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### Ophthalmomyiasis in an Adolescent Boy

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#### Introduction

Myiasis is the infestation of tissue with fly larvae, commonly referred to as maggots. Human beings and vertebrates are affected by larvae of some Dipteran flies, which at least for a brief period feed on the host's tissues, body fluids, or ingested food<sup>1</sup>. Ophthalmomyiasis specifically refers to the infestation of the human eye, and it may occur in external, internal, or orbital forms, depending on the location of the larvae<sup>2</sup>. The most commonly encountered form of ophthalmomyiasis is the external ophthalmomyiasis. In this form, infections of superficial periocular tissue, including the eyelids, conjunctiva, lacrimal sac and nasolacrimal ducts have been recorded, but conjunctival myiasis appears to be the most common<sup>3</sup>. The most damaging type is the orbital myiasis where the larvae get their way to the orbital structure and cause serious damage. It is widespread in the tropics and subtropics of Africa and the Americas, and occurs in other areas of the world. Greater awareness on the part of physicians about clinical symptoms and relevant exposure histories would improve the expediency and efficacy of treatment for patients with myiasis.

*Keywords:* Myiasis ophthalmica, myiasis, ophthalmomyiasis

#### Case report

18 years old, Syrian male patient attended our hospital clinic with complaints of severe tearing, redness and a moving foreign object in his right eye. He also had pain, slight pruritus, and edema in his right inner canthus. There was no history of previous ocular surgeries, and he was not taking any ocular medications (Figure 1). He was in good general health with no systemic symptoms. On examination, he had a visual acuity of 20/20 with nospectacles correction, a normal extraocular motility and fundus findings. Intraocular pressure was normal bilaterally. Anterior and posterior chamber examination was normal. A small erythematous lesion with a demarcated punctum in the center and periorbital edema were noted in the right inner canthus. On slit-lamp examination, a small yellowish organism and a serous-purulent fluid drained from the punctum. The larva was then easily grasped with forceps and gently removed without making any incision into the lesion (see the picture of larva in Figure 2. Courtesy: Nature.com). The other eye was normal. Patient improved with the treatment.

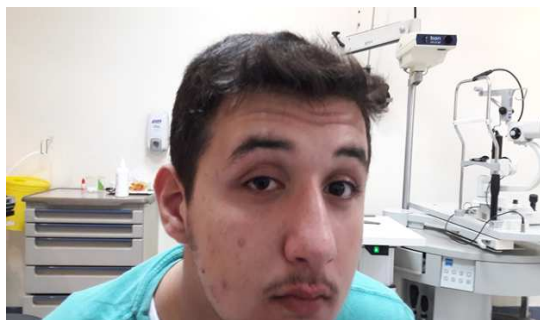


Figure 1. Redness and swelling right eye

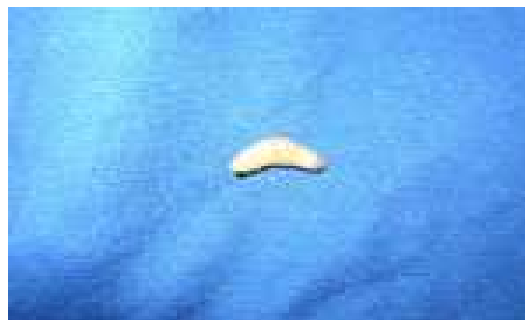


Figure 2. Larva. Courtesy: Nature.com

## Discussion

Myiasis is the parasitic infestation of the body of a live mammal by fly larvae (maggots) that grow inside the host while feeding on its tissue. Flies are most commonly attracted to open wounds and urine, feces and soaked fur. Some species including the most common myiatic flies, the botfly, blowfly and screwfly can create an infestation even on unbroken skin and have been known to use moist soil and non-myiatic flies such as the common housefly as vector agents for their parasitic larvae. The most common site for infestation is skin, but eyes, nose, paranasal sinuses, throat and urogenital tract might also be infested<sup>4</sup>. Keyt first described an ocular myiasis case in 1900 then Elliott notified ophthalmomyiasis from India in 1910<sup>5</sup>.

Ophthalmomyiasis due to *Oestrus ovis* was firstly described by James in 1945<sup>6</sup>. *Oestrus ovis* is the most common agent for external ocular myiasis. The majority of the cases have been reported from the Mediterranean countries and Middle East region<sup>7</sup>. In the external type, the patients may present with classic conjunctivitis, pseudomembranous conjunctivitis, punctuate keratitis and/or keratouveitis and mimics allergic or viral conjunctivitis<sup>8</sup>. Ophthalmomyiasis is an infestation of the eye with larvae of most commonly *O. ovis* and these larvae (maggots) are ejected in a milky fluid by the female fly while it is in a flight<sup>9</sup>. The maggots are tiny translucent worms, 1–2 mm in length with dark heads and a couple of distinct dark brown oral hooks and numerous hooks of the body can be seen crawling over the conjunctiva or swimming in the vitreous cavity and/or sub retinal space<sup>10</sup>. Patients complain of pain, burning, itching, redness, and watering in the affected eye, with an abrupt onset, accompanied by sensations of larvae moving in the eye. If timely management is not done, the larvae penetrate the sclera and reach the vitreous and sub retinal space, causing ophthalmomyiasis internal as a complication. This manifests as pigmented and atrophic retinal pigment epithelial tracts in multiple crisscross patterns, in conjunction with fibrovascular proliferation, hemorrhage, and exudative detachment of the retina leading to blindness. Maggots can also infiltrate the lacrimal sac and can migrate through the lacrimal canal to the nasal cavity. Extension to the cranial cavity is a possibility, due to the close proximity to the base of the skull. Myiasis varies widely in the forms it takes and its effects on the victims. Such variations depend largely on the fly species and where the larvae are located. Some flies lay eggs in open wounds, other larvae may invade unbroken skin or enter the body through the nose or ears, and still others may be swallowed if the eggs are deposited on the lips or on food.

### Types of Ophthalmomyiasis:

*External type* where the infestation is on the external ocular surface. Here the patient presents with conjunctivitis, cellulitis and/or keratouveitis.

*Internal type* where the larvae penetrate into the globe and the larvae can be seen within the vitreous cavity and/or sub retinal space. This is the destructive type.

*The 3<sup>rd</sup> Type*, which is more destructive is the orbital myiasis where the larvae penetrate deep into the orbital cavity and destroy the tissue<sup>11</sup>. Our case is exclusively of the external type where the larvae were seen on the conjunctiva surface with normal posterior segment.

Ophthalmomyiasis is rare, the largest series reported by M. Abdel Latif et al<sup>12</sup>. In the external type the patients may present with classic conjunctivitis, pseudomembranous conjunctivitis, punctuate keratitis and/or keratouveitis. Even rare, ophthalmomyiasis should be in the different diagnosis of unilateral conjunctivitis. The condition is curable, but a delay in removing the causative larvae may lead to their penetration into the inside of the eye or orbit causing a more destructive damage<sup>13</sup>. Normally, healthy individuals are unlikely to suffer from myiasis. Chronic debilitating conditions, such as leprosy, diabetes mellitus, open wounds, fungating carcinomas, psychiatric illness, intellectual disability, hemiplegia, and immunosuppressive agents may predispose individuals to myiasis. Our patient was young and did not have any systemic disease. Patients most often infested with larva, complain of pruritus and pain, and they may sense movement of the larva. If the larva dies within the cavity, the lesion may be very similar to a chalazion<sup>14</sup>. The symptoms of ophthalmomyiasis externa are very similar to symptoms of

acute catarrhal conjunctivitis. Patients reported itching, burning, mobile foreign body sensation, photophobia, watery discharge and eyelid hyperemia in their eyes. The symptoms begin after larval ovulation with acute onset of eye pain and inflammation unilaterally as a rule. Conjunctival pseudomembrane, follicular conjunctival reaction and punctate keratopathy may accompany the clinical picture. Viral, bacterial or foreign body conjunctivitis may cause the same symptoms but visualization of the larva concludes the diagnosis<sup>15</sup>.

### Conclusion

Although human ophthalmomyiasis is a rare disease but it may be emerging and increasing. It is considered that many metabolic diseases like diabetes mellitus and cancers like squamous cell carcinoma, as well as poor hygiene can provide a suitable ground for myiasis because of delaying in wound healing in these diseases. Dermatologist and ophthalmologist must be alert about myiasis that parasitic infections of ocular surface may be seen in healthy individuals. Maggots in eye are rare in developed and even in under developed areas due to awareness and relatively easy access to ophthalmic facility as compared to the past<sup>16</sup>. Sanitation and occupational knowledge is important in parasitic diseases. Prompt diagnosis and treatment prevents serious complications. Fornix examination is essential in the diagnosis of larva. Ophthalmologists must take into consideration ophthalmomyiasis in the differential diagnosis of conjunctivitis.

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