

## ORBITAL MYIASIS

### MIÍASE ORBITÁRIA

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#### ABSTRACT

Invasion of the orbit by dipterous fly larvae, an uncommon form of myiasis, may result in sequelae ranging from minor irritation to blindness, and even death. We report a case of a 55-year-old man with destructive orbital myiasis resulting in complete loss of the ocular globe. He presented with severe pain and swelling in his orbital region. Larvae were seen and identified as *Cochliomyia hominivorax*. Oral ivermectin and intravenous antibiotic were administered prior to surgery. Although infrequent, orbital myiasis may be severe enough to require evisceration or exenteration.

**Indexing terms:** eye infections, parasitic; ivermectin; myiasis; orbit evisceration.

#### RESUMO

*Invasão orbitária por larvas de moscas, uma forma incomum de miíase, pode resultar em seqüelas que vão desde irritação leve, cegueira e até em morte. Relatamos um caso de um paciente de 55 anos com miíase orbitária destrutiva, resultando em perda do globo ocular. Ele apresentava dor forte e edema em região periorbitária. Larvas foram identificadas como sendo de Cochliomyia*

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hominivorax. Ivermectina oral e antibiótico endovenoso foram administrados previamente à cirurgia. Embora infreqüente, miíase orbitária pode ser bastante grave necessitando de evisceração ou exenteração.

**Termos de indexação:** infecções oculares parasitárias; ivermectina; miíase; evisceração orbitária.

## INTRODUCTION

Myiasis is an uncommon condition produced by the invasion of tissues by maggots, the larvae of flies. This phenomenon has been mainly reported in underdeveloped and developing countries or in individuals living in rural areas. The medical consequences of myiasis vary and depend in part on whether the larvae are obligatory parasites, which require vital living tissue for survival, or facultative parasites, which require only decomposing organic matter such as rotting food, carcasses, feces, or the necrotic tissue of a wound. Facultative species tend to produce mild infestations, while obligatory species can be invasive<sup>1,2</sup>.

Ophthalmomyiasis is a rare entity caused by infestation of the eye and/or ocular adnexa by certain dipterous larvae, and represents less than 5% of the cases of human myiasis<sup>1</sup>. Ophthalmomyiasis is classified as orbital, external or internal, based on the site of larval invasion. Large numbers of larvae invading and destroying orbital contents cause orbital myiasis. External ophthalmomyiasis refers to superficial infestation of ocular tissue, including the conjunctiva. Internal ophthalmomyiasis occurs when the larvae penetrate the sclera and burrow in the subretinal space<sup>1-3</sup>.

In humans, the orbital form of ophthalmomyiasis is particularly serious. The invasive parasitic larvae almost invariably cause massive destruction of orbital tissue in neglected patients, accompanied by marked inflammatory reactions and secondary bacterial infections<sup>4-7</sup>. We describe a case of destructive orbital myiasis caused by larvae of the New World screwworm, *Cochliomyia hominivorax*. At the time of presentation, the intraocular contents were totally destroyed.

## CASE REPORT

A 55-year-old agricultural worker was referred with a 1-week history of severe pain and swelling in his left orbital region. Two weeks prior to presentation, he suffered trauma in the left face resulting in a small skin lesion. He was known to be alcoholic and a chronic smoker and there was no history of diabetes, hypertension, or previous surgeries.

Upon examination, the patient had marked periorbital edema, and multiple cutaneous necrotic areas contained numerous visible maggots and purulent discharge (Figure 1). The eyeball was destroyed and visual acuity was no light perception in the left eye. Laboratory findings were within normal limits. The specimens were sent to the Center for Zoonosis Control of Sobral (CE), where microscopy showed that the larvae were third-stage *Cochliomyia hominivorax* (varejeira fly). They were creamy white and had a typical maggot shape, with a cylindrical body of approximately 13 mm long and 3 mm wide. Culture of the cutaneous erosions was not done. Irrigation with saline solution was performed. He was



Figure 1. Photograph of patient before surgery.

given a single oral dose of ivermectin (200µg/kg) and intravenous cefalotin was initiated to control associated infection. Despite the complete resolution of the myiasis in a 48-hour period, exenteration was carried out. The patient was discharged four days later.

## DISCUSSION

Orbital and ophthalmic myiasis are uncommon, and they can occur in healthy individuals of all ages, although they are more frequent in diseased or emaciated patients<sup>6-9</sup>. Potential complications include deep tissue penetration by the larvae<sup>5,6,10</sup>.

Orbital myiasis in the New World is usually caused by *Cochliomyia hominivorax*, the etiology of this patient. The fly is usually attracted by the bad odor of exposed and diseased body cavities<sup>6,10</sup>. Early diagnosis and treatment are important to avoid gross destruction of the tissues and to control secondary infection. Although deaths from myiasis of the head and neck regions have rarely occurred in recent times, the potential for bone erosion and fatal intracranial invasion should not be overlooked<sup>7</sup>.

*Cochliomyia hominivorax* is an obligatory parasite with the capacity to produce deep, disfiguring wounds that occasionally result in death. It is a dipteran insect of the *Calliphoridae* family (flies). The destruction of the eyeball and the perforation of the nose in our patient demonstrate the aggressiveness of *C. hominivorax* larvae. This thermophilic species is endemic to the tropical and subtropical zones of the American continent. The female of *C. hominivorax* lays batches of approximately 500 eggs on the edges of wounds or natural body orifices. The eggs hatch after 14-18 hours. In the 24 hours following hatching, the larvae burrow into living tissue to find food. The complete development of the larvae takes five to nine days, and the insect then leaves the host to pupate in the soil<sup>2,11</sup>. Domesticated animals, such as cattle, are important reservoirs for the New World screwworm<sup>2</sup>.

Recently, massive orbital and ocular invasion by *Cochliomyia sp* resulted in death of the patient<sup>7</sup>. Massive orbital myiasis by *Cochliomyia hominivorax* was reported in a Brazilian patient with basal cell carcinoma of the eyelid; exenteration was performed<sup>10</sup>. The other flies *Cryomyia bezziana*, *Hypoderma bovis*, *Lucilia sp* and *Callitroga macellaria* also have been reported to produce destructive orbital myiasis<sup>1,2,6,7</sup>. The low socioeconomic status, alcoholism, poor hygiene habits and a prolonged state of unconsciousness in a rural location probably contributed to the fast destruction of the orbital contents of the patient.

Management of orbital myiasis should be directed toward removing all invading organisms and controlling the almost inevitable secondary infection. Solutions of hydrogen peroxide, chloroform, ether, ethanol, cocaine and turpentine have been used to kill and remove the larvae<sup>1,7,12</sup>. Recently, oral ivermectin has been successfully used in the treatment of cavitary myiasis as adjunctive therapy prior to surgery, making the mechanical removal of larvae an unnecessary procedure, as in this case<sup>5,6,13,14</sup>.

## CONCLUSION

Orbital myiasis is an affliction that can result in widespread destruction. The proximity of the brain and the possibility for intracranial invasion from the orbital apex renders this a potentially life-threatening condition. Although preventive measures may not always be successful, adequate personal hygiene and proper care of wounds may reduce the condition. Early diagnosis and management is important in preventing complications.

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