

Radical mastoidectomy cavity myiasis caused by *Wohlfahrtia magnifica*

LOKMAN UZUN, M.D., FIKRET CINAR, M.D., LEVENT BEKIR BEDER, M.D., TURAN ASLAN, M.D.*,
KURSAT ALTINTAS, M.D.†

Abstract

In this article, a *Wohlfahrtia magnifica* otomyiasis case, a 31-year-old, non-mentally retarded patient who had undergone radical mastoidectomy previously is presented. Maggots in the radical mastoidectomy cavity were removed then topical treatment was applied. The maggots were identified as *W. magnifica*. In cases of myiasis, identification of larvae following direct extraction and application of preventative methods is essential.

Key words: Myiasis; Mastoid, surgery

Introduction

Infestation of live human or vertebrate animals with the larvae of dipteran flies feeding on the host's organ, body fluids or ingested foods is known as myiasis. The disorder may be classified as primary, secondary, obligate or accidental.¹ In primary myiasis, the larvae breach the skin. In secondary myiasis, the larvae invade pre-existing wound ulcerations or suppurative lesions.² Lesions with foul discharge or blood attract and stimulate the female insect to deposit eggs on them. During the development process, some fly larvae need living vertebrates for growth. Human infestation by fly larvae that normally develop in decaying organic matter such as carcasses is referred to as accidental myiasis. Most cases of human myiasis are secondary or accidental.^{3,4} These infestations are not uncommon in tropical and subtropical regions. They may also be seen outside endemic regions with the increase in international travel. Human infestations have involved the skin,⁵ eye,⁶ nose,⁷ orotrachea,⁴ ear,⁸ mouth,⁹ vulva,³ penis,¹⁰ brain¹¹ and urinary bladder.¹²

Maggots that attack the nose or ear may penetrate the brain with a fatal outcome.⁴ Myiasis of the otolaryngological cavity usually occurs from neglected chronic lesions (such as neglected chronic suppurative otitis media) of the patients with poor personal hygiene.⁸

Aural myiasis is a rare clinical state and occurs frequently in children. It is also frequently seen in adults especially those who are mentally retarded. Most of the identified causative agents belong to the Sarcophagidae family.¹³ Among the Sarcophagidae species, *Wohlfahrtia magnifica* is frequently seen as a causative agent of various types of myiasis in the Mediterranean basin, southern Russia, Turkey, Israel and the Middle and Far East.^{4,14} In the developmental phases of *Wohlfahrtia magnifica*, the mouth-hooks system is formed in the first instar by three hooks: two lateral and one medial. In the second instar, there are only two thicker, longer and more markedly curved hooks. This arrangement is maintained until the

end of larval development. The posterior peritremes are elongated in the dorsal surface of the 11th somatic segment. In the third instar, the peritremes have three variably shaped peritremal splits: the inner one is curved, the median one is straight and long, and the outer one is straight and long.¹⁴ We recently found a case of radical cavity myiasis caused by *Wohlfahrtia magnifica*.

Case report

The patient is a 31-year-old male. He had undergone left radical mastoidectomy in a military hospital after gunshot wounding, 10 years ago. He had been examined irregularly almost once a year by the family practitioner or other ENT surgeons, due to a discharge from the left ear. He had been admitted to the hospital with otalgia, vertigo, bloody discharge, sensation of a moving foreign body and a maggot was observed to be protruding from the left ear. The patient's history revealed that, 35 maggots had come out from the left ear, the day before. Additionally, he had suffered from foul discharge for the last 10 days. Previously, he had had no treatment in any other medical institution because of this problem. It was the first visit to our outpatient clinic due to these foreign bodies. Also, he had had no history of such a problem before. In the otoscopic examination, seven hyper-mobile maggots were seen in the radical mastoidectomy cavity that covered hyperaemic, wet and bloody mucosa. Because of the difficulty of removing the maggots from the cavity, an ether-soaked cotton pack was put into the ear canal for 10 minutes to anaesthetize the maggots. Ten minutes later, seven maggots were removed from the ear and the cavity was washed several times with H₂O₂. Four per cent boric acid in alcohol topical treatment was planned for the infected ear. After 10 days, the bloody discharge had stopped, the mucosa of the cavity appeared less hyperaemic and healthier. It was not possible to incubate the maggots to adults. The maggots were fixed in four per cent formaldehyde solution and sent to the medical entomologist for identification.

From the Departments of ENT, and Infectious Diseases and Clinical Microbiology*, Karaelmas University School of Medicine, Zonguldak and the Department of Parasitology†, Ankara University School of Medicine, Ankara, Turkey.

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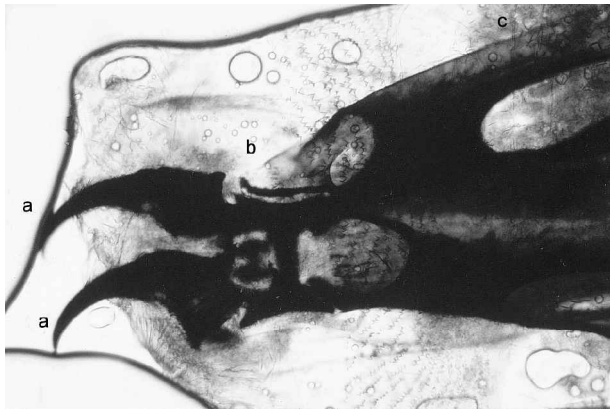


FIG. 1

Head of the maggot: (a) double stout mouth hooks, (b) subhypostomal sclerite, (c) pharyngeal windows in both cornua (unstained 10 × 10).

Discussion

In cases with otomyiasis, maggots are deposited in the human ear and usually penetrate into the wall of the aural cavity. The injury of the auditory meatus may lead to deafness, meningitis or even death may occur.^{1,4} In this case, the otomicroscopic examination of the cavity revealed that there was no evidence of surrounding tissue destruction. Pathological findings were limited to mucosal damage.

Aural myiasis is a rare clinical state and occurs frequently in children and in adults especially those who are mentally retarded.¹³ However, this patient was neither a child nor mentally retarded. We suggest that the flies may easily have laid eggs in the cavity, through the surgically widened outer ear canal perhaps when the patient was sleeping.

The maggots, which were removed from the patient's left ear, were identified as third-stage *Sarcophagidae* larvae. The diagnostic characteristics include stout mouth hooks, pharyngeal scleritis with windows in both cornua (Figure 1), and posterior peritremes with three characteristic slits. The inner peritremal slit was curved, the median one was straight and longer, the outer one was curved and long (Figure 2). The general morphological features of the

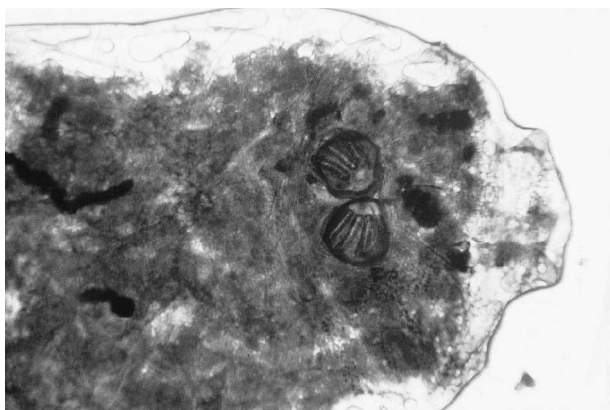


FIG. 2

Posterior peritremes of the larvae, which have three slits (unstained 4 × 10).



FIG. 3

Radical mastoidectomy cavity with inflamed mucosa and bloody discharge containing maggots (otoendoscopic appearance).

larvae, the clinical findings of the patients and the epidemiological features of the otomyiasis-producing agents were characteristics of *Wohlfahrtia magnifica* (Figures 1–4).

Treatment options include direct removal of the maggots and the use of chloroform, oil drops, urea, dextrose, creatine, hypertonic saline, topical ivermectine and iodine saline. Prophylactic antibiotic therapy may prevent secondary infections.^{1,13} In the literature, there is only one report concerning myiasis of the radical mastoidectomy cavity.¹⁵ To our knowledge this is the first report of the myiasis of the radical mastoidectomy cavity caused by *Wohlfahrtia magnifica*.

Conclusion

There is a danger of myiasis in either tropical and subtropical regions or the other parts of the world as a result of easy international travel opportunities. To reduce the incidence of these infestations, preventative measures (e.g. control of the fly populations, reduction of odours of decomposition, general cleaning and covering of wounds) should be applied.

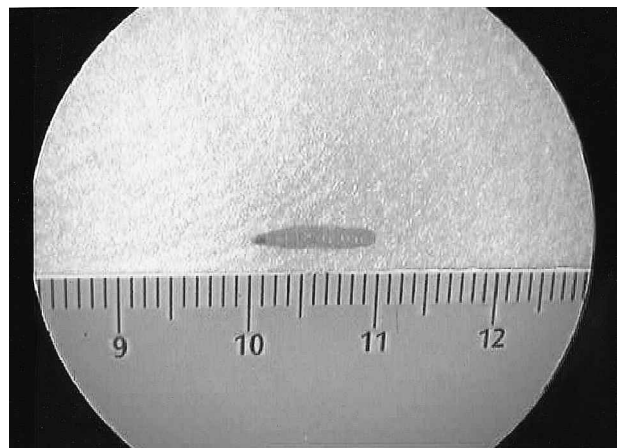


FIG. 4

Maggot removed from radical mastoidectomy cavity (fixed with formaldehyde solution 4 per cent).

- This paper describes the infestation of a radical mastoidectomy cavity with *Wohlfahrtia magnifica*
- The maggots were removed and topical treatment was given

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Address for correspondence:

Lokman Uzun, M.D.,
Department of ENT,
Karaelmas University
School of Medicine,
67600 Kozlu, Zonguldak, Turkey.

Fax: 90 372 261 01 55

E-mail: luzun@mailcity.com

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