Respir Case Rep 2025;14(2):70-72 DOI: 10.5505/respircase.2025.09735

Oral Nosocomial Myiasis in an Intensive Care Unit: A Case Report

Yoğun Bakım Ünitesinde Oral Nozokomiyal Miyazis: Olgu Sunumu

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Abstract

Myiasis has been more frequently studied as an animal disease caused by fly larvae, although it may also affect humans. Bacteria and viruses are the most common nosocomial pathogens in intensive care units, although it is necessary to be aware of the potential for nosocomial parasitic infections. We present here a case of oral myiasis in a 96-year-old patient with Alzheimer's disease who was intubated while being treated for aspiration pneumonia. Our intention in this regard is to clarify the specific clinical features of the disease, especially hospital-acquired myiasis, and to raise awareness of the potential for nosocomial parasitic infections among physicians, as preventable and treatable diseases.

Keywords: *Musco domestica (housefly), Nosocomial infections, Oral myiasis.*

Öz

Miyazis genellikle sinek larvalarının neden olduğu bir hayvan hastalığı olarak bilinir, ancak insanlarda da enfeksiyonlara neden olabilir. Bakteriler ve virüsler yoğun bakım ünitelerinde en sık görülen nozokomiyal patojenlerdir. Ancak nozokomiyal paraziter enfeksiyonlar için uyanık olmak önemlidir. Bu çalışmada, aspirasyon pnömonisi nedeniyle entübe edilen 96 yaşındaki Alzheimer hastasında oral miyazis olgusu sunulmuştur. Amaç, özellikle hastane kaynaklı miyaziste hastalığın spesifik klinik özelliklerini ortaya koymak ve hekimler arasında nozokomiyal parazit enfeksiyonları hakkında şüphe uyandırmaktır. Çünkü parazit enfeksiyonları önlenebilir ve tedavi edilebilir hastalıklardır.

Anahtar Kelimeler: *Musco domestica (karasinek), Nozokomiyal enfeksiyonlar, Oral miyazis.*

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Submitted (Başvuru tarihi): 01.02.2025 ***Accepted (Kabul tarihi):*** 02.05.2025

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Myiasis is a parasitic infestation of Dipteran insect larvae that can affect humans and other vertebrates (1). The word "Myia" means specifically "invasion of tissues by fly larvae". The first case of human myiasis involving dipterous larvae was reported by Hope in 1840, while Fritz Zumpt expanded the definition in 1965, referring to "the invasion of Diptera larvae that feed on living and deceased host tissues, body fluids or ingested food products, at least for a while" (2).

Human myiasis can take various forms, but the most common is cutaneous myiasis, given the need of pathogens for easily accessible parts of the body for oviposition and larval development (3). Oral myiasis, on the other hand, is the rarest form due to the limited contact of the oral cavity with the external environment (4).

Dipteran flies may also cause hospital-acquired myiasis, although such incidences are rarely reported. Musca domestica, known more commonly as houseflies, live close to humans, breed in garbage and animal feces, and contaminate food, and cases of nosocomial myiasis attributable to this species have been reported (3).

We present here the case of a 96-year-old patient with myiasis admitted to the ICU to emphasize the potential development of nosocomial infections from parasitic infestations in the critically ill.

CASE

A 96-year-old woman with Alzheimer's disease who applied to our center with shortness of breath was identified with consolidation in the lower zone of the right lung in imaging studies consistent with aspiration pneumonia. The patient, who had a Glascow coma scale score of 7, was subsequently transferred to the ICU following intubation. The lack of adequate coughing and swallowing functions led to unsuccessful extubation trials. Oral care was provided 3 times a day using a chlorhexidine oral care solution, and the patient was followed up in the ICU for 40 days. A single fly larva was detected in the oral cavity during routine oral care approximately 1 month after ICU admission (Figure 1), although no other larvae were identified by a careful examination of the oronasal cavity. The cavity was cleaned with a 70% alcohol solution. No ulcerated lesions were identified in the cavity and mucosal integrity was intact. The patient was started on broad spectrum antibiotherapy but died on the 40th day of hospitalization due to pneumosepsis and septic shock. The larva obtained from the patient was thought to be a housefly larva. Despite preventative measures, houseflies had previously been detected in the ICU.

Figure 1: *Oral nosocomial myiasis*

DISCUSSION

Myiasis refers to the opportunistic parasitic invasion of fly larvae, occurring especially in tropical and subtropical regions. Black fly larvae are associated primarily with facultative myiasis. The transmission of maggots to humans can follow two routes, the most common of which is via the direct inoculation of eggs into living tissues and body cavities, while less common is through the ingestion of food infected with larvae (3,5). Black flies can also cause pseudomyiasis, in which flies that do not need any host to develop and lay eggs accidentally (6). The presented case had developed cavitary myiasis (oral myiasis), and the causative pathogens were thought to be black flies (Musco domestica), having been previously encountered in the ICU. The hospital is located on the seafront, surrounded by trees and in a location with high humidity, and the patient was hospitalized in July, in the height of summer. Despite the preventative measures taken in the institution, including fly screens, electric insect traps and environmental spraying, the patient developed a myaisis infection.

Nosocomial myiasis is a rarely reported condition that occurs most frequently in immobile and debilitated patients. The oral cavity is rarely affected by parasitic infestation, however, poor oral hygiene and a constant open mouth posture can predispose a person to oral myiasis (7).

In the presented case, the patient was a 96-year-old immobile female with Alzheimer's disease whose lack of adequate swallowing and poor coughing reflex were risk factors for myiasis, exacerbated by her prolonged ICU stay while intubated and her persistent open mouth posture. Consistent with the literature, the patient presented with oral myiasis in the head and neck region (7,8).

Intensive care guidelines offer recommendations for the prevention of nosocomial infections, including fly screens on the windows in the social areas of ICUs, and electric fly traps on the walls in high-risk areas. Open wounds and bodily cavities should be kept clean and closed to reduce the likelihood of myiasis. Treatments of diseases that can cause halitosis, especially sinusitis and pneumonia, can reduce the risk of myiasis. Furthermore, nursing care can be improved by increasing the number of nurses, encouraging vigilance, raising awareness and providing training in infestations and pest control, all of which can reduce the risk of myiasis. Nosocomial infections can have a detrimental effect on the reputation of the hospital and ICU, as well as psychological effects on patients and their families (9,10).

Training programs targeting the prevention of such parasitic infections should include basic information about the classification and spread of infestations, signs indicating the presence of infestations, the role of hygiene rules, and the chemical and the biological control methods, and should be provided by the infection control unit to ICU staff every 6–12 months.

No specific treatment has been identified for nosocomial myiasis, however, the most common approach involved the mechanical removal of the larvae with the help of a clamp. It has been reported that irrigation with ether forces the maggots out, while wounds can be debrided by washing with antiseptic solutions such as normal saline or 0.2% chlorhexidine. Ivermectin is often used due to its larvicidal action (2). Maggot therapy has also been proposed, involving the inoculation of sterile fly larvae into chronic wounds to provide tissue debritment and to induce therapeutic myiasis (8). In the presented case, the patient's oronasal cavity was carefully explored and her mouth was disinfected with 70% ethyl alcohol. No wound, ulcerated lesion or necrotic tissue was found in the oral cavity, and no additional treatment other than oral sanitization was deemed necessary.

CONCLUSION

Nosocomial parasitic infestations are rare but may be fatal in advanced stages, and so appropriate attention should be paid to the prevention and detection of fly larvae in ICUs. Although most cases to date have been reported in tropical regions, non-tropical areas may come to be affected as a result of climate change. For this reason, the awareness of this crucial issue among health care providers should be raised.

CONFLICTS OF INTEREST

None declared.

AUTHOR CONTRIBUTIONS

Concept - A.Ç., D.Ö., Ş.B.; Planning and Design - A.Ç., D.Ö., Ş.B.; Supervision - A.Ç., D.Ö., Ş.B.; Funding - Materials -; Data Collection and/or Processing - D.Ö.; Analysis and/or Interpretation - A.Ç.; Literature Review - D.Ö., Ş.B., A.Ç.; Writing - A.Ç.; Critical Review - Ş.B.

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