

## Otomyiasis: Clinical and Parasitological Considerations

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### Abstract

Myiasis of external orifices usually occurs from neglected chronic lesions of the patients with poor personal hygiene. Some cases have been reported in hospitalized patients, often those who are debilitated. Otomyiasis or aural myiasis is rare in healthy individuals. Unless treated, chronic otitis media or bone destruction may develop. In the current work, a rare case of otomyiasis in a healthy patient was reported with a special reference to the treatment of this condition.

**Keywords:** *Otomyiasis; Ear Discharge; Peitreme; Wohlfahrtia magnifica*

### Introduction

Myiasis is a pathological condition caused by the infestation of humans and other vertebrate animals' tissues by dipterous larvae [1]. These cases occur when flies are attracted to patient body tissue fluids and deposit eggs into an open wound or body opening such as the nose or ear [2]. Most cases probably occur as a result of direct egg or larvae deposition on a human host. The larvae penetrate the tissue, thus causing different damages depending on the body site [3].

The clinical presentation of myiasis differs according to the organs involved, the number of larvae and their species [4]. Accordingly, myiasis can be classified into; 1) anatomical myiasis such as cutaneous myiasis, wound myiasis, intestinal myiasis, aural myiasis, nasal myiasis, ophthalmomyiasis and urogenital myiasis and 2) ecological classification: specific/obligatory or semispecific/facultative or accidental/pseudomyiasis [5].

Myiasis of external orifices usually occurs from neglected chronic lesions of the patients with poor personal hygiene [6]. Some cases have been reported in hospitalized patients, often those who are debilitated [7]. Otomyiasis or aural myiasis is rare in healthy individuals. However, chronic otorrhea is reported in healthy patients and it can be considered as a risk factor [8].

In this article, a rare case of aural myiasis in a healthy patient is reported with a short review of literature.

### Case Report

#### Clinical history

43-year-old male patient was presented with discharge from the ear. On examination, blood tinged and purulent discharge from the right ear. The right external ear canal was completely occluded with whitish larvae, secretions, and granulation tissue. Unilateral perforated tympanic membrane. The patient gave no history of previous ear infections. After removal of larvae, the external and middle ears were irrigated with hydrogen peroxide and boric acid mixed in physiological saline. Topical antibiotics were given for secondary bacterial infection.

### Collection of larvae from affected sites

Larvae were provided from Otolaryngology Department, Ministry of Health Hospital. Six larvae were removed by saline irrigation with 10% lidocaine spray, and 70% ethanol to restrict the movements of larvae and concomitant suctioning [9] and then referred to Medical Parasitology Department for identification.

### Identification of the larvae

The larvae were examined macroscopically then processed according to methods described by Zumpt [10] and Smith [11] and described by Rohela, *et al* [12]. Larvae were fixed in 70% alcohol for 10 minutes. Larvae were then cleared in 10% KOH solution overnight. Then rinsed in distilled water, dehydrated in ascending series of ethanol and finally cleared using clove oil for 15 minutes. The specimens were then mounted on glass slides. After oven-drying at 60°C for 2 - 3 days, the specimens were examined under a microscope. Larvae were identified by examining the size, posterior spiracles, and the cephalopharyngeal skeleton using the keys described by Zumpt [10].

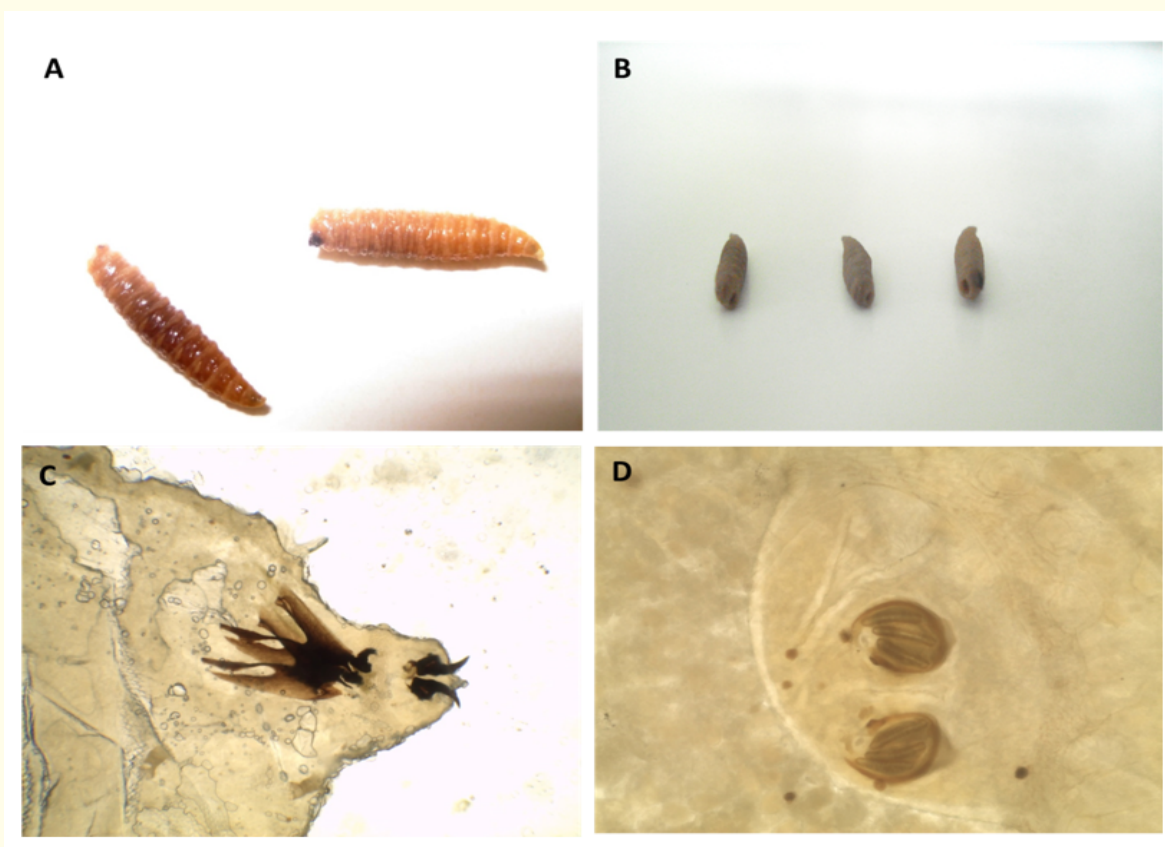
## Results

### Clinical history

The patient was diagnosed as otomiasis complicated by unilateral perforated tympanic membrane.

### Parasitological examination of collected larvae

Macroscopic examination of the larvae showed that the maggots are light brown, ranging in size from 8 to 11.5 mm in length. The larvae are thick, cylindrical and segmented. Those morphologic features of the larvae were characteristic of *Wohlfahrtia magnifica*. The maggots were cylindrical in shape with cephalopharyngeal sclerite. The posterior spiracle has three splits enclosed in an opened peritreme (Figure 1).



**Figure 1:** The parasitological identification of *Wohlfahrtia magnifica*: A: The whole larvae, B: The posterior part of the last segment, C: Cephalo-pharyngeal skeleton. D: Posterior spiracles with three slits and opened peritreme.

## Discussion

Otomiasis involves the invasion of the external and/or middle ears where eggs or larvae are deposited [13]. It is a rare condition and encountered more frequently in children, debilitated or mentally retarded people. Low socioeconomic status, immunocompromised state, debilitated and unhygienic living conditions also may be the contributing factors responsible for myiasis [13,14].

The clinical presentation of otomiasis is variable. The most common sign and symptoms of aural myiasis are foreign-body sensation and maggots are found in the external auditory canal. The condition is usually unilateral and bilateral disease is an exception [1]. Other symptoms include malodorous otorrhea, perforation of the tympanic membrane, bleeding, impaired hearing, otalgia, pruritus and vertigo [5,14-17]. Diffuse inflammation of the skin of the external ear canal may be observed. Otoscopy may reveal maggots and, in some cases, perforated tympanic membrane [15]. Computed tomography is indicated to evaluate other complications such as the invasion of the mastoid cavity or penetration of the central nervous system with meningitis [13,17].

The most important species causing aural myiasis are *Cochliomyia hominivorax* [18,19], *W. magnifica* [6,13,17], *Chrysomya bezziana* [12], *Chrysomya megacephala* [20], *Sarcophaga* [14,21] and *Parasarcophaga crassipalpis* [22].

The larvae identified in the current case are *Wohlfahrtia magnifica* (Family: Sarcophagidae). Females are larviparous, depositing first instar larvae. The larvae mature in 5 - 7 days and then leave the tissues for pupation [10,23]. *W. magnifica* is the most important cause of myiasis in the genus *Wohlfahrtia*. It is an obligate parasite detected in southeastern Europe, southern and Asiatic Russia, the Near East and North Africa [10]. *W. magnifica* was previously described in different cases of myiasis such as otomiasis [24,25], ophthalmomyiasis [26], vulvar myiasis [27], wound myiasis [28] and cutaneous myiasis [29]. In addition, it has been reported in the oral cavity and gingiva [30].

In humans, *W. magnifica* larvae are often deposited into the ear, where they usually penetrate the tissues, and rarely can invade the cartilage. Tissue destruction results mechanically by the penetrating larvae and by the production of collagenase [31].

Myiasis of the ear can be dangerous because the larvae may penetrate into the brain with about 8% fatality rate [32]. If it is not treated appropriately, chronic suppuration may develop resulting in chronic inflammation of the external auditory canal, chronic otitis media or bone destruction [33].

The traditional management for aural myiasis is the manual extraction of the maggots. Irrigation of the ear using saline with 70% ethanol and 10% chloroform is recommended to ensure complete removal of all larvae. Suctioning has been used to ensure complete removal of the maggots [15,21]. Systemic ivermectin may give favorable results in more severe cases [34,35].

## Conclusion

In conclusion, otomiasis should be considered especially in children or debilitated patients presented with different aural manifestations. Early intervention is important to avoid serious complications and could be life-saving.

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