

## Ivermectin treatment for massive orbital myiasis in an empty socket with concomitant scalp pediculosis

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We report a rare case of massive orbital myiasis following recent lid injury, occurring in the empty socket of an elderly lady, who had concurrent scalp pediculosis. The orbital myiasis was effectively treated with the broad-spectrum antiparasitic agent, ivermectin, thus precluding the need for an exploratory surgery. Ivermectin was also effective in managing the concurrent scalp pediculosis.

**Key words:** Ivermectin, lid laceration, orbital myiasis, scalp pediculosis

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Orbital myiasis, or maggot infestation, is a rare condition with very few reports having been published worldwide.<sup>[1,2]</sup> Management of orbital myiasis may range from simple manual removal of the maggots to destructive surgeries of the globe and orbit.<sup>[3]</sup> With the advent of the broad-spectrum antiparasitic drug, ivermectin, there is now a safe and noninvasive means of tackling maggots, especially those buried deep in the orbital tissues.<sup>[4]</sup> Although introduced into veterinary medicine as an anthelmintic, ivermectin is also useful against ectoparasites like lice.<sup>[5]</sup>

### Case Report

A 70-year-old female presented with complaints of painful swelling of the right side of the face and the presence of wormy creatures in the lids and orbit on the right side, of 4 days duration. Her sleep was disturbed due to their constant movement.

She had undergone bilateral cataract surgeries elsewhere 2 years ago and the right eye had been removed 8 months ago. No documentary details were available. The patient reported that she had sustained accidental injury to the right upper lid, about 10 days earlier. She did not take any treatment for

the same. Enquiry revealed that the patient was from a rural background and had close contact with goats.

Examination revealed an elderly, unkempt lady with right-sided facial cellulitis. There were large, maggot infested ulcerations involving the medial parts of the right upper and lower lids as well as the ipsilateral lacrimal sac area. The right orbit was anophthalmic, foul smelling, and ridden with numerous maggots, some of which were present in multiple deep pockets of the lids and orbital tissue [Fig. 1]. Ophthalmic examination of the left side revealed no abnormality other than pseudophakia. The presence of severe scalp pediculosis was noticed and a dermatologist's consultation was taken. ENT examination was normal.

Immediate treatment consisted of injection Tetanus Toxoid, oral diclofenac, and instillation of 0.3% gatifloxacin eye drops, four times a day in the right orbit. Laboratory investigations and X-ray orbits were normal. Manual removal of maggots was done several times a day, initially following turpentine wash, and later under topical anesthesia [Fig. 2]. However, several maggots continued to remain deeply buried in pockets in the lids and orbit. Magnetic resonance imaging (MRI) suggested a suspicion of early erosion of the medial orbital wall on the right side. The retro-orbital compartment including the optic canal was normal [Figs. 3 and 4].

The patient was administered a single oral dose of 12 mg of ivermectin, following which she had a dramatic relief from pain. 1% ivermectin drops prepared by dissolving the tablet in distilled water was additionally instilled four times a day in the right orbit for a week. Dead maggots were easily removed and rapid wound healing ensued. The patient was discharged with a healthy socket [Figs. 5 and 6] and a louse-free head. At final count, over a hundred maggots were removed, varying from 10 to 15 mm in size. The parent fly could not be identified.

## Discussion

Although maggot infestations are common in the tropics, only between 5 and 14% of all cases involve the ocular tissues,<sup>[6,7]</sup> and most ophthalmologists have little experience with this condition. Maggots are the larvae of those dipteran flies which need a host for completion of their life cycle. The definitive hosts for maggots are goats and sheep. Man is an accidental host, and trauma is an important risk factor. Myiasis cases tend to occur in the spring and summer. Our patient presented in the monsoon season with a recent lid laceration and a history of close contact with goats.

Orbital myiasis tends to endanger the globe and may extend into neighboring areas, such as the paranasal sinuses or the intracranial cavity.<sup>[1]</sup> Our patient had an empty socket filled with maggots, which threatened to erode the medial orbital wall.

The aim of treatment is to remove the maggots. We found that the maggots avoided bright light, but the presence of air bubbles helped in locating them. Maggots tend to resist removal by digging in their hook like structures. Forceful removals may result in incomplete extractions leading to granulomatous inflammation and calcification.<sup>[8]</sup> One may try to coax the maggots out by blocking their breathing holes with petroleum jelly, or the parasites may be killed by turpentine oil or hypertonic saline induced dehydration, prior to manual extraction.

Orbital myiasis proceeding to globe invasion may entail



Figure 1: Right orbital myiasis



Figure 2: Maggots removed manually

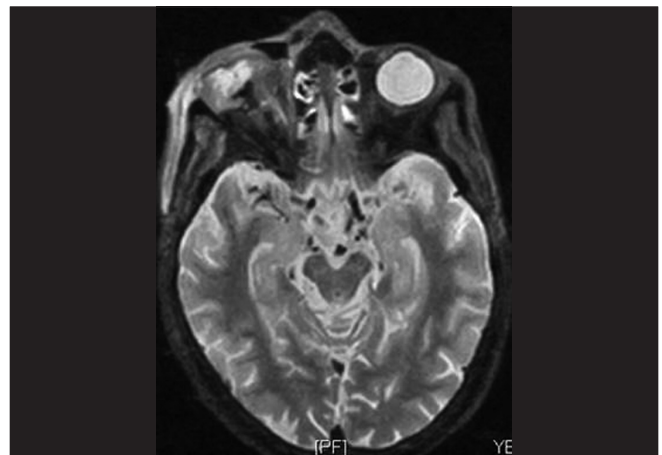
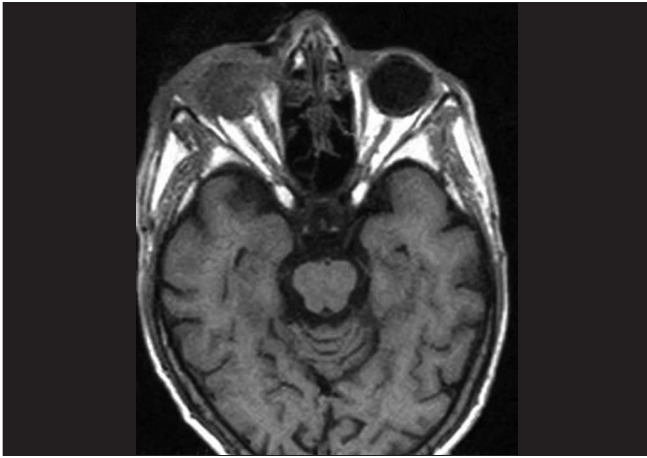


Figure 3: Magnetic resonance imaging axial STIR signal showing inflammation of right lateral orbital wall

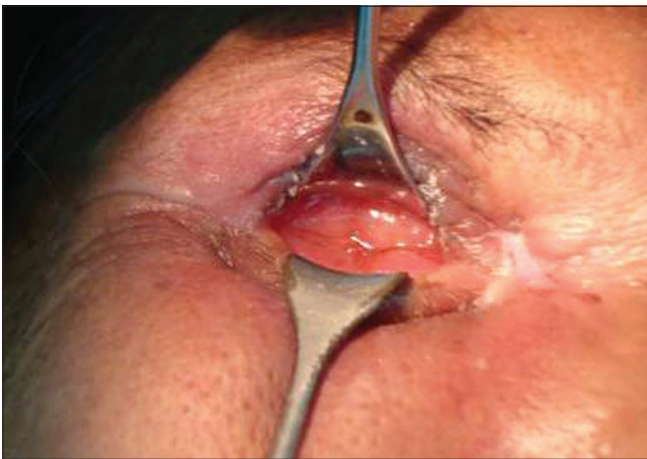
removal of the globe, while erosion into surrounding structures may necessitate orbital exenteration. In 1995, a review of 429 cases of orbital exenterations revealed that as many as 9 had been done for deep orbital myiasis.<sup>[3]</sup>



**Figure 4:** Magnetic resonance imaging axial T2 of right orbit showing anophthalmia with marked inflammation of right medial orbital wall and lateral displacement of right medial rectus



**Figure 5:** Healing of lids after treatment with ivermectin



**Figure 6:** Well-healed lids with a healthy, maggot-free socket

In recent years, the broad-spectrum antiparasitic agent, ivermectin, has been successfully used as a noninvasive means to treat orbital myiasis.<sup>[4]</sup>

Scalp pediculosis has been reported to predispose to scalp myiasis.<sup>[9]</sup> Although this patient had heavy scalp pediculosis, scalp myiasis did not occur, possibly because she habitually wore a head scarf. Pediculosis too is amenable to treatment with ivermectin.<sup>[5]</sup>

In view of the massive, mixed parasitic infestation and the persistence of deeply buried maggots, and in order to avoid exploratory surgery, it was decided to treat the patient with ivermectin. Ivermectin is a semi-synthetic macrolide which was introduced as a safe anthelmintic in mammals. The oral dose of ivermectin is 200 µg/kg body weight. The drug may also be used topically as a 0.1% or 0.8% solution in birds and animals.<sup>[10]</sup> It has been used as a 1% solution in the treatment of scabies.<sup>[11]</sup> Ivermectin inhibits neurotransmission by causing hyperpolarization of the neurons and myocytes of invertebrates. Safety of ivermectin is very high in humans.<sup>[12]</sup> Common side effects on oral administration are dizziness, headaches and muscle pains. No adverse reactions were observed in our patient.

Systemic antibiotics may not be required since secondary pyogenic infection is precluded by the antibacterial activity of the maggots themselves.<sup>[13]</sup> Emphasis on personal hygiene is an important preventive measure.

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