Clinical

Sebaceous cysts with unpleasant twists: cutaneous myiasis with *Dermatobia hominis*

**Abstract**

*Dermatobia hominis* (human Bot fly) causes furuncular myiasis (larval infection) in Central and South America. This report describes a case in a member of the UK Armed Forces who had recently taken part in an overseas training exercise in Belize. The importance of clinical history (including travel history) is highlighted. We also describe the outcomes of conservative treatment and surgical intervention for separate lesions in the same patient.

**Case Summary**

A 36-year old paratrooper presented to a deployed Role 1 Medical Facility with two discharging pruritic lesions in his scalp which evolved simultaneously over the preceding five weeks. Six weeks earlier he had completed a 28 day jungle training package in Belize which included time living under field conditions. He received bites from numerous insects despite best efforts to adhere to preventative measures as per the given in-country health brief and pre-exercise medical instruction. No constitutional symptoms were noted and the individual was otherwise fit and well with no significant past medical history. The individual had previously received antibiotics for suspected infected sebaceous cysts comprising of flucloxicillin 500mg six hourly for five days rising to 1g six hourly for a total of ten days.

Physical examination revealed both lesions to be approximately 5mm in diameter and located 50mm from one another on the parietal scalp. Each lesion was erythematous with a clearly defined punctum discharging dark exudate. Regional non-tender lymphadenopathy was demonstrated along the posterior cervical chain which was actually of greatest concern to the patient and the reason he was prompted to seek medical attention.

Excision of the presumed sebaceous cysts under local anaesthetic was attempted. On excision, the presence of a foreign body was evident within a cavity. No movement was noted and the remains of a dead larva were subsequently removed. Whether the larva was already dead or was killed...
during the intervention is unknown.

A diagnosis of human Bot fly myiasis was made and a conservative approach to the second lesion, thought to be of the same aetiology, was taken. The lesion was covered with petroleum jelly and a Tegaderm dressing was applied and left in situ for eight hours. Occasional pulsatile movements from the lesion’s punctum were noted almost immediately after application of the jelly and eventually a presenting part became easily accessible. An intact, live larva was subsequently removed with forceps (Figure 1).

Each cavity was subsequently irrigated with normal saline and dressed appropriately. The patient made an unremarkable recovery and the lymphadenopathy resolved within 48 hours.

Discussion

*Dermatobia hominis* is a species of fly endemic to Central and South America between latitudes 25°N and 32°S. The larvae of these flies may invade the subcutaneous tissues of humans, together with a variety of other animals, resulting in furuncular myiasis. Typically sheep and horses are affected, however *Dermatobia hominis*, together with the African Tumbu fly (*Cordylobia anthropophaga*) have adapted themselves to also parasitise humans.

An adult female Bot fly lays her eggs onto the body of a captured haematophagous insect, usually a mosquito or fly (Figure 2). This differs from the Tumbu fly which spreads its larvae by laying eggs directly onto clothes and towels. Bot fly eggs develop into larvae on the vector and remain in situ until the vector takes a blood meal from a human or animal host. Alternatively, the eggs may simply fall from a Bot fly when it lands on the host’s skin; the elevated body temperature subsequently stimulates the eggs to hatch into larvae. Newly emerged Bot fly larvae then penetrate the host’s tissue directly or via hair follicles. Lesions occur commonly on exposed areas of skin (scalp, face, back, extremities), although scrotal, ocular and breast myiasis have also been reported. A larva will feed in subcutaneous tissues for 5-10 weeks and breathes through an aperture using two respiratory spiracles, seen as a punctum in the host’s skin (Figure 3).

As the larva feeds and grows it may cause a subcutaneous creeping sensation, itching, and sharp pain that is usually nocturnal. The larval stage lasts for approximately ten weeks, and evolves through three instars with the molted skin being discharged through the punctum (an instar is the

![Figure 3. The Dermatobia hominis larva isolated from the patient (18mm in length). Characteristic features include: respiratory spiracles (1), a cuticle enclosing the internal organs (2), distally-facing spines (3), and a pair of mouth hooks (4).](image)
phase between two periods of molting in the development of an insect larva) or Serosanguineous discharge is often secreted through the central punctum, and occasionally the larva itself can be visualised. Mature larvae drop to the ground and pupate in the environment. Larvae tend to leave their host during the night and early morning, probably to avoid drying out. After approximately one month, the adult flies emerge to mate and repeat the cycle. The cycle lasts between three and four months although as the species is poikilothermic growth is highly temperature dependent.

This case highlights the importance of taking a good history, including travel history. The diagnosis of Bot fly infestation is usually made clinically. This is confirmed by the application of paraffin gel or mineral oil over the lesion which blocks the punctum, and hence the spiracle, causing asphyxiation and partial extrusion of the distal end of the larva as it seeks oxygen. If the diagnosis is in question, ultrasound scanning may be employed to visualise larvae. Differential diagnoses include infected sebaceous cysts or furuncles with associated lymphadenopathy. Infestation is not usually harmful, although failure to completely extract a larva can be complicated by secondary bacterial infection or a foreign body inflammatory reaction. Conservative treatment using an asphyxiant as described above together with an occlusive dressing may induce exit of the larva. The use of raw meat in this context has been described as an alternative. If occlusion is complete, larvae will have either emerged or died within 48 hours. Moistened tobacco leaves or nicotine solution have been used by native populations to partially paralyse larvae in order to decrease resistance to gentle extraction, but is rarely successful alone. Whilst generally more applicable to Tumbu fly myiasis, mechanical extraction using an asphyxiant and occlusive dressing may be successful on occasion, as in this case. However, the bulbous distal shape of a well developed larva may make this approach difficult and incision under local anaesthetic is often required. Following infiltration with lidocaine, a cruciate incision is made over the lesion, taking care not to inject or incise the larva itself during the procedure. Extraction of an intact larva may be subsequently performed with forceps and the cavity then heals from below by secondary intention. Whilst the lesions are typically microbiologically sterile, secondary bacterial infection may occur and require a course of antibiotics.

Conclusion
Despite the closure of the British Army Training Support Unit Belize (BATSUB) in 2011, there are elements of the UK military that still use Belize as a training environment. Belize is also a location for HM Ship’s port visits as part of Atlantic Patrol Task (North) where jungle treks are often organised. These elements, together with the increase in global travel and tourism, raises the likelihood of military medical personnel seeing cases of Dermatobia hominis infestation that present to their practice. The clinical history, travel history, and characteristic punctum, should raise suspicion in anybody presenting with a non-resolving cutaneous lesion. Attempts should be made to treat the lesion conservatively however there should remain a low threshold for surgical intervention to effect complete removal of a larva.

References

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