

Multiple furuncular myiasis caused by the Tumbu fly in travelers visiting friends and relatives in Sub-Saharan Africa

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Summary

Myiasis is a parasitic infestation caused by dipteran larvae (flies). It is one of the most common dermatological diseases in travelers returning from tropical and subtropical regions, especially sub-Saharan Africa and Central and South America. Due to globalization, its prevalence has increased in non-endemic countries, such as those of the European Union. The main vector in Africa is the Tumbu fly (*Cordylobia anthropophaga*).

The furuncular variant is the most frequent form in travelers and is characterized by painful, boil-like nodules with a central opening for larval respiration. Diagnosis is primarily clinical and is based on travel history and skin lesions. Treatment consists of complete larval removal, often using occlusive techniques to force the larva to emerge, together with the management of any secondary bacterial infection.

We present three cases detected in the Metropolitan North area of Barcelona after travel to sub-Saharan Africa, all presenting with multiple third-instar larvae.

Keywords:

Myiasis. Tumbu fly.
Travelers. Sub-Saharan
Africa. Neglected
tropical diseases.

Miasis furuncular múltiple causada por la mosca Tumbu en viajeros que visitan amigos y familiares en África subsahariana

Resumen

La miasis es una infestación parasitaria causada por larvas de dípteros (moscas). Es una de las enfermedades dermatológicas más comunes en viajeros procedentes de regiones tropicales y subtropicales, especialmente del África subsahariana y de América Central y del Sur. Debido a la globalización, su prevalencia ha aumentado en países no endémicos, como la Unión Europea. El principal vector en África es la mosca *Cordylobia anthropophaga*. La variante furuncular es la más frecuente en viajeros y se caracteriza por nódulos dolorosos, similares a forúnculos, con una abertura central para la respiración de la larva. El diagnóstico es principalmente clínico, basado en el historial de viajes y las lesiones cutáneas. El tratamiento consiste en la extracción completa de la larva, a menudo mediante técnicas de asfixia para forzar su salida, y el manejo de cualquier infección secundaria.

Presentamos 3 casos detectados en el área metropolitana norte de Barcelona tras un viaje a la región subsahariana con múltiples extracciones de larvas de tercer estadio.

Palabras clave:

Miasis. Mosca Tumbu.
Viajeros. África subsahariana.
Enfermedades tropicales
desatendidas.

Introduction

Myiasis is derived from the Greek word “myia”, meaning fly¹, and refers to the infestation of humans or animals by the immature stages of dipteran larvae (maggots), which feed on host tissues. It is one of the most common parasitic skin diseases in tropical regions²⁻⁷. Human myiasis is one of the most common skin diseases diagnosed among travelers returning from tropical and subtropical regions, and this neglected tropical disease is considered to be underreported in sub-Saharan Africa^{5,7}.

Dermatological diseases affect up to 8% of travelers, and myiasis is among the five most common dermatological conditions diagnosed in patients returning from tropical areas⁸. With the increase in international travel and globalization, the disease has become increasingly common, and a growing number of cases is expected in non-endemic countries such as those of the European Union (EU)^{1,2,8}.

Cordylobia anthropophaga and *Dermatobia hominis* are the principal causative agents of myiasis in Africa and Central and South America, respectively. According to a systematic review, *Cordylobia anthropophaga* accounted for 66.2% of the 104 reported cases and was predominantly associated with sub-Saharan Africa. Furthermore, cutaneous myiasis was the most common clinical presentation (54.7% of cases), followed by furuncular myiasis (38.2%)¹.

The Tumbu fly (*Cordylobia anthropophaga*) lays approximately 100 to 300 eggs on dry sand contaminated with urine or feces, or on clothing left to dry in shaded outdoor areas or bushes. After hatching, the larvae penetrate intact skin following contact with contaminated soil or clothing.

After 7 to 12 days, second- and third-instar larvae develop. Finally, the third-instar larva leaves the host, falls to the ground, and buries itself to pupate. Patients usually experience no symptoms when the larva initially penetrates the skin, and many returning travelers do not suspect that larvae are the cause of their skin lesions^{2,5,9,10}.

Myiasis can be classified biologically as obligatory, in which fly larvae require healthy host tissue as a nutrient source; facultative, in which larvae typically colonize necrotic tissue or pre-existing wounds; and accidental, in which larvae do not require host tissue for development, although this category may sometimes be difficult to distinguish from facultative myiasis⁴.

Human myiasis can also be classified as primary or secondary, depending on whether the larvae invade healthy tissue or colonize pre-existing wounds. In addition, cutaneous myiasis can be categorized into furuncular, migratory (creeping), and wound (traumatic) forms^{1,5}.

Furuncular myiasis is the most common presentation in travelers returning from endemic regions and is characterized by the development of painful inflammatory nodules resembling furuncles, each with a central punctum on otherwise healthy skin^{5,8}. Diagnosis is primarily clinical and relies on both the patient's history and physical examination. The presence of a central punctum, pain, nocturnal pruritus, and surrounding skin discomfort are the most common clinical findings⁸. When the larva cannot be readily identified clinically, ultrasonography may be useful. Magnetic resonance imaging and computed tomography have also been described for lesions located in uncommon anatomical sites^{1,8}.

The aim of treatment is complete larval extraction while minimizing trauma to the surrounding tissues. The application of paraffin, petroleum jelly, or other occlusive substances over the central punctum induces the larva to emerge by obstructing its air supply. Antibiotic therapy may be required in cases of secondary bacterial infection^{1,4,5,8}. Several factors have been associated with an increased risk of myiasis, including low socioeconomic status, poor sanitary conditions, mental illness, and immunodeficiency¹¹.

We present three cases detected in the Metropolitan North area of Barcelona involving patients with multiple furuncular lesions after travel to sub-Saharan Africa as visitors visiting friends and relatives (VFR travelers). Multiple third-instar larvae were extracted and subsequently identified as *Cordylobia anthropophaga*.

Clinical cases

Case 1

A 32-year-old woman with no relevant medical history presented to the emergency department after returning from Senegal where she had been visiting friends and relatives (VFR). During her stay, she had swum in rivers and in the sea. Several days later, she noticed a painful lesion on her foot from which a larva emerged. She initially attended an emergency primary care center and was subsequently referred to a regional hospital because of the appearance of multiple painful skin lesions involving both feet and hips.

In the emergency department, three larvae were manually extracted (Figure 1). Shortly thereafter, she developed fever during the night, and physical examination revealed an erythematous lesion on her right hip at the site where one of the larvae had previously been removed.

Further surgical exploration allowed the extraction of two additional larvae from residual lesions on both feet. Blood tests showed no evidence of systemic inflammation. Microbiologi-

Figure 1. Case 1 furuncular myiasis in traveler.



Figure 2. Case 2 furuncular myiasis in traveler.



cal identification of *Cordylobia anthropophaga* confirmed the diagnosis of cutaneous myiasis. Oral amoxicillin-clavulanate was initiated because of surrounding cellulitis. The patient remained afebrile thereafter and experienced a favorable clinical outcome.

Case 2

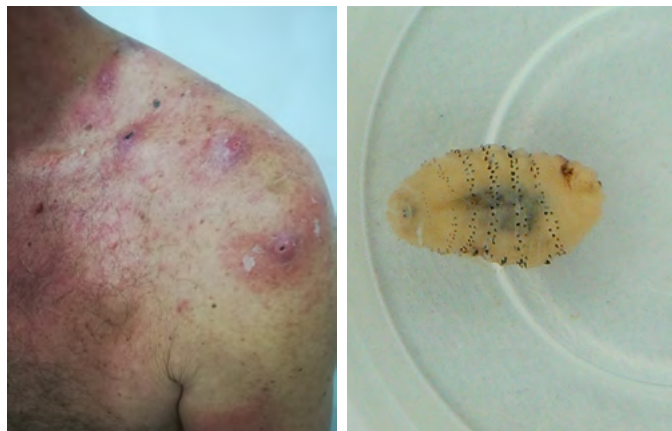
A 65-year-old man living with HIV (CD4+ cell count: 648 cells/ μ L) was referred by his primary care physician to the Tropical Medicine outpatient clinic after returning from Gabon, where he had been visiting friends and relatives (VFR). He presented with the sequential

appearance of furuncular lesions on his back, neck, and upper arms. He had previously received topical mupirocin and oral antihistamines without clinical improvement. The patient reported having used a towel borrowed from a local friend while at the beach.

Clinical examination using magnification revealed 14 nodular lesions with central puncta corresponding to larval breathing pores, at different stages of maturation, strongly suggesting furuncular myiasis (Figure 2).

Given the high number of lesions in the context of HIV infection, oral ivermectin was administered together with oral

Figure 3. Case 3 furuncular myiasis in traveler.



clindamycin because several lesions showed signs of secondary bacterial infection.

Following treatment, the patient showed marked clinical improvement, with a reduction in inflammation and pruritus. Taxonomic identification confirmed *Cordylobia anthropophaga*.

Case 3

A 56-year-old man returned from visiting relatives in Tanzania three days before presentation with 26 furuncular skin lesions, predominantly involving the trunk (Figure 3). He reported drying his clothes directly on the ground during his stay.

Because of the large number of lesions, manual extraction of the larvae was performed, followed by treatment with ivermectin. The patient experienced progressive clinical improvement without complications. Taxonomic identification subsequently confirmed *Cordylobia anthropophaga*.

Discussion

In non-endemic countries such as the European Union (EU), cases of myiasis are frequently misdiagnosed or remain undiagnosed, largely because the disease is unfamiliar to many clinicians and continues to be considered a neglected tropical disease^{5,6,8}. Furuncular myiasis caused by the Tumbu fly is typically observed in travelers returning from sub-Saharan Africa, and the number of imported cases is expected to increase as international travel to endemic regions continues to rise.

It is important to recognize that the number of reported cases is likely lower than the true number of diagnosed cases. Furuncular myiasis may easily be mistaken for furunculosis, cellulitis, or other bacterial skin infections, as occurred initially in Case 2. Therefore, clinicians, particularly those working in primary care and emergency departments, should maintain a high index

of suspicion when evaluating travelers returning from endemic areas with painful nodular skin lesions.

In our series, the initial diagnostic suspicion was raised in a Primary Care Emergency Centre, and all patients were subsequently referred to either a regional hospital or a Tropical Medicine Unit for confirmation and management. Access to specialized microbiology laboratories enabled taxonomic identification of the larvae, thereby confirming the diagnosis. However, this level of diagnostic support is not routinely available in many primary care facilities or smaller hospitals across the European Union. Consequently, many cases may be treated empirically without laboratory confirmation and therefore remain unreported.

Several factors have been associated with an increased risk of human myiasis, particularly poor socioeconomic conditions and inadequate sanitation. However, the disease may affect travelers from any socioeconomic background. VFR travelers constitute one of the highest-risk groups because they are often less likely to seek pre-travel medical advice and may underestimate the risk of exposure¹. Consequently, healthcare professionals should provide preventive counseling during pre-travel consultations. Likewise, local public health authorities in endemic countries should reinforce preventive measures by informing travelers about simple protective practices, including avoiding contact between clothing and contaminated soil and ironing clothes after drying outdoors.

In all three patients presented here, furuncular myiasis was caused by *Cordylobia anthropophaga*, producing multiple skin lesions, in agreement with previous reports from sub-Saharan Africa. These findings are consistent with the systematic review by Jallow *et al.*, which identified *C. anthropophaga* as the predominant causative species in the region. Interestingly, whereas most published cases involve a single lesion, all three of our patients presented with multiple furuncular lesions, highlighting the possibility of extensive infestation in returning travelers.

Based on their morphology, including their cylindrical, ovoid, and robust appearance, the extracted larvae were classified as third-instar larvae.

Manual extraction was the initial therapeutic approach in all patients. However, Case 1 required a second intervention because persistent pain and fever raised suspicion of retained larvae. Surgical exploration confirmed the presence of two additional larvae, which were successfully removed.

Antibiotic therapy was subsequently initiated because of secondary bacterial infection. This clinical course is comparable to previous reports involving travelers returning from sub-Saharan Africa, including those described by Alvaro *et al.*, Rimoin *et al.*, and De Rosa *et al.*^{7,11}.

Although ultrasonography was not required in our patients, it represents a valuable diagnostic tool when clinical findings are inconclusive or when retained larvae are suspected. Likewise, oral ivermectin has been reported as a useful adjunctive treatment in patients with numerous lesions or when complete manual extraction is difficult¹². In our series, ivermectin was administered in Cases 2 and 3 because of the large number of lesions, resulting in favorable clinical outcomes.

Our case series illustrates the importance of early clinical suspicion in primary care, followed by prompt referral to specialized centers where definitive diagnosis, complete larval extraction, and microbiological identification can be performed. As international travel continues to increase, clinicians working in both primary care and hospital settings should remain familiar with imported tropical diseases such as furuncular myiasis. Early recognition facilitates appropriate treatment, prevents unnecessary antibiotic use, and reduces the risk of complications.

Bibliography

1. Jallow BJJ, Gassara G, Bajinka O, Luo Y, Liu M, Cai J, *et al*. Human myiasis in Sub-Saharan Africa: A systematic review. *PLoS Negl Trop Dis*. 2024;18(3):e0012027. doi: 10.1371/journal.pntd.0012027.
2. Biernat B, Gładysz P, Sulima M, Sikorska K. Cutaneous myiasis caused by *Dermatobia hominis* (Diptera: Oestridae) in a Polish traveller to South America - a case report. *Int Marit Health*. 2024;75(1):61-3. doi: 10.5603/imh.99548.
3. Francesconi F, Lupi O. Myiasis. *Clin Microbiol Rev*. 2012;25(1):79-105. doi: 10.1128/CMR.00010-11.
4. Mathison BA, Cramner LM, Cox G, Jerris RC, Couturier MR. The Brief Case: Furuncular Myiasis Caused by the Third-Instar Larva of a Bot Fly in the Genus *Cuterebra*. *J Clin Microbiol*. 2022;60(9):e0230721. doi: 10.1128/jcm.02307-21.
5. Popović Dragonjić L, Jović A, Janković I, Miladinović J, Ranković A, Cvetanović M, *et al*. *Cordylobia anthropophaga* Myiasis Mimicking Hyperproliferative Skin Disorder in Traveler Returning from Sub-Saharan Africa. *Trop Med Infect Dis*. 2023;8(11):505. doi: 10.3390/tropicalmed8110505.
6. Bernhardt V, Finkelmeier F, Verhoff MA, Amendt J. Myiasis in humans - a global case report evaluation and literature analysis. *Parasitol Res*. 2019;118(2):389-97. doi: 10.1007/s00436-018-6145-7. Erratum in: *Parasitol Res*. 2019;118(2):723. doi: 10.1007/s00436-018-6187-x.
7. Alvaro A, Casartelli M, Schiavini M, Fama F, Gabrieli P, Cordier L. A Case of Myiasis Caused by *Cordylobia anthropophaga* (Diptera: Calliphoridae) in an Italian Traveler Returning from Senegal. *Acta Parasitol*. 2024;69(1):1053-7. doi: 10.1007/s11686-024-00807-0.
8. Mendoza AZ, Borna S, Ho OA, Waldorf JC. Travel-Related Cutaneous Myiasis: A Case Report. *J Clin Med*. 2024;13(17):5190. doi: 10.3390/jcm13175190.
9. Biernat B, Gładysz P, Kuna A, Sulima M, Bykowska-Tumasz M, Sontag E. Myiasis by *Cordylobia anthropophaga* and *C. rodhaini* (Diptera: Calliphoridae) in Polish travelers to Africa with new molecular data. *J Med Entomol*. 2025;62(2):471-4. doi: 10.1093/jme/tjaf006.
10. Robbins K, Khachemoune A. Cutaneous myiasis: a review of the common types of myiasis. *Int J Dermatol*. 2010;49(10):1092-8. doi: 10.1111/j.1365-4632.2010.04577.x.
11. Rimoin L, Jackson J, Yang A, Goh C, Soriano T. Furuncular myiasis in 2 American travelers returning from Senegal. *Cutis*. 2014;94(6):281-4.
12. Payán-Gómez C, Cabal-Herrera AM, Caicedo-Rosales JA, Saldarriaga-Gil W. Severe Vaginal Myiasis: Successful Management With Ivermectin. *Int J Infect Dis*. 2022;122:398-400. doi: 10.1016/j.ijid.2022.06.021.