

Case Report

Human external ophthalmomyiasis caused by *Lucilia sericata* Meigen (Diptera: Calliphoridae) – a green bottle fly

Tanja Kalezić¹, Milenko Stojković¹, Ivana Vuković², Radoslava Spasić³, Marko Andjelković⁴, Svetlana Stanojlović¹, Marija Božić¹, Aleksandar Džamić⁵

¹ Clinic for Eye Disease, Clinical Centre of Serbia, Faculty of medicine, University of Belgrade, Belgrade, Serbia

² Institute for Gynecology and Obstetrics, Clinical Centre of Serbia, Faculty of medicine, University of Belgrade, Belgrade, Serbia

³ Department of Entomology and Agricultural Zoology, Faculty of Agriculture, University of Belgrade, Belgrade, Serbia

⁴ Department of Prosthodontics, School of Dentistry, University of Belgrade, Belgrade, Serbia

⁵ Institute for Microbiology and Immunology, Department of Parasitology, Faculty of medicine, University of Belgrade, Belgrade, Serbia

Abstract

Ophthalmomyiasis externa is the result of infestation of the conjunctiva by the larval form or maggots of flies from the order Diptera. If not recognized and managed appropriately, it can be complicated by the potentially fatal condition ophthalmomyiasis interna. Ophthalmomyiasis externa is mainly caused by the sheep bot fly (*Oestrus ovis*). We present the first case, to our knowledge, of ophthalmomyiasis externa in an elderly woman from Belgrade caused by *Lucilia sericata* Meigen – a green bottle fly.

Key words: ophthalmomyiasis externa; *Lucilia Sericata* Meigen; hospital infestation.

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Introduction

Infection and infestation of the eye and orbit by insect larvae are common in countries where standards of hygiene are low [1,2]. Ophthalmomyiasis externa is the result of infestation of the conjunctiva by the larval form or maggots of flies from the order Diptera [3].

By definition, infestation can be external, internal, and orbital [4,5]. Ophthalmomyiasis externa is the infestation of conjunctival sac with fly larvae, without globe penetration.

Extensive literature review revealed a relatively small number of articles describing ophthalmomyiasis in humans, but none of them mentioned an infestation that was caused by *Lucilia sericata* Meigen. To the best of our knowledge, this is the first case report of eye surface (conjunctival sac) infestation in humans by *Lucilia sericata* Meigen maggots.

Most reported cases of secondary human orbital involvement or primary orbital infection were caused by sheep nasal bot fly (*Oestrus ovis*) or cattle bottlefly (*Hypoderma bovis*) [3,6,7].

Larvae migrate into eye globe or orbit, either through the bloodstream or by direct penetration through conjunctiva and/or sclera [8]. However, ophthalmomyiasis may also occur as skin or nasal myiasis.

We report a case of ophthalmomyiasis externa in an elderly woman in Belgrade, Serbia.

Case history and examination

An 87-year-old woman came to our hospital in an ambulatory vehicle, somnolent, with a naso-gastric infusion tube, and heteroanamnestic data (supplied by an attending nurse from the neurology department) of a recent cerebrovascular insult. The patient was admitted in a very serious and life-threatening condition. No heteroanamnestic data or available medical records were even remotely suggestive of any previous eye/adnexal disease or injury.

Ophthalmological report

The findings in the right eye during examination were normal.

The left eye showed massive myiasis at the surface of the conjunctiva, filled with a fleshy mass of crawling maggots (Figure 1).

The conjunctival and corneal surfaces were intact, as proven by a fluorescein test after the removal of maggots; there was no bleeding during removal.

Visual acuity was not taken, considering her condition. The anterior chamber was without any cells. The vitreous cavity was normal. The fundus was normal, considering the patient's age and condition.

The larvae were translucent and approximately 12 mm long. Double eversion of the eyelid was performed. Sixteen organisms were removed from the left eye (Figure 2).

Treatment of choice for ophthalmomyiasis was removal of the larvae. Topical anesthetic was used to paralyze the larvae to make their removal by forceps easier [9]. The maggots were removed with jeweler's forceps and the globe was irrigated with an antiseptic solution and oleum Chloramphenicol 1%.

Parasitological-entomological examination

Sixteen maggots were removed from the left eye. A sample of the larvae was adequately collected and sent for parasitological examination.

Entomological report

The species *Lucilia sericata* (syn. *Phaenicia sericata* Meigen) was identified according to the morphological characters of third instar larvae. Examined larvae were first preserved in 70% ethanol, and then they were macerated or cleared in 10% potassium hydroxide. Cleared larvae were mounted on slides using Canada balsam medium. Identification

was performed based on a detailed study of the cephalopharyngeal skeleton, anterior and posterior spiracles, using the pictorial key described by Stojanovich *et al.* [10]. Larvae of *Lucilia sericata* measured 12 mm in length. The cephalopharyngeal skeleton was without accessory sclerite. The anterior (prothoracic) spiracle on the right side had eight openings, and the left one had seven openings (Figure 3).

Posterior (anal) spiracular plates were with three straight, approximately parallel slits. Peritreme, which completely surrounded the spiracular plate, was thin, less sclerotized, and had no projection inward toward the spiracular slits (Figure 4).

Bionomy of Lucilia sericata

Lucilia sericata is typically an outdoor scavenger, but it may enter houses and other sites, and it is an important synanthrope species. *Lucilia sericata* larvae are essentially carrion breeders, but they can adapt to a wide variety of media, including various types of excrement and garbage containing meat scraps. Also, they may infest humans, and may be attracted to neglected, suppurating, malodorous wounds, especially if the patient is, to a degree, helpless.

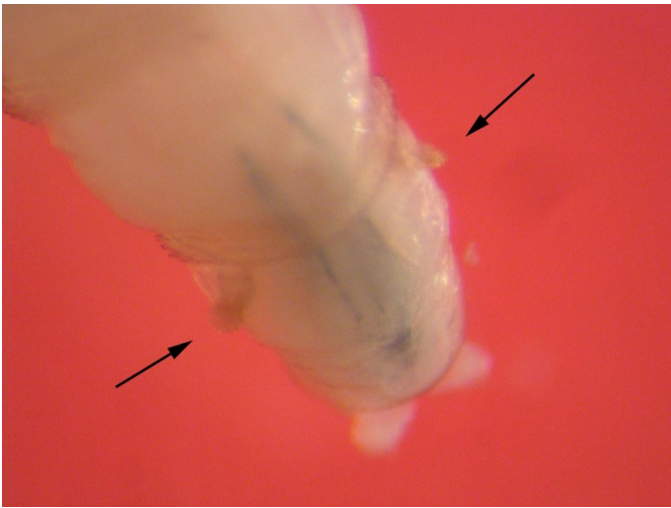
Females lay clusters of up to 200 eggs on the host or carcass. Larvae develop through three instars, feeding on live or dead tissue. The fully developed larvae leave the host or carrion and burrow into the surrounding soil or substrate to pupate. Pupal development takes seven to ten days, after which the adult fly emerges. After mating, females lay eggs. There can be three to four or more generations in a year [11].

Figure 1. *Lucilia Sericata* Meigen maggots; clinical examination



Figure 2. *Lucilia Sericata* Meigen maggot



Figure 3. Anterior spiracles; *Lucilia Sericata* Meigen**Figure 4.** Posterior spiracles; *Lucilia Sericata* Meigen

Discussion

Lucilia sericata Meigen is an unusual cause of ophthalmomyiasis in humans [12]. It is obvious that two risk factors contributed to the development of this particular case. The first was the condition of the patient – she had long-term mental and physical dependency and disturbed consciousness, which prevented her sensation of fly contact. A computerized tomography scan showed massive damage of brain tissue by infarction of the brain, causing tissue reduction incompatible with mental recovery [13].

The second risk factor was ventilation of the patient's room by means of an open window without netting. The temperature at the time (end of June) was around 25°C.

The possibility of infection by mechanical transmission of flies in a hospital environment is another factor to consider [8].

An effective way to prevent myiasis would be to provide nets for windows and other ventilation ducts.

Conclusions

To the best of our knowledge, this is the first reported case of conjunctival infestation with *Lucilia sericata* Meigen maggots in humans. It is necessary to emphasize the need for all medical workers to be highly aware of infestation with bottle fly maggots, especially in patients in comas or other bedridden patients with reduced levels of consciousness.

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Corresponding author

Dr. Tanja Kalezić
Clinic for Eye Disease, Clinical Centre of Serbia
University of Belgrade, Faculty of Medicine
Pasterova St. No 2, 11000 Belgrade, Serbia
Phone: +381 63 8148 843
Email: tanjakalezic@gmail.com

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