


Aural Myiasis in the Elderly – A Case Report

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ABSTRACT

Introduction: Aural myiasis is a rare parasitic infestation in the external ear canal caused by fly larvae. It is commonly observed in tropical and subtropical regions, with risk factors including poor hygiene, chronic illnesses, and occupational exposure to environments infested with flies. **Case**: A 72-year-old male from a rural village presented with complaints of severe pain in his right ear, accompanied by bloody discharge, and a sensation of movement in the ear canal. Multiple removal procedures were finally succeeded in extracting all infesting larvae. The patient was treated with antibiotics, analgesics, and antiseptic irrigation. **Discussion:** Aural myiasis poses a health risk, especially in geriatric and rural populations. Delayed treatment can lead to extensive tissue damage and secondary infections. **Conclusion:** Diagnosis is made by identifying dipteran larvae in infested body parts. Comprehensive management involves mechanical removal, pharmacological treatment, and preventive education. Increased awareness among healthcare providers is essential to reduce morbidity associated with aural myiasis.

Keywords: Aural myiasis, case report, fly larvae, parasitic infestation.

ABSTRAK

Pendahuluan: *Aural myiasis* merupakan infestasi parasit langka di liang telinga eksternal yang disebabkan oleh larva lalat. Kondisi ini lebih sering terjadi di daerah tropis dan subtropis, dengan faktor risiko seperti kebersihan yang buruk, penyakit kronis, dan paparan lingkungan yang terkontaminasi larva lalat. **Kasus:** Seorang pria berusia 72 tahun dari sebuah desa terpencil datang dengan keluhan nyeri hebat di telinga kanan, disertai sekret berdarah serta sensasi gerakan di liang telinga. Setelah beberapa kali prosedur evakuasi, seluruh larva berhasil dikeluarkan. Pasien mendapat terapi antibiotik, analgesik, dan irigasi antiseptik. **Pembahasan:** *Aural myiasis* menimbulkan risiko kesehatan, terutama pada populasi lansia dan pedesaan. Keterlambatan penanganan dapat menyebabkan kerusakan jaringan yang luas dan infeksi sekunder. **Simpulan:** Diagnosis dilakukan dengan mengidentifikasi larva lalat pada bagian tubuh yang terinfeksi. Penatalaksanaan komprehensif meliputi evakuasi larva secara mekanis, terapi farmakologis, serta edukasi pencegahan. Peningkatan kewaspadaan tenaga medis diperlukan untuk mengurangi morbiditas akibat *aural myiasis.* **Ridha Patria Febriani, Dian Ayu Ruspita, Ryan Halleyantoro. *Aural Myiasis* pada Lanjut Usia – Laporan Kasus.**

Kata Kunci: *Aural myiasis,* laporan kasus, larva lalat, infestasi parasit.

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INTRODUCTION

Myiasis, the infestation of human tissue by fly larvae, is a significant medical and socio-economic issue, particularly in tropical and subtropical regions. The condition is caused by obligate or facultative parasitic larvae of diptera. The infestation of the external ear canal leads to aural myiasis.[1,2]

Aural myiasis has been documented as early as ancient Rome.[3] External ear infestation occurs particularly in warm and humid regions, and the ear canal condition supports the development of dipteran eggs.[4] Larvae invade the external ear canal, leading to pain, inflammation, and secondary bacterial infections. Several cases also report tympanic membrane perforation due to the infestation.[5] Management involves mechanical and pharmacological interventions to ensure complete eradication of larvae and prevention of complications.[6] Understanding the pathophysiology, epidemiology, and prevention of myiasis is essential for effective public health strategies and individual protective measures.[2]

CASE

A 72-year-old male farmer from a rural village presented with complaints of severe pain in his right ear, which progressively worsened over 3 weeks. He described a sensation of "creeping" or "scratching" movement within the ear, accompanied by bloody discharge. The symptoms were debilitating, and he reported difficulty sleeping due to

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the constant discomfort. Additionally, he noticed a gradual reduction in hearing on the affected side. No facial weakness or systemic symptoms such as fever were reported. A week earlier, larvae were seen crawling out of his right ear, accumulating at the orifice, and finally blocking it completely. He already sought help from a local physician and underwent initial removal, but due to the depth of the infestation, the procedure failed to completely remove the larvae.

The patient is a farmer and lives in a house surrounded by livestock, including chickens, goats, and cattle. His routine included prolonged exposure to farm animals and their waste, often under conditions with poor sanitation. He also reported limited personal hygiene practices due to his work schedule and long hours spent outdoors. On physical examination, the patient appeared distressed but otherwise stable. External examination of the right ear revealed an inflamed and swollen external auditory canal, along with visible necrotic debris. Multiple live larvae were seen obstructing the canal, thus preventing visualization of the tympanic membrane (**Figure 1**).

Photo documentation by Ridha Patria Febriani.
Figure 1. Clinical presentation of the patient. The external auricular canal has been totally occluded by larvae, and the periauricular tissue is swollen due to inflammation.

To confirm the diagnosis and assess the extent of infestation, a thorough otoscopic ear examination was conducted under local anesthesia. The initial management involved the careful mechanical removal of the visible larvae using fine forceps under otoscopic guidance. A total of twelve larvae were extracted during the procedure. After the procedure, the tympanic membrane was partially visible and appeared intact but inflamed. A deep necrotizing wound was visible on the canal wall, and some larvae are still visible inside the wound. Further removal under local anesthesia was difficult; therefore, the patient was admitted for further removal of deeper larvae, and also wound debridement under general anesthesia.

Photo documentation by Ridha Patria Febriani.
Figure 2. Larvae collected from larva removal under general anesthesia.

In the preoperative assessment, there was no evidence of cranial nerve involvement or systemic infection. A significant amount of necrotic tissue containing larvae was removed during the procedure, continued with endoscopic exploration of the ear canal. About 25 larvae were successfully removed **(Figure 2),** but some larvae persisted. Iodine and hydrogen peroxide irrigation failed to expose the larvae. On post-operative day one, the patient complained of another episode of pain and creeping or "scratching" movement. Another endoscopic exploration attempt under local anesthesia successfully removed all remaining 10 larvae.

Ofloxacin ear drops were prescribed along with a seven-day course of oral amoxicillin 500 mg/8 hours to treat secondary bacterial infection. Paracetamol was given for symptomatic relief. Morphological analysis was not performed due to failure in transferring the larval specimen, leaving the species undetermined. In further teleconsultation, the larvae were suspected of being *Musca domestica* or *Chrysomya bezziana*. The suspicion was based on the larval characteristics of size, white yellowish color, and also by the geographic distribution of the fly. Mastoid radiologic examination confirmed that the infestation was confined to the external auditory canal.

The patient was educated on preventive measures, including personal hygiene, the use of protective clothing, and environmental modifications to reduce fly exposure. He was also advised to seek prompt medical attention for any future symptoms. Over the next 2 weeks, the patient returned for regular follow-up visits. His symptoms improved steadily, with complete resolution of pain and discharge by the second week. Repeat ear endoscopic examination confirmed that the ear canal had healed, with no evidence of residual larvae or secondary complications. His hearing also returned to normal.

DISCUSSION

Myiasis is a parasitic infestation caused by dipteran larvae feeding on necrotic or living tissues of humans and animals.[1] The condition is most prevalent in tropical regions, with a higher incidence in areas with poor hygiene, inadequate healthcare, and high fly populations.[2,7] Contrary to common belief, myiasis is not zoonotic; both animals and humans can be independently infested under favorable environmental conditions.[1,5,8] Transmission occurs directly from the environment, not through contact with an infected animal or human.[1,2]

Myiasis is reported globally, but its prevalence is higher in tropical and subtropical countries.[1,2] Factors influencing distribution include environmental, socioeconomic, and occupational exposures.[2,7] Aural myiasis is most prevalent in rural areas of Southeast Asia, Africa, Central and South America.[2,9] Incidence peaks during warm and humid seasons, especially monsoon periods.[2] Populations at risk include children, the elderly, and individuals with chronic illnesses or disabilities.[4,7] Predisposing factors include poor hygiene, chronic ear disease, and occupations in fly-infested environments. [2,10] Human myiasis is categorized based on the anatomical site and mode of larval invasion.[1,8]

Cutaneous myiasis is the most common form, usually manifesting as furuncular or wound myiasis.[9–11] Intestinal and urinary myiasis are rare, while cavitary myiasis includes nasal, oral, or aural involvement.[4,12] Aural myiasis is a cavitary form involving the external ear canal. Accumulation of debris and wax in the ear attracts flies to lay eggs. Pre-existing comorbidities and untreated ear conditions, such as chronic otitis externa, abscesses, or ulcers, may further provide a suitable environment for larval growth.

The flies responsible for myiasis lay eggs on healthy, inflamed, wounded, or necrotic tissue of the host's ear canal. These eggs are deposited inside or adjacent to the ear canal and may proceed to develop into larvae due to the moist and humid environment of the surroundings.[4] Depending on local conditions, eggs hatch within 8–24 hours. As they hatch, fly larvae invade tissues, and some of these larvae may release proteolytic enzymes to degrade tissue, facilitating invasion and nutrient acquisition, thus provoking inflammatory responses. The invasion of larvae will further lead to tissue necrosis and secondary infections, causing deep burrowing lesions and potentially septicemia if untreated.[4,13]

Aural myiasis symptoms vary with the extent of infestation; they may present as ear pain, ear swelling,ear canal obstruction, hearing loss, or bloody or foul-smelling discharge.[5,12] Diagnosis is clinical by the identification of larvae in the ear canal. Endoscopy and imaging may also help in assessing the depth of the infestations and the subsequent destruction of the ear tissue.[5,7] Although aural myiasis is rarely fatal, delayed treatment can lead to complications, including hearing loss, extensive tissue destruction, or intracranial spread.[4,14] Optimal management includes combining larval removal, symptomatic treatment, wound care, and antibiotics to prevent secondary infections.[1,5,6]

Removal of larvae is the primary method for managing aural myiasis, and is usually performed by mechanically extracting larvae using forceps. Endoscopic guidance may be required to better identify the larvae in deeper locations. Endoscopic removal can be challenging because the larvae may respond to the light. When a surgical lamp, headlamp, or endoscopic lumina is introduced to the canal, the larvae tend to hide in their burrows between the necrotic tissue.

Surgery is sometimes required to remove larvae in severe cases, especially for cavitary myiasis. Surgery is also required to remove necrotic tissue and avoid bacterial co-infection. During surgery, a necrotomy may also facilitate the removal of larvae within the tissue.[14,15] Antiseptic solutions such as hydrogen peroxide or diluted iodine which are used to clean the ear canal and reduce microbial load, can also create an unfavorable environment for larvae. Antiseptic solutions can lure the larvae out of their burrow, but they should be used cautiously to avoid ototoxicity.[5,15]

When complete mechanical and surgical removal fails, other measures should be taken to remove the larvae, either by forcing them to leave the ear canal or by medically eradicating them. Occlusive agents like turpentine oil or mineral oil may be used to assist removal.[1,4] Topically applied occlusive agents can suffocate larvae by blocking their respiratory spiracles and kill them. The application will also block the canal from external air, depleting the oxygen level inside the canal. This will force the larvae to abandon their burrow and exit the ear canal, or killed inside because of low oxygen concentration. Caution is advisable in patients with tympanic membrane perforation, because an intact eustachian duct may act as an alternative oxygen supply. This may lead the larvae to migrate deeper into the middle and inner ear, causing more extensive complications.

Antiparasitic agents may also play a critical role in paralyzing or killing larvae when surgical removal fails to remove all the larvae, or when systemic infestations occur.[1,4] Commonly used drugs include ivermectin, which paralyzes larvae by binding to glutamate-gated chloride channels.[1,6] Ivermectin has shown high efficacy in reducing larval viability and improving outcomes.[6,15] Ivermectin can be applied locally or orally at 200 µg/kg body weight.[6] Although commonly safe for humans, common side effects on oral administration, such as dizziness, headaches, and muscle pains has been reported. Albendazole is an alternative antiparasitic agent that has been reported to be efficacious in patients with severe orbital infestation.[9] This patient did not receive antiparasitic agents because mechanical and surgical removal succeeded in removing all the larvae.

Secondary bacterial infections commonly co-exist during aural myiasis due to tissue damage caused by larvae. These infections may require topical or systemic antibiotics based on their severity.[4,14] Ciprofloxacin or neomycin-polymyxin B-hydrocortisone drops can help reduce bacterial load in the ear canal. Oral or intravenous antibiotics (e.g., amoxicillin-clavulanate or ceftriaxone) are administered in severe infections or cases of systemic involvement.

In a noncomplicated aural myiasis, pain is usually manageable with acetaminophen or NSAIDs. Non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen or diclofenac can be used to manage pain and inflammation. For severe pain, an intravenous analgesic such as ketorolac may also be prescribed. Severe swelling and inflammation may require corticosteroids, although they should be used cautiously in patients with diabetes or gastrointestinal ulcers.[15,16]

Prevention involves environmental sanitation and personal hygiene.[4,7] Reducing fly populations and maintaining ear hygiene can prevent the occurrence of human myiasis. Protective gears such as an ear cover may help in preventing the fly to lay their eggs in the ear canal. This protective measure should be imperative when the worker works in a fly-infested area or when the worker has wounds, secretions, or contracted ear diseases that may attract flies.

Species identification may provide insight into prognosis and treatment, as *Chrysomya bezziana* is an obligate parasite, while others like *Lucilia,* are facultative.[3,8,16] These distinctions require careful examination of their morphological and anatomical features. In this patient, however, species distinction failed to be performed. Proper specimen preservation in formaldehyde or alcohol is crucial for identification.[1,16] Larval specimen obtained from the patients were not prepared with preservatives during the packing for the


transfer process, leading to maceration and decomposing, thus hindering the analysis.

CONCLUSION

Human myiasis is a potential health problem in fly infested regions. Diagnosis is made by identifying dipteran larvae in infested body parts. Management of aural myiasis complements mechanical and surgical removal techniques, aiming to eliminate larvae, prevent secondary infections, and alleviate symptoms. Species identification may help in case management; therefore proper transfer protocol should be established. The patient's occupational exposure were significant risk factor, emphasizing the need for targeted occupational health education in high-risk populations.

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