society

**Key Words:** *Hypoderma bovis*, orbital myiasis.

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### Introduction

Myiasis, a term first introduced by FW Hope, refers to the invasion into living tissues of humans and other mammals by the eggs or larvae of flies from the order of Diptera.<sup>1,2</sup> Ophthalmomyiasis refers to infestations of the eye and/or ocular adnexa. Most reported myiasis patients are mainly from tropical countries, have a low socioeconomic status, and have close contact with animals. The invasive parasitic larvae almost invariably cause massive destruction of orbital tissue, especially in neglected patients, accompanied by marked inflammatory reactions and secondary bacterial infections. Depending on the genus of the fly, infestation can be caused by single or multiple larvae.<sup>3</sup>

We report a destructive orbital myiasis case caused by *Hypoderma bovis* and treated by orbital exenteration

in order to prevent intracranial invasion by both larvae and neoplastic tissue.

### Case Report

An 85-year-old female patient was admitted to the Department of Ophthalmology, Dicle University Faculty of Medicine, with the complaint of a wound in her right eye for over 1 year. Larvae had been in the same eye for 1 week. The patient had a history of an acne-like lesion for 7 years in her lower eyelid, which had been excised 2 years previously in another clinic. One year after excision it had recurred in the same region. Despite all our attempts, we could not obtain the documents on the patient's initial surgery.

The clinical examination showed no light perception in her right eye; the eyelid was thickened and there was a necrotic, loose tissue lesion 3 × 4 cm in diameter, invading inferiorly into the upper side of the maxilla, superiorly to the roof of the orbita, medially to the lateral part of the nose, and laterally to the ossa zygomatica (Figure 1). The conjunctiva was hyperemic, the cornea was cloudy,

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**Figure 1.** Appearance of lesion and larval involvement in the right eye of an 85-year-old woman with a long history of orbital myiasis caused by *Hypoderma bovis*.

the iris was normal, pupils were normal, and light responses were absent. There was a cataract in the lens of the right eye and the fundus could not be examined.

Light-sensitive and motile larvae were detected in the lesion. With forceps, 71 larvae were extracted from the lesion within 48 hours (Figure 2). The larvae had 12 segments and were 8–15 mm in length. By parasitological examination, it was determined that the larvae were in the third developmental phase of *Hypoderma bovis*, a member of the Oestridae family.

Visual acuity in the patient's left eye was 2/200 and intraocular pressure was 15 mm Hg. Anterior segment findings were normal except for an inferiorly dislocated lens with cataract. By ultrasound, both globes were evaluated as normal. A 3 × 4 cm-diameter solid mass with heterogeneous density filled the right maxillary sinus, and superiorly reached the nasal bone and medial rectus muscle. The impaired bone structure in the right eye was detected by computed tomography (CT). No escaped larvae were detected in the CT scan. The ocular bulbus, retrobulbar space, extraocular muscles and optic nerve were normal in the left eye. No intracranial invasion was

found by CT. No metastasis was detected in other examinations.

Orbital exenteration, total maxillectomy and graft repair were conducted in the right eye. Pathological examination confirmed basal cell carcinoma. During the six-month period of follow-up, orbital tomography and clinical examinations were performed, and the patient was examined and evaluated for recurrence and metastasis.

## Discussion

Flies are small-winged arthropods of the class Insecta. Some are biologic or mechanical vectors of protozoal, viral, bacterial or helminthic diseases. Others are important because of their bites, production of allergens, or larval tissue invasion causing myiasis.<sup>1</sup> Myiasis in humans may be benign to asymptomatic or may result in mild to violent disturbances, even death. Ophthalmomyiasis accounts for less than 5% of the cases of human myiasis. It is classified into external, internal, or orbital ophthalmomyiasis according to the site and degree of larval infestation. External ophthalmomyiasis refers to the limited infestation of superficial periocular tissues and includes palpebral and conjunctival myiasis. Internal ophthalmomyiasis occurs when parasitic dipterous larvae penetrate the conjunctiva and sclera and migrate into the subretinal space.

Orbital myiasis is the least common form of ophthalmomyiasis.<sup>1</sup> By consulting Pub Med, we found that only 11 orbital myiasis patients have been reported in the last 35 years. This case is the first orbital myiasis case caused by *H. bovis* reported from Turkey. Previous patients with orbital myiasis have been mostly either children or elderly



**Figure 2.** Some of the *H. bovis* larvae removed from the lesion.

persons, or demented patients who could not adequately care for themselves. Low socioeconomic status and poor hygiene add to the risk of infestation. Most reported myiasis patients have belonged to a low class of society, being farmers, laborers or beggars. In some orbital myiasis cases, preexisting ocular disease predisposes the patient to larval infestation. In children, gonococcal conjunctivitis and in adults, periocular ulcerated skin cancers may predispose to larval infestation.<sup>3</sup> Basal cell carcinoma was the predisposing factor in our case.

Eighty species of Diptera have been known to invade man. Infestation may occur in eyelids, conjunctiva, cornea, globe or orbit. In *H. bovis*, a member of the Oestriidae family, the complete life cycle takes place in cattle, and infestation frequently occurs in cattle when a fly transfers eggs to wounds or broken skin. Larvae hatch in one week and proceed to invade the host tissue. Larvae are 5 to 20 mm in length and 3 mm in diameter and form tunnels in tissues. Although ocular myiasis in humans commonly caused by *H. bovis* does occur, infestation is rare because humans are accidental hosts. Most patients have been in close contact with animals and eggs are transferred due to bad hygienic conditions or habits. Our patient also was in a low socioeconomic status and living in close contact with cattle.

Myiasis is not a common disorder in humans and it affects primarily wounds of the skin. Infections with purulent secretions, and blood and body secretions are the most common factors that attract flies. Baliga et al reported an orbital myiasis case caused by *Oestrus ovis* on ulcerated tissue resembling basal cell carcinoma.<sup>2</sup> Ophthalmomyiasis developing in a patient with basal cell carcinoma in a lower eyelid was reported.<sup>4</sup> Agarwal and Singh reported a patient with basal cell carcinoma who secondarily developed orbital myiasis.<sup>5</sup> We operated on our case with a tumor in the lower eyelid because the orbital myiasis caused by *H. bovis* had recurred postoperatively.

Individuals in close contact with sheep or goats in early summer until the later rainy season are susceptible to orbital myiasis if stung in the eye by an insect or struck by a small object, leading to pain and inflammation<sup>2</sup>.

In cases of orbital myiasis, diagnosis is made clinically and treatment should be directed toward removing all invading organisms, proper care of wounds and controlling the almost inevitable secondary bacterial infections. Various solutions have been recommended to narcotize or kill larvae such as naphtha,<sup>2</sup> ether,<sup>2,4</sup> chloroform,<sup>2,4</sup> cocaine,<sup>4</sup> and turpentine.<sup>4,5</sup> Also, many authors recommend local application of iodoform, ethyl chloride, mercury chloride, atropine 0.5% solution or salt solutions, or systemic butazoline or thiobendazole in order to remove larvae. The proximity of the brain and the possibility for intracranial invasion from the orbital apex renders this a potential life-threatening condition. In those cases in which invasion approaches the orbital apex, exenteration must be seriously considered.<sup>1</sup> We performed orbital exenteration in our patient for this reason.

In conclusion, orbital myiasis is a rare disease, accompanied by marked inflammatory reactions and secondary bacterial infections, massive destruction and life-threatening consequences such as intracranial invasion.

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