



CASE REPORT

Cutaneous myiasis

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Summary Cutaneous myiasis is a unique disease, endemic in tropical areas, and uncommon in the Western world, making its diagnosis difficult for physicians that are unfamiliar with the disease process. Larvae of a two-winged fly are inoculated through normal skin by a mosquito bite. The larvae grow in the subcutaneous tissues, feed off the surrounding tissues and develop into a fly. A patient with a seemingly commonplace cutaneous lesion which was a harbinger of a much more sinister, unique disease process, is presented. Salient features that characterise these lesions, the difficulty in accurate (and timely) diagnosis, treatment and a review of the literature are discussed with the aim of overcoming limitations of diagnosis and management. © 2008 Published by Elsevier Ltd on behalf of British Association of Plastic, Reconstructive and Aesthetic Surgeons.

International travel, both for business and tourism, has vastly expanded the scope of transcontinental transmission of infective agents. Several recent endemic and sporadic outbreaks of microbial diseases^{1–4} only reaffirm our new-found belief that the 'world is flat.'⁵ Here we present a brief report of a patient who presented with a seemingly commonplace cutaneous lesion which was a harbinger of a much more sinister, unique disease process. Cutaneous myiasis is a unique mode of transmission of a two-winged fly. Interestingly, the larvae of the fly are inoculated

through normal skin by a mosquito bite. The larvae grow in the subcutaneous tissues, feed off the surrounding tissues and develop into a fly. Endemic in tropical areas, it is uncommon in the Western world, making its diagnosis difficult for physicians that are unfamiliar with the disease process. This report aims to overcome some of these limitations. Salient features that characterise these lesions, the difficulty in accurate (and timely) diagnosis, treatment and a review of the literature are presented.

Case report

A 25-year-old male presented with three masses on his scalp that were progressively growing in size over a period of 6 weeks. History revealed a prior visit to Belize where he

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was repeatedly bitten by mosquitoes. The swellings were largely painless and had two presenting symptoms: oozing of dark watery fluid from a small new-onset pore on the dome of the lesion, and a sense that there was 'something crawling inside these lumps'. Physical examination revealed three masses on the scalp (Figure 1A, B), each with a central pore from which a brown, serous material could be expressed. There was no fluctuance, cellulitis or evidence of 'movement beneath the skin'. He did not have any similar affliction anywhere else on his body. Visits to his physician proved ineffective at establishing a diagnosis as was a course of antibiotic therapy. No radiologic investigations were performed. Indications for excising the lesions were to establish a pathological diagnosis, to treat the cutaneous ailment and confirm the clinical diagnosis of myiasis.

Excision of the masses was performed as an office procedure under local anaesthesia. An elliptical incision including a pore was made and the wound explored. A living larva (ovoid, 1×0.75 cm with two tapering tips) was found adjacent to the periosteum. Surrounding tissue was necrotic and easily debrided. The wounds were thoroughly irrigated and closed in layers. Postoperative recovery was

uneventful. The larva was sent for histopathological analysis and thereon to an entomologist who classified the larva as *Dermatobia hominis*. The patient is disease free 4 months following his surgery.

Background

There are numerous species of Diptera, most of which are innocuous to humans. Families of Diptera that most commonly cause human morbidity are Oestridae and Calliphoridae.^{6–8} Each family demonstrates a unique pattern of larval deposition which can be differentiated based upon clinical presentation (Table 1).

Human infestation by the botfly (both human and horse) occurs when larvae are deposited in the subcutaneous tissue through a mosquito bite. After a daylong incubation period, the larvae hatch in response to the body heat of the host. The botfly larvae must create a pore as a source of oxygen during subcutaneous infiltration. The larvae mature within the subcutaneous space and, if left untreated, will moult and ultimately leave the host to mature into adult flies.^{6–11}

Infestation by larvae from the tumbu fly result in a clinical presentation similar to the myiasis caused by the botfly, however the mode of transmission and location of the lesions differ. The female adult tumbu fly lays her eggs on the soil or on drying clothes. When the clothes or soil come into contact with the human host, the larvae can then deposit themselves on the skin. The life cycle of the tumbu fly then follows similarly to that of the botfly.^{6–9,11,12}

The final members of the Calliphoridae family that result in human morbidity are the Old and New World screwworm. As opposed to the inoculation of the botfly and tumbu fly through intact skin with little migration beyond the subcutaneous space, screwworms are attracted to drainage from a previous wound and later may infiltrate cartilage, bone and other organs.

Discussion

All Diptera that cause human disease are obligatory flies and their larvae require a host to undergo necessary development. While cutaneous myiasis is usually self-limiting, terminating with the exit of the larvae from the host site, its sequelae can become problematic. The air pore created by the larvae may become an entry portal for skin flora such as *Staphylococcus aureus*, *Streptococcus* and *Clostridium tetanus* resulting in secondary infection, tetanus and disfigurement. Death of the larva prior to its exit or retained body parts may lead to subcutaneous infection.^{6,7,9}

Wound myiasis and nasopharyngeal myiasis pose much more of a health risk to human hosts. Infestation of wounds and the nasopharyngeal canal by larvae can lead to migration into the heart, bone and brain. Unlike cutaneous myiasis which generally resolves spontaneously, nasopharyngeal myiasis necessitates immediate surgical intervention. Untreated, nasopharynx myiasis carries an 8% fatality rate due to its proximity to the brain.^{6,7,9}

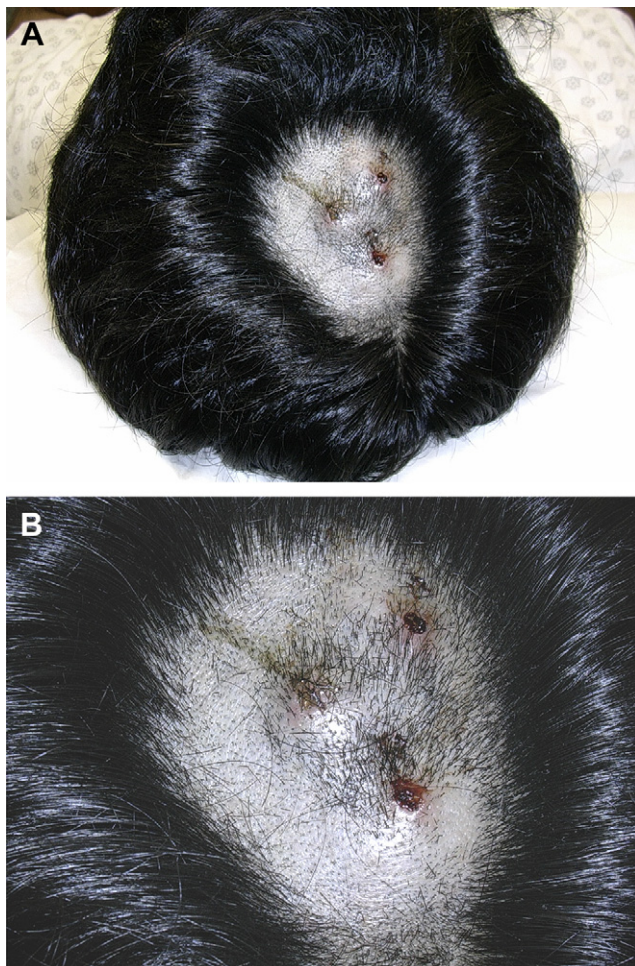


Figure 1 (A, B) The scalp of a 25-year-old male inoculated with Diptera larva. Note the three pores created by the larva as a conduit for oxygen entry into the subcutaneous tissue.

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