CASE REPORT

Human botfly infestation: the tip of the iceberg

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SUMMARY

A retired man in his 60s was referred to the on call orthopaedic team by his general practitioner following several attempts to extricate a human botfly larva from his forearm. While on holiday in Belize with his daughter 8 weeks previously they both were bitten by some insects. She developed an infestation which was treated locally. Once back in the UK, he subsequently reported of localised itching and discomfort. A botfly larva was successfully removed in the emergency department following local anaesthetic infiltration.

BACKGROUND

Myiasis, a cutaneous infestation of larvae, caused by the human botfly is rarely seen in the UK. *Dermatobia hominis*, the human botfly, is native to Central and South America and cases of infestation are only seen in travellers to these areas.¹ We present a case of human botfly larval removal in the emergency department under local anaesthetic and review the literature on the management of human infestation by the botfly, with an aim to raise awareness of this diagnosis.

CASE PRESENTATION

A 67-year-old man had visited the Central American country of Belize 8 weeks prior to presentation, where he was bitten by a mosquito on the posterolateral aspect of his right proximal forearm. Initially there was only a mild itching sensation, but this persisted with a circular erythematous area developing. Later there was a necrotic centre with skin breakdown, within which he could intermittently see a mobile white thread-like protrusion (figure 1).

He was systemically well with no fever. His daughter who had accompanied him on the trip to Belize had a similar cutaneous infestation which was treated locally, and he was concerned that he might have a similar organism under his skin.

Following attempts by his general practitioner to remove the larva he was referred to the orthopaedic on call team, and seen in the emergency department.

There was a raised erythematous swelling measuring 5 cm in diameter, and a central punctum area with the tip of the larva visible. There was no neurovascular deficit, and he had no axillary or cervical lymphadenopathy.

INVESTIGATIONS

Blood tests revealed a mild eosinophilia, otherwise no other significant findings noted.

Figure 1 Myiasis with *Dermatobia hominis*, showing central necrotic punctum with visible breathing apparatus of larva.

DIFFERENTIAL DIAGNOSIS

Differential diagnosis would include myiasis caused by the larva stage of other flies for example, blowfly, screw fly etc.

TREATMENT

After verbal consent, 10 mL of 1% lidocaine was infiltrated in the skin and surrounding subcutaneous tissues.

Under aseptic conditions, a 3 cm incision was made along the skin crease lines and a single botfly larva was removed easily using a pair of dissecting forceps (figures 2 and 3). No further larvae were seen. The central necrotic area was debrided (figure 4), then betadine wound dressing applied.

OUTCOME AND FOLLOW-UP

The patient was seen 2 weeks postprocedure, the wound was healing well and there were no complications (figure 5). The larva was sent to Liverpool Tropical Medicine Hospital for dissecting microscopy and has been confirmed to be the larva stage of the *D. hominis*.

DISCUSSION**Overview: introduction**

The human Botfly (*D. hominis*), which is native to Central and South America,² causes skin furuncular

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Figure 2 Wholly extracted larva of *Dermatobia hominis* following mini surgical incision under local anaesthetic.

myiasis at the site of egg penetration. Myiasis is the invasion of subcutaneous tissues by the larvae of the dipterous fly. The adult form of the human botfly is rarely seen, ranges between 1 and 3 cm long and has been described as sharing semblance with a bumble bee.

Epidemiology

The human Botfly species is native to Central and South America.

Pathogenesis

The female human Botfly lays her eggs on the body of an intermediate host, usually a mosquito, or fly, which acts as a vector onto the human skin when it feeds.³ The heat of the skin causes the eggs to hatch into larvae where they rapidly burrow themselves. The larval stage in the skin tissue can last between 27 and 128 days before the adult larva drops to the ground where it pupates for between 27 and 78 days before maturing into the adult botfly. The whole life cycle lasts between 3 and 4 months.⁴ The larvae breathe through a central punctum. Unlike other sub-family of the botfly, the larva of the human botfly does not migrate far into the skin from its point of entrance.⁵⁻⁷

The presence of the larva in the skin often triggers a local inflammatory response with the migration and proliferation of inflammatory cells. These include neutrophils, mast cells, eosinophils, fibroblasts and endothelial cells⁸⁻¹⁰ and can cause irritation, itching and local tissue damage. The majority of cases affect the limbs, though presentation on the genitals, scalp,

Figure 4 Post larva extraction and debridement of myiasis with *Dermatobia hominis*.

breast and eye have been reported.¹¹⁻¹⁴ Palpebral infestation was seen in a Danish zoologist who had travelled to Brazil¹⁵ and fatal cerebral Myiasis was reported in two babies where the larva was thought to have penetrated through the fontanelles.^{16 17} Multiple skin infestation is uncommon and it is usual to see only one larva in a skin burrow. Respiratory allergic symptoms in humans have been reported, precipitated by nasal invasion of affected patients by the sheep Botfly specie.¹⁸

Secondary bacteria infection is rare as the larvae secrete bacteriostatic and bacteriocidal substance which ingestion of bacterial organisms.

Clinical presentation

There is a localised, itchy, erythematous raised skin lesion with a central punctum through which the larva may occasionally be seen and through which it breathes. A serous, bloody and rarely purulent discharge can occur. Pain is unusual and should raise the possibility of a secondary bacterial infection. Travel history to the Americas is most significant, particularly where treatment of a simple bacterial furuncle with antibiotics has not led to the expected improvement in symptoms.

Investigation

Clinical diagnosis is usually possible in most cases, though atypical presentation in unusual anatomical sites may require imaging techniques.¹⁹

Figure 3 Larva of *Dermatobia hominis* measuring 3 cm in length.

Figure 5 Follow-up 2 weeks post up, satisfactory wound healing.

Treatment

Treatment options vary with different degree of success. It is important to extract whole larva completely.

Non-surgical options include suffocation, with topical application of vaseline, petroleum jelly, beeswax or pork fat. The use of the sap from the Matatortalo tree found in Costa Rica has been reported to kill larva but does not extrude it.²⁰ However, the dead larva may then need a surgical extraction.

Manually squeezing the larva out through the centre punctum is not advised as it can lead to the rupture of larva with release of its fluid and subsequent risk of anaphylactic reaction²¹ and is more likely to lead to incomplete extraction and secondary infection. This may also happen with the use of adhesive tape.

Venom extractor has also been employed with or without immobilising the larva that exerts a suction pressure and theoretically causes its extrusion.²²

Antiparasitic agent like Ivermectin has shown effectiveness in treating both Myiasis and alimentary forms of Botfly infestation.

Surgical excision using local anaesthesia is an effective treatment option, allowing complete removal of the larvae and debridement of the necrotic cavity.

Learning points

- Travel history to the Americas in a patient with prolonged itchy skin lesion with a central punctum should draw one's mind to human botfly myiasis.
- Surgical excision allows complete removal of the larva.
- Send extracted larva to an appropriate institution for confirmation of larval species.

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Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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