

Furuncular Myiasis

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Two cases of cutaneous myiasis are described. The first, acquired in West Africa, consisting of 36 furuncle-like lesions, was caused by the larvae of *Cordylobia anthropophaga*. An adult fly was raised from one larva. In the second patient, the infestation was caused by five larvae of *Dermatobia hominis* acquired in Central America. Neither patient was aware of any infestation, but the clinical presentation, although also suggestive of bacterial skin infection, showed a typical course and symptoms of cutaneous myiasis in both patients. Key words: Tumbu and botfly myiasis; Larval eradication; Scanning electronmicroscopy.

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The larvae of several species of two-winged flies (Diptera) are capable of causing cutaneous myiasis. The life cycle of these parasites includes the laying eggs outside the host or on wounds, penetration of small larva into the skin, several moults and finally, the emergence of a mature larva which leaves the host to pupate in the soil or, exceptionally, beneath the host's skin (1).

Cutaneous myiasis is a not uncommon parasitic infestation in the tropics and, with the increase in international travel, cases are also encountered out-

side the endemic region, in both Europe and North America (2–8). Furuncular skin infection is easily suspected if the physician is unaware of the infestation. We report 2 cases of cutaneous myiasis most commonly acquired by Man and describe how the larvae can be eradicated from the skin.

CASE REPORTS

Case 1

In February 1980 a 62-year-old woman spent 2 months in Senegal. Two weeks before returning to Finland she developed a fever (39.4°C), which lasted for a few days. Not long after, small, red nodules developed on her abdomen and buttocks. Some of these became rather painful and excreted serous exudate.

On her return to Finland, she was admitted to a local hospital. Bacterial skin infection was suspected, and she was treated with dicloxacilline (2 g/day) for 5 days. The patient had a negative bacterial culture from the skin and a normal peripheral leukocyte count ($7.3 \times 10^9/l$) but a slightly elevated erythrocyte sedimentation rate (ESR, 22 mm/h). New crusted lesions developed on her abdomen, buttocks and legs (Fig. 1).

She was transferred to the Department of Tropical Medicine, where 36 lesions were counted. Antibiotic treatment was continued up to 12 days and she was also given analgesic drugs. Myiasis was diagnosed when some larvae emerged from her skin. The crusts were removed, and the lesions were covered with liquid paraffin for several hours to close the airways of the larvae. The larvae were then removed from the dermis by placing the fingers beneath the burrow and squeezing the larva upwards (Fig. 2). Within one week all the larvae

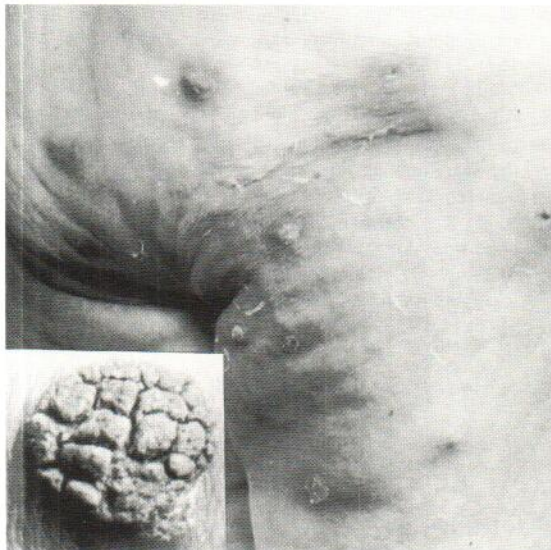


Fig. 1. Several furuncular myiasis lesions on the buttocks in case 1. *Insert:* A close-up view of a crusted lesion.

had been removed, the lesions were healing rapidly and at a follow-up visit one month later only a few scars remained. While hospitalized, the patient had had septic fever for one day, but all blood films and cultures proved negative for malaria plasmodiums and bacteria. The ESR was up to 32 mm/h and the liver enzyme levels were also elevated (ALAT 27-114-87, ASAT 26-101-43), but she had normal leukocyte counts and no evidence of any gastrointestinal or other infection.

Microscopic examination of the larvae suggested that the species was *Cordylobia anthropophaga* (tumbu fly), as was verified when an adult fly was raised from one larva (Fig. 3).

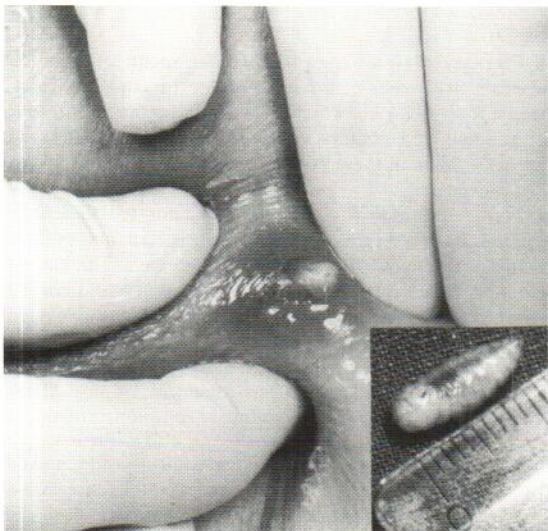


Fig. 2. Removal of larva with digital pressure after closing the airways with liquid paraffin. *Insert:* newly removed larva.



Fig. 3. An adult tumbu fly (*Cordylobia anthropophaga*) emerged from its pupa. The fly was raised from one larva obtained from case 1.

Case 2

A 42-year-old male biologist spent 2 weeks in Costa Rica in February 1989. While there, he travelled around and spent several days in the rain forest. He took normal malaria prophylaxis and had no symptoms of any infection before return-

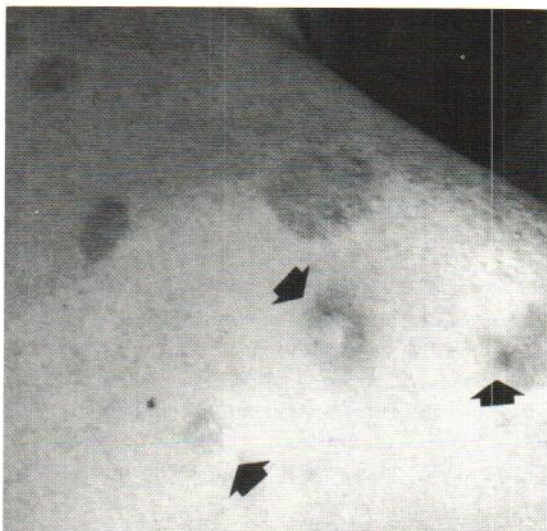


Fig. 4. Three furuncular myiasis lesions (arrows) and several psoriatic plaques on the upper back of case 2.

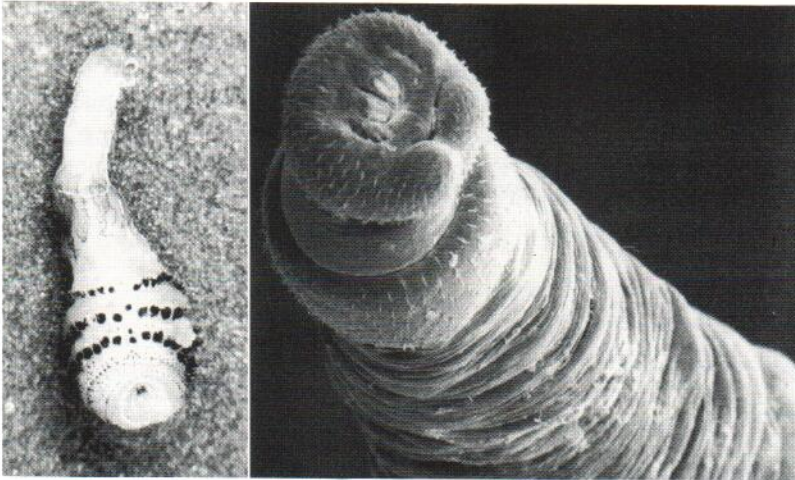


Fig. 5. Left: Larva of *Dermatobia hominis* removed from the skin in case 2. Note the girdles of black, chitinized spines and two small, black oral hooks. Right: Scanning electronmicrograph of a caudal end of *Dermatobia* larva showing the openings of spiracles.

ing home. He had a 13-year history of psoriasis, but the several plaque-type lesions on his forehead, forearms, upper back and waist almost cleared during his stay in Costa Rica. A few days after returning to Finland, he noticed five red nodules on his back (Fig. 4). They were rather painful and, especially at night, he felt an intermittent stinging sensation.

He consulted a dermatologist, who initially suspected skin infection. The bacterial culture, leukocyte count and ESR were normal, but more thorough examination of one lesion revealed myiasis. The first attempts to get rid of the larvae failed. This was perhaps due to the early larval stages and only some mucus-like material and 'hooks' could be obtained for microscopic examination. During the next five days, four larvae were removed by means of liquid paraffin and pressure with the fingers. The remaining larva had to be excised under local anaesthesia. Prophylactic antibiotic treatment was given. The burrow was 2 cm long and was localized almost horizontally below the dermis. The size of the larvae varied between 9 and 17 mm (Fig. 5). The species was *Dermatobia hominis* (human botfly), but an effort to raise a larva into an adult fly did not succeed.

DISCUSSION

A diagnosis of cutaneous myiasis can be obscured by several factors. These infestations are rarely seen in Europe and e.g. only two or three cases of tumbu fly myiasis will be seen in a year in British centres of tropical medicine and five cases were encountered in Finland in 1977–1980 (5–6). The patients also tend to be unaware of any insect aetiology of their skin disorder. In the case of *Cordylobia anthropophaga* infestation, the adult tumbu fly lays its eggs on urine-soaked soil or sand, where the eggs hatch in a few days. The young larva is about 1 mm long and stands upright to seek a suitable host, usually a rodent. Around human dwellings, the eggs can be laid on damp clothing and

humans can also be the unwitting host. Once contact is made, the larva penetrates the skin painlessly within a few minutes, and then builds its dwelling cavity (1).

Three larval stages are completed in 2 weeks, with slight discharge produced and the clinical appearance of a furuncular lesion. Any part of the human body may be infested, but the feet, buttocks and genitalia are the most common sites (1). Our patient was badly infested in West Africa, where the tumbu fly is a common cause of furuncular myiasis. The route may have been either a black swimming suit which she had left outdoors to dry overnight, or a damp blanket she lay on while sunbathing on several days. The larval infestation went completely unnoticed. The fever and furuncular appearance of the lesions suggested a bacterial skin infection and led to antibiotic treatment. The diagnosis of myiasis was established when the first larvae emerged from the skin. The patient had a total of 36 larvae in her skin and the inflammatory reaction caused by such a heavy infestation could well have been the cause of the fever, elevated ESR and possibly also the elevated liver enzyme levels (1, 2, 9).

Our second patient acquired myiasis in tropical America, where *Dermatobia hominis* infestations are not uncommon and from where travellers have brought it also to Europe (4, 7, 8). The life cycle of this robust, brightly coloured 12-mm-long fly is common to other myiasis-causing botflies, but the transmission is exceptional. The adult female fly catches a blood-sucking flying insect, usually a mosquito, and glues her eggs onto the abdomen of the vector insect (1, 8). On contact with the warm-blooded host, e.g. a cow, dog, cat, rabbit or Man, the eggs hatch rapidly at

a signal given by the elevated temperature, and the larvae crawl onto the host's skin when the vector insect feeds. The larvae rapidly dig into the skin, a small papule develops which over 3–6 weeks slowly grows into a dome-shaped nodule more than 1 cm across. It closely resembles a furuncle but has a pearly coloured core, the discharge is creamy rather than pus-like, and the posterior end of the larva may be seen in the core.

In a case of *Dermatobia hominis* infestation, there are seldom more than five lesions, and the patients may have been aware of the mosquito bites responsible for the transmission (1, 8). This was not the case with our patient because he was bitten on several occasions while in the rain forest. However, he suspected some infestation when he felt the pulsating burning sensation, especially at night; he even thought it was caused by some "living thing" under his skin. Such a sensation is easily interpreted as a delusion, but isolated, furuncle-like lesions and a patient's recent visit to the tropics should prompt the physician to consider myiasis.

The larvae should be removed as soon as myiasis has been diagnosed. The use of petrolatum, liquid paraffin or even sticking plaster facilitates the removal by closing the airways to the larvae, causing them to partly emerge from the burrow (10, 11). The hook-like spines, especially of *Dermatobia* larvae, effectively prevent extraction, and attempts to remove the larva by anything other than gentle digital pressure may result in damage to and death of the larva with subsequent secondary infection (4, 8). We used liquid paraffin in both cases and only one *Dermatobia* larva had to be removed with excision under local anaesthesia. Healing was rapid with both methods and, in our first patient, we did not even observe the slowdown in healing after the natural emergence of the larvae reported by Alexander (1). However, the pain and inflammatory reaction around the lesions are so severe that it is not advisable to wait for the natural emergence of the larvae. This occurs in *Cordylobia* infestations within 2 weeks, but is much longer, from 6 to 12 weeks in *Dermatobia* infestations (1, 2). Therefore, in

Europe *Cordylobia* infestations can be encountered in visitors recently arrived from tropical Africa and very rarely also from some European countries (12). In contrast, *Dermatobia* infestations are contracted in Central or South America several days or some weeks previously, and trips to remote places famous for their nature seem to be particularly risky (3, 4, 7, 8, 9).

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