

Otomyiasis: A case report

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Abstract

Abstract Myiasis is the infestation by dipteran fly larvae to feed on the host's organs, bodily fluids, or ingested food. We report a 14year old grade 7 female patient who visited our hospital with a complaint of right ear pain of two years duration. Keywords: Otomyiasis, myiasis, aural myiasis, adult

Introduction

The term "myiasis" refers to the infestation of live people or animals by flies [1, 2]. The word "myiasis," which means "fly," is derived from the Greek word "myia," which was first used in 1840[3]. Myiasis is the particular, semi-specific, or inadvertent infiltration of living mammalian tissue by dipteran fly larvae to feed on the host's organs, bodily fluids, or ingested food. The fly is thought to be able to lay its eggs on an immobile person's skin, wounds, or natural openings while in flight. Larvae that produce myiasis primarily target the body's cutaneous tissue (furuncular and creeping), bodily cavities, and organs [4]. Human myiasis can range from benign to asymptomatic, or it can cause minor to severe problems, even death [5].

Because of the potential for brain penetration, infections of the nose and ears are particularly deadly; the mortality rate is about 8%. In the tropics and subtropics, myiasis is a widespread parasite infestation. Due to global travel, cases are also seen in Europe and North America outside of the areas where it is endemic [4, 6]. Children are more prone to developing aural myiasis than adults. It is frequently observed in adults as well, particularly in mentally impaired people. The Sarcophagidae family includes the majority of the recognized causal agents. In the Mediterranean Basin, Southern Russia, Turkey, Israel, the Middle East, and the Far East, *Wohlfahrtia Magnifica*, a species of the Sarcophagidae, is frequently identified as the cause of several forms of myiasis [7, 8]. For the otolaryngologist, aural myiasis presents a rare but distinctive clinical entity.

The clinical spectrum covered a wide range of symptoms, including maggots in the ear, otalgia, otorrhea, perforation of the eardrum, bleeding, itching, roaring sound, tinnitus, furuncle of the external ear, and restlessness. Clinicians must refer patients with maggot species identification in order to gather epidemiological information on cases of auditory myiasis [9].

Clinical presentation

We present a 14year old grade 7 female patient who visited our hospital with a complaint of right ear pain of two years duration. She had been complaining of intermittent type of ear ache over the past eight years for which she visited a number of health facilities. The pain worsened over the past two years which led her to get evaluated at our institution. In addition, she complains headache, itching, roaring sound in her ear, tinnitus, loss of sleep, difficulty attending her school lesson, and minimal hearing loss. She tried to get rid of the discomfort by inserting a cotton tip into her ear and applying the Valsalva maneuver (**fig.1**). She

observed plenty of worms coming out of her ear after being triggered by the cotton tip and following which she felt relief. Recently, she saw adult flies coming out of her right ear and flew away (**fig.2**). Otherwise, she has no fever, body weakness and change in behavior. She is the 3rd child for her families and has four brothers and three sisters. She takes shower once a week. She has no comorbid illnesses like diabetes mellitus and neuropathy.



Figure 1: A picture showing adult fly coming out of the ear.



Figure 2: A picture showing an adult fly being removed with a cotton tip.

On physical examination, vital signs were Blood pressure=100/60, pulse rate=82 beats per minute, respiratory rate=16, temperature=36.5 degree centigrade, and saturation 96% off oxygen. On HEENT examination, the conjunctiva was hyperemic and the sclera non-icteric. Otoloscopic examination revealed adult flies embedded in the right ear. The tympanic membrane was not visualized. The left ear is normal except for certain waxes on the wall of the external auditory canal. The Rinne test for the right ear is negative because the patient feels the vibration of the tuning fork while it was put on the mastoid process. There were no pertinent positive findings in the remaining systems.

Laboratory investigations were done to assess for comorbidities and risk factors. On complete blood count, white blood cells=5000, neutrophil=55%, hemoglobin=15gm/dl, and platelet=210000. Random blood sugar was 120mg/dl, and HIV test=non-reactive.

After written informed consent was taken the ear was irrigated with normal saline. There were about four adult flies that came out of the ear while flushing with intravenous fluid (**fig.3**).



Figure 3: An image showing freshly dead adult fly removed from the ear.

The contralateral ear was also irrigated to remove the wax. An otoscopic examination was repeated after the procedure. The tympanic membrane was intact and there were no remaining maggots or larvae left (**fig.4**). Ciprofloxacin ear drops 0.2%,0.25ml BID for seven days to prevent secondary bacterial infection.

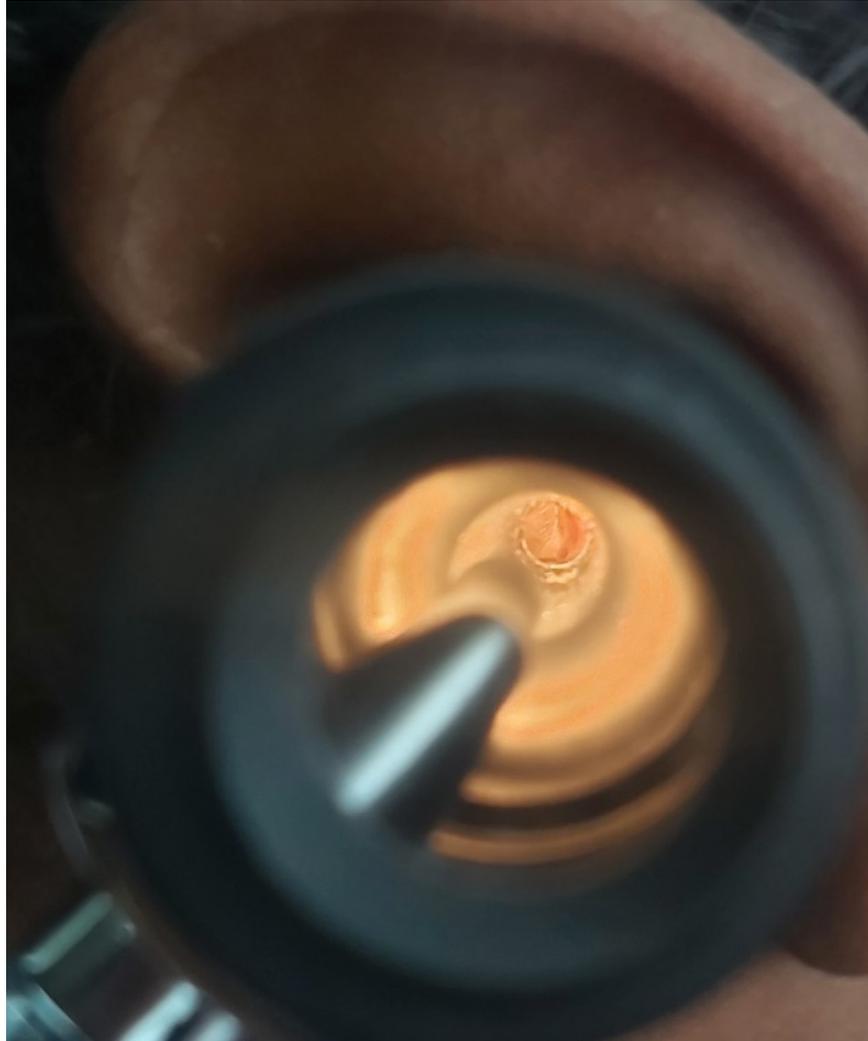


Figure 4: An otoscopic picture showing intact tympanic membrane after irrigation and removal was done.

Discussion

Aural myiasis is an uncommon infestation of the ears. Myiasis is categorized as an obligatory or facultative infestation. In the former, the host, most frequently a goat or sheep, is an essential component of the maggots' life cycle, but in the latter, it is not [10]. Fly species from the Calliphoridae, Sarcophagidae, Gastrophilidae, Cuteribridae, Musca, Famina, Chrysomyia, and *C. vicifia* families cause myiasis. The commonest genera causing myiasis belongs to Sarcophagidae [11]. Myiasis is more common in tropical and subtropical regions, and most cases recorded in the United States and Europe are in tourists coming back from these regions. In moderate climates, the larvae of cosmopolitan dipteran flies accidentally parasitize human skin (*Hypoderma bovis* and *Gasterophilus intestinalis*), the nose, paranasal sinuses, pharynx, and ears (*Calliphora* species, *Lucilia sericata*, and *Musca domestica*), the alimentary tract and urogenital system (*Fannia canicularis*), and the eyes, orbits, and periorbital tissues. [12]. Medical entomologists, veterinarians, and doctors frequently find it helpful to further categorize myiasis into several categories according to the body area and tissue affected [13]. That means traumatic myiasis, oral myiasis, aural myiasis, ophthalmomyiasis, enteric myiasis, urogenital myiasis, and rectal myiasis. Previously, almost all literatures have documented aural myiasis due to the infestation of fly maggots. To our knowledge, no paper has been published on ear infestation by adult

flies. In contrast to those reports, this particular case is worth reporting due to the rarest of all myiasis cases.

According to the research, hosts are typically 60 years old, with a male-to-female ratio of 5.5:1. The incidence of myiasis may be associated with the level of sanitation currently in place, the density of the current fly population, and the individual's economic situation. Patients who are intellectually handicapped, elderly, diabetic, chronic purulent otitis media, homelessness, alcoholism, psychological disorders or unwell, peripheral vascular disease as well as drug users, are more vulnerable to attack. [14-16]. In our case, the patient is only 14 years old school girl and has no comorbid illnesses. However, reports of newborn myiasis cases have also been made [17]. Human myiasis can be mild and asymptomatic or severe and potentially fatal since larval infestations of the eye, nose, and ears can enter the brain [18]. The same is true for this patient. She tolerated right ear pain over the past eight years though she visited a number of health facilities.

Aural myiasis can cause a variety of distinct signs and symptoms, such as otalgia, offensive otorrhea, aural fullness, bleeding, itching, a roaring sound, tinnitus, vertigo, and furuncles of the external auditory canal when larvae are present in the ear. Meningitis and hearing loss can result from damage to the auditory meatus [11, 12, 19]. The larval attack may cause damage to the ear canal's surrounding tissue, including the bones, and very rarely, death [7]. Either mechanical tissue disruption or the larvae's synthesis of the enzyme collagenase can result in tissue damage. Because the feeding maggots from a single egg batch may entice many additional ovipositing flies of numerous species, resulting in the aggregation of thousands of eggs and larvae, small, early infestations frequently grow into massive infestations with life-threatening implications [20]. After the deposited larvae begin to feed on the surrounding tissues, the symptoms appear. Usually, the history and clinical examination, which will reveal the larvae in the ear, are used to identify the infestation. Due to the fact that the larvae are typically found close to the external auditory canal because they need air to breathe, further testing to diagnose it is unnecessary [21].

Most of the time, treating aural myiasis is as simple as removing the larvae and irrigating the ear with one or more of the following solutions: Alcohol, chloroform, normal saline, oil, ivermectin, or iodine [9, 22-26]. Additionally, broad-spectrum preventive antibiotics are typically used to stop subsequent infections. Under a microscope, the larvae should be removed, and any remnants should be thoroughly examined. Given that they all produce the same results, it is difficult to determine which irrigation solution is better. The irrigation's usual purpose is to kill and remove any remaining larvae, especially those that are difficult to see or reach on examination [21]. Sometimes patients require surgical investigation to determine the extent of the disease or to check for residual disease. In these situations, mastoid exploration is typically carried out to determine the degree of the infestation and, if any residue is discovered, it will be eradicated [27, 28].

Conclusion

Otomyiasis is a very rare disease of the ear that is caused by an infestation of fly larvae. The commonest genera causing myiasis belongs to Sarcophagidae. The predisposing factors include mental impairment, elderly, diabetes, chronic purulent otitis media, homelessness, alcoholism, and peripheral vascular disease. The clinical manifestations are otalgia, offensive otorrhea, aural fullness, bleeding, itching, a roaring sound, tinnitus, vertigo, and furuncles of the external auditory canal when larvae are present in the ear. The management of aural myiasis involves removing the larvae and irrigating the ear with normal saline or chloroform solution.

Author Contributions

TM: Writing – original draft. KS: writing patient history, EM and SD: Supervision, review and editing. NE and EI: Conceptualization and Design, DB: writing management done. All authors read and approved the final manuscript.

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None

Conflict of Interest

The authors declare that they have no conflicts of interest.

Data Availability Statement

Data are available from the corresponding author upon reasonable request

Consent

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy

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