

Severe Aural Myiasis in Emergency Room

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Abstract

Introduction: Myiasis is common infection in Colombia as the climate favors different species of flies. In general, all share the same pathophysiological mechanism that begins when the female deposits eggs in the biological tissue to allow the development of the larvae, developing the infection and depending on the anatomical site compromised, possible complications can occur, we report a unusual severe aural myiasis.

Case presentation: A 71-year-old male with insulin-dependent type 2 diabetes mellitus, with a 4-day evolution of a lesion in the pinna. Consulted to our emergency room, presenting larvae in helix. Physical examination showed necrosis of 80% of the helix with abundant myiasis inside, helix and antihelix cartilage exposure in the anterior and posterior portions, with necrotic tissue, fetid, edema and erythema of the entire pinna with no impact on the preauricular region, computed tomography showed no damage of the mastoid. The subsequent analysis identified larvae of *Cochliomyia hominivorax*.

Management and Outcome: The treatment consisted in larvae extraction, ampicillin/sulbactam and clotrimazole drops, after a 16-day hospitalisation, the patient was discharged without complications. Later the pinna was reconstructed using skin flaps.

Discussion: A superficial wound attracts a dipterous female that deposits its eggs, allowing for the development of early larvae that feed on healthy tissue. Pain and edema prompt the patient to seek medical attention where the diagnosis is simple through the visualisation of larvae in the tissue and larvae extraction. Antibiotics and ivermectin are used for treatment of the infection and in this case, surgical debridement was performed. As in other cases, staphylococcal superinfection is reported.

Keywords: Aural Myiasis; Diabetes Mellitus; Larvae; Necrosis; Pinna; *Staphylococcus*; Superinfection

Introduction

In the tropical countries, due to their climatic characteristics and environmental variables, the population is exposed to a greater number of infectious diseases, such as parasitic infestation which can affect the intestinal, muscular, pulmonary and neurological systems; according to the etiology the dipteran infections are less frequent entities.

Different types of flies can deposit their eggs, the combination of the interactions between the climate, socioeconomic conditions and the medical history of the host will allow the development of Myiasis [1-2]. In this case report a Colombian patient developed a severe aural Myiasis which required a reconstructive surgery for loss of aural tissue. A brief discussion and update of these infections is presented from the emergency department.

Case Presentation

A 71-year-old male who works in agriculture and has a history of insulin-dependent type 2 diabetes mellitus, but is poorly adherent and has had previous vascular complications, was treated as a patient in our Emergency Department. His clinical picture is that of a 4-day-old injury that he suffered whilst performing an agricultural chore. The patient reported that he accidentally cut his right pinna causing a shallow laceration and that 24 hours later it was surrounded by flies so he decided to put homemade ointments on the wound. Later he noted edema in the pinna, local pain and larvae in the helix and so decided to come to the Clinic. A physical examination showed necrosis of 80% of the helix with abundant myiasis inside (Figure 1 and Figure 2), helix and antihelix cartilage exposure in the anterior and posterior portions, with necrotic tissue, fetid, edema and erythema of the entire pinna with no impact on the preauricular region nor the mastoid. There were no changes to the auditory canal, nor was otorrhea present. The tympanic membrane

was intact and healthy and a cone of light was present.



Figure 1 and Figure 2: Multiple Larvae in the Pinna.

Subsequently, approximately 100 larvae were extracted, initially flushing with saline solution using pressure and with sterile forceps. Multiple cavitations, destruction of skin and cartilage, and septa and multiple subdermal pockets occupied by larvae are all evident. The tomography (Figure 3) shows that only soft tissue was affected.

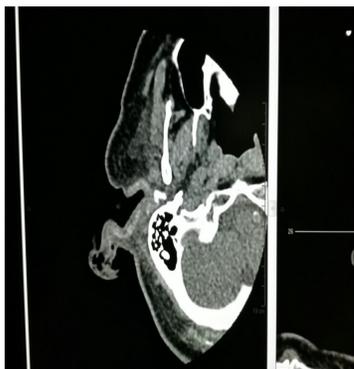


Figure 3: Tomography without the Mastoid Affected.

Subsequent analysis identified *Cochliomyia hominivorax* larvae. Surgical debridement of non-viable tissue and lavage was performed, tissue culture was obtained, necrosis of 90% of the pinna (Figure 4) was noted and the wound was then covered with gentamicin ointment.

In a second surgical procedure, the upper, middle and lower third of the helix and antihelix was amputated. A culture of the sample was performed which identified Methicillin-Sensitive *Staphylococcus aureus* (MSSA), so the antibiotic was changed to ampicillin/sulbactam and clotrimazole drops were given for the management of fungal otitis.



Figure 4: Necrosis of 90% of the Pinna post-surgical lavage.

After a 16-day hospitalisation, the patient was discharged without complications. Later the pinna was reconstructed using skin flaps.

Discussion

Infestation by dipteran larvae or myiasis is a common infection in tropical countries as the climate favours different species of flies. In general, all share the same pathophysiological mechanism that begins when the female deposits eggs in biological tissue to allow the development of the larvae. The attraction of the fly to the tissue depends on specific variables of each species [1-2]. In the case of *Cochliomyia hominivorax*, the female is attracted by odors from wounds or cavities that lead her to depositing between 200 and 300 eggs in the tissue. *C. hominivorax* larvae do not feed on necrotic tissue, they hatch in 12 to 14 hours, emitting odors that stimulate more females to deposit more eggs allowing a cycle of infestation in mammals [3]. For *C. hominivorax*, the most common risk factors associated with its infestation are poor hygiene, especially of wounds (even if they are superficial), natural disasters and low socioeconomic strata. Wounds in patients with diabetes, cancer, tracheostomies and suppurative lesions are also associated with myiasis [1-6]. Worldwide, cutaneous myiasis and myiasis wounds are the most frequently seen clinical cases. Virtually any body region that presents a wound can be infested [2,7]. Aural myiasis or that involving the inner/outer ear is not so frequent within the anatomical regions affected, however, this infestation has been described in all ages in all groups and in different countries [2,8-10], without the associated mortality being reported. Even in patients where tympanic membrane and mastoid is affected, in this type of myiasis, the main parasite reported is *Wohlfahrtia magnifica*, which has a different biological cycle to *C. hominivorax* [10] especially in the hatching of the larva: *C. hominivorax* is faster, allowing the infection to develop in a shorter period of time [2].

Like other myiasis, the treatment consists basically in the mechanical removal of larvae which can be done initially with pressurized liquids such as saline, povidone-iodine and hydrogen peroxide [12,13]. It is very important to ensure that the larvae are destroyed to prevent polymicrobial infections. Post-larvae removal treatment is not standardised; the wound can be covered with topical antibiotics or ointments. In most cases, oral ivermectin in doses of 150-300 µg/kg is used for the intent of larval paralysis and death, however tissue culture continues to be fundamental as bacterial superinfection, especially by *Staphylococcus*, is common. Surgical indications in the aural infestation are made in view of the need to explore the mastoid antrum or mastoid due to the presence of suspected larvae migrating through a perforated tympanic membrane [14,15] Mortality due to otomyiasis has not been reported even with the risk of perforation of the tympanic membrane and intracerebral migration. Deafness and mastoiditis are reported as the main consequences.

Intracerebral myiasis is not part of the classification of otomyiasis but of cavitory myiasis, and perhaps due to this, its fatality is not reported within otomyiasis [2,14].

Conclusion

In conclusion, this case report is similar to those described in other countries. A superficial wound attracts a dipterous female that deposits its eggs, allowing for the development of early larvae that feed on healthy tissue. Pain and edema prompt the patient to seek medical attention where the diagnosis is simple through the visualisation of larvae in the tissue and larvae extraction. Antibiotics and ivermectin are used for treatment of the infection and in this case, surgical debridement was performed. As in other cases, staphylococcal superinfection is reported. The authors declare that there is no conflict of interest.

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