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## Short Communication

## Cutaneous myiasis: Think beyond furunculosis

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## ABSTRACT

**Background:** Cutaneous myiasis is the infestation of the skin by larvae (maggots) of the order Diptera (two winged). Being an imported and sporadic illness, furuncular myiasis often poses a diagnostic challenge to the treating physician. This traditionally endemic entity is being more frequently reported worldwide as 'vacation' disease in travellers returning from these regions. However, there is a paucity of large scale study, especially on individuals occupationally stationed for longer periods of time in these endemic geographic locations. **Methods:** Sixteen Indian male patients with cutaneous furuncular myiasis presenting to dermatology outpatient department at a tertiary care field hospital deployed in a United Nations peacekeeping mission in Central Africa were studied for clinical presentation, sites involved, larvae/maggot extracted, period of resolution and complications if any.

**Results:** Average age of patients was 29 years. The average duration of infestation was 4 days. All lesions were found to be confined to sites over body normally covered with clothing, commonest being anterior abdomen in 9 (56.25%) patients followed by chest in 6 (37.5%) patients. The lesion count was also highest on anterior abdomen with 39 lesions. The average time to resolution following extraction of larvae (*Cordylobia anthropophaga*) was 6 days.

**Conclusion:** The purpose of this study was to familiarize oneself with an endemic infestation which often masquerades itself as pyoderma to the naïve physician, more so in an imported case or more importantly, an 'exported' health care professional.

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## Introduction

Cutaneous myiasis is the infestation of the skin by larvae (maggots) of the Arthropod order of Diptera. Based on clinical presentation, cutaneous myiasis can either be furuncular,

wound or migratory. Furuncular myiasis is commonly caused by *Dermatobia hominis* (Bot fly) and *Cordylobia anthropophaga* (Tumbu fly) and as the name suggests, are characterized by boil like lesions.<sup>1,2</sup> Cutaneous myiasis though endemic, assumes unique importance, in that it is the fourth most common travel associated skin disease among travellers to these regions.<sup>3</sup>

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## Materials and methods

Sixteen Indian male and otherwise healthy patients (aged between 26 and 35 years) with cutaneous furuncular myiasis presenting to dermatology outpatient department at a tertiary care field hospital deployed in a United Nations peacekeeping mission in Central Africa over a period of 10 months between July 2015 and April 2016 were examined and treated. The patients were studied for duration of these lesions, sites involved, larvae (maggots) extracted, period of resolution and complications if any. History of red raised lesions or boils with movement within and/or serous exudate was elicited from all patients, as also that of spontaneous or expressed larvae from these lesions. All patient were disrobed completely and examined in natural light for skin coloured or erythematous papules, nodules or furuncular lesions with or without central open puncta and serous discharge. Lesions infested with live larvae were only considered for lesion count. Patients completely or partially treated at referral clinics were excluded from the study. All patients received similar management which included single session or serial extraction of all larvae (maggots) under local anaesthesia by making a cruciate incision over open puncta or sites of serous exudate. All larvae extracted were subjected to parasitological examination by pathologist. Skin biopsy of representative lesion was taken from two patients for histopathological examination. All patient received follow-up treatment with Oral Ampicillin 500 mg and clavulanic acid 125 mg three times a day, oral Paracetamol 500 mg twice a day for pain relief for 7 days. Daily wound dressing was done for all treated lesions till healing and thereafter daily topical application of 2% Mupirocin ointment for another 7 days. Patients were reviewed again at day seven and 1 month later.

## Results

Sixteen male patients aged between 26 and 35 years (mean age 29.12 years) presenting with complaints suggestive of cutaneous furuncular myiasis were examined for characteristic lesions and managed with extraction of larvae/maggots from these lesions. The clinical patient profile including age, sites involved, lesion count, onset/duration, resolution post-treatment and complications if any are shown comprehensively in Table 1. The longest duration of infestation noticed by the patients was 7 days and shortest 2 days (mean 3.81 days). All lesions were found to be confined to sites over body normally covered with clothing, i.e. neck, chest, anterior abdomen, back, buttocks and proximal upper and lower limbs. Chart 1 displays the distribution of lesions in patients as well as their frequency as per site involved. Most common site involved was anterior abdomen in 9 (56.25%) patients followed by chest in 6 (37.5%) patients (Fig. 1). The lesion count was also highest on anterior abdomen with 39 lesions, followed by that on the chest with 19 lesions. No mucosal sites including eyes, nose, ears, oral cavity or genitalia were involved. The average time to resolution following extraction was 5.75 days. There was a solitary case with cellulitis over anterior abdomen as complication. Skin biopsy of the two index cases revealed the larvae of *C.*

*anthropophaga* in the dermis surrounded by intense inflammatory reaction composed of predominantly neutrophils as well as eosinophils and few histiocytes (Fig. 2a) and a high power view (400×) of an intact larvae revealed appendages with acellular cuticle, underlying skeletal muscle fibres and developing eggs in situ (Fig. 2b).

## Discussion

The word myiasis is derived from the Greek word 'Myia' meaning a fly. The entity was originally proposed by Hope in 1840. It is defined as infestation of live human & vertebrate animals by larvae (maggots) of the order Diptera (two winged). Myiasis can be classified either on the basis of relationship between the host and the parasite or based on the area of the body infested. The second clinical classification appears more useful and includes cutaneous, ophthalmic, nasopharyngeal, auricular, oral, enteric and urogenital. Of these, cutaneous myiasis is the most common form encountered the world over. Cutaneous myiasis further include furuncular, migratory and wound myiasis based on the type of larvae infesting. Furuncular myiasis is caused by larvae of *D. hominis*, *C. anthropophaga*, *Cuterebra* spp., *Wohlfahrtia vigil*, and *W. opaca*.<sup>2,4</sup> Of these, *D. hominis* 'Human Botfly' and *C. anthropophaga* 'Tumbu Fly' are the most common worldwide causing human infestation.<sup>1</sup>

While *D. hominis* is native to central and South America, *C. anthropophaga* is confined to tropics and subtropics of Sub-Saharan Africa. The adult female *C. anthropophaga* lays its eggs over damp soil often contaminated with urine or faeces. Upon hatching, the first instar larvae can survive up to 9 days before they are picked up when clothes are left to dry in these shady areas or unsuspecting victim rests on these shady areas. On contact with skin the larvae penetrate and lodge themselves in the dermis for 8–12 days, following which the third instar larvae fall out and pupate into the soil.<sup>2,3</sup>

Most cases of cutaneous furuncular myiasis in literature worldwide have been reported as imported cases as these flies are endemic in certain regions of the world and often picked up by travellers visiting these regions.<sup>5–7</sup> *C. anthropophaga* is also known as 'skin maggot fly', the 'mango fly', the 'putzi fly', 'ver du Cayor' (worm of Cayor) or, most commonly, the 'tumbu fly' which in creole language of Sierra Leone translates to "an insect, maggot or earthworm that eats wood, grain, rice, etc". Infestation with *C. anthropophaga* occurs all-round the year in endemic areas.<sup>2</sup> In the present study all patients were deployed in urban/semi-urban setting of an endemic geographic area of Central Africa. The mean age of patients in the present study was 29 years. However, literature suggests a wide range including infants.<sup>8</sup> There is also no sex predilection, though all patients in present study were incidentally males as combatants deployed in a United Nations peacekeeping operation. The average duration of lesions in this study was 4 days which was consistent with referenced literature.<sup>2</sup>

All patients in this study reported pruritus, pain and movement in all or some of their lesions at some time or the other during the course of their illness. Other cutaneous symptoms reported in literature include 'prickly heat sensation', insomnia and even agitation. As was expected, the

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