

Mucocutaneous leishmaniasis: A clinical case report and literature review of health implications for human migration

Alejandra García, Mariana Vélez Pintado, Ana Paula Landeta Sa, Karen Marañón, Ingeborg Becker, Carla Román, Griselda Montes de Oca Sánchez, M. Fernanda González Lara, Alfredo Ponce de León, Alexandro Bonifaz

Instituto Nacional de Ciencias Médicas y Nutrición “Salvador Zubirán”, Hospital General de México “Dr. Eduardo Liceaga”, Centro Médico ABC, México

Corresponding author: José Alexandro Bonifaz, MD PhD, E-mail: a_bonifaz@yahoo.com.mx

ABSTRACT

Mucocutaneous leishmaniasis (MCL) is a severe form of leishmaniasis. Migration poses a challenge in the diagnosis and treatment of this disease, as patients may present with species not typically recognized as endemic. *Leishmania panamensis* is the predominant species in Panamá, and it is associated with clinical progression. There are no previous reports of this species in Mexico. Herein, we present a 41-year-old woman who presented to the emergency department with skin ulcers on her forehead, right arm, nasal mucosa, and abdomen while traveling on foot from Colombia to Mexico in a migrant caravan. She underwent several medical evaluations and received multiple treatments without improvement. The diagnosis of mucocutaneous leishmaniasis by *L. panamensis* was established three months later. She was treated with liposomal amphotericin B (LAmB). After four months of follow-up, the patient remained asymptomatic, with no lesions. This highlights delays that may occur in non-endemic settings and their impact on migrant populations.

Key words: Migrant caravan, Mosquito, Mucocutaneous, Leishmaniasis, *Leishmania panamensis*, Liposomal amphotericin B

INTRODUCTION

Migration through Central America has reached unprecedented levels, with most individuals arriving in Mexico and waiting for an opportunity to enter the United States. This significant movement comes with changing epidemiology patterns and diagnostic challenges [1].

Leishmaniasis is a chronic infection caused by a flagellated protozoan belonging to the genus *Leishmania*. It is an intracellular parasite transmitted by the bite of female sandflies, specifically *Lutzomyia* in the Americas. Reports of *L. panamensis* are not common in Mexico; it is primarily reported in Central America, especially in Colombia, Costa Rica, and Panamá; a high

suspicion is required in migrant populations because of its classification as complex leishmaniasis due to the potential of affecting the mucosa. The clinical manifestations of leishmaniasis vary according to the species involved and the host's immune response. The *L. panamensis* reservoir are sloths, and it is especially associated with the sandfly *Lutzomyia trapidoi*. Its infection may be severe, leading to disfigurement or mucosal necrosis and functional impairment. This type of leishmaniasis does not cure spontaneously. This species has lymphatic dissemination; the mucosal membranes more frequently affected are the nose and pharynx. The use of LAmB must be individualized, given limited access to miltefosine and the antimonial's toxicity [2-4].

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CASE REPORT

Herein, we present a 41-year-old woman with no significant medical history. She was born in Barinas, Venezuela, and lived in an urban area in Cali, Colombia, from 2022 until September 2023. That month, she decided to migrate to the United States. She joined a migrant caravan traveling on foot through Panamá, Costa Rica, Nicaragua, El Salvador, and Guatemala, arriving in Mexico City in October 2023. During her journey, she slept on roads, in shelters, in hostels, and on city streets. She crossed rivers, lakes, forests, fields, and walked through the Darien Gap at the Colombia-Panama border and the Lacandon jungle in the state of Chiapas, Mexico. She reported frequent exposure to rats, cockroaches, mosquitoes, and ticks. While traveling, she developed a dermatosis on her forehead, right arm, and abdomen after being bitten by a mosquito during her foot journey from Colombia to Mexico. The lesions began as papules, progressed to nodules, and slowly ulcerated over thirty days. She did not have access to health services until she arrived in Mexico City. After her arrival, she underwent several medical evaluations and received multiple treatments, including acyclovir, dicloxacillin, itraconazole, and amoxicillin/clavulanate, without improvement.

In January 2024, she presented at the emergency department of a general hospital with skin ulcers. She denied medication use, chronic diseases, and other systemic symptoms. On physical examination, the patient appeared well. Vital signs were blood pressure 100/70 mm Hg, pulse 68 beats per minute, temperature 36.2°C, respirations 16 breaths per minute, and oxygen saturation 95% on room air. Dermatologic evaluation revealed a disseminated dermatosis affecting the right arm (Fig. 1), forehead (Figs. 2a and 2b), and abdomen (Figs. 3k and 3l), consisting of three ulcers, some with a warty appearance, others with an erythematous base containing granulation tissue, and with indurated, raised, erythematous-violet borders. The smallest was 1 x 1 cm, and the largest was 7 x 5 cm. The rest of the physical examination and the routine laboratory tests were normal.

A skin biopsy was taken, and a direct skin imprint (microscopic analysis with Giemsa stain) revealed amastigotes. A positive ELISA test (serum antibodies) was also obtained, and a skin biopsy culture yielded promastigotes. The histopathological report of the skin biopsy concluded a granulomatous inflammatory infiltrate from the papillary dermis to the middle



Figure 1: Right forearm skin lesion: Ulcer with an irregular, erythematous base and areas of hyperkeratosis; indurated and elevated borders with a reddish-violet color.

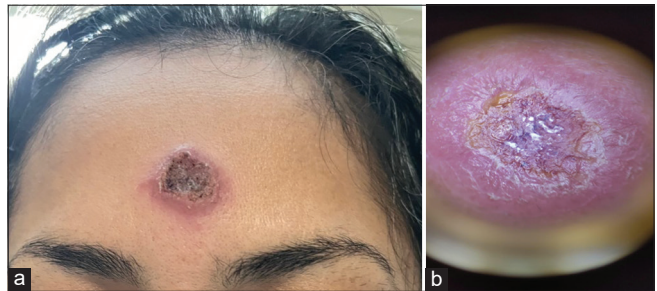


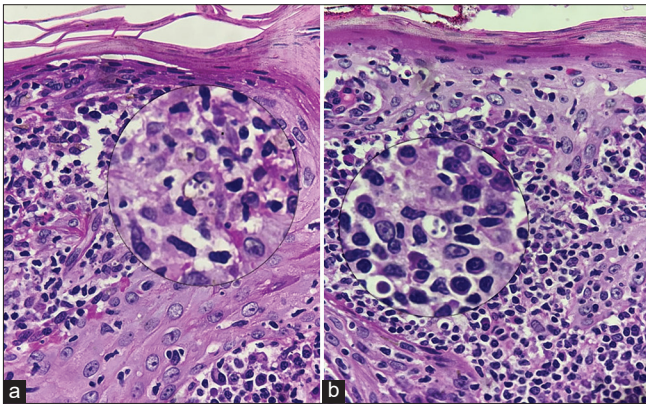
Figure 2: (a and b) Forehead skin lesion and its dermatoscopy: Round ulcer with an erythematous base partially covered by a bloody and meliceric crust; elevated and erythematous borders.

reticular dermis and abundant mixed inflammatory infiltrate with neutrophils, plasma cells, and vacuolated histiocytes, some of which presented rounded intracytoplasmic structures in the periphery, with positive PAS and Grocott staining compatible with amastigotes (Figs. 4a and 4b). Finally, the immunoparasitology laboratory (Faculty of Medicine, Universidad Nacional Autónoma de México) took a skin biopsy, which was positive for *Leishmania sp.* (ITS1)/*Leishmania viannia* (LM9/LV2)/*Leishmania panamensis* (L13). Due to the limited availability of pentavalent antimonials, the patient was referred to a tertiary care center.

Upon arrival, she reported nasal pain, and a nasal ulcer was found afterward. Otorhinolaryngology performed a nasal endoscopy, reporting a pale mucosa with a crusty lesion in the left nasal vestibule extending to the inferior turbinate head with a friable and erythematous mucosa. A nasal mucosa biopsy showed ulcerated mucosa with lymphoplasmacytic inflammation,



Figures 3: (a-e) Evolution of the skin lesions on the right arm. (f-j) Evolution of the skin lesions on the forehead. (k-o) Evolution of the skin lesions on the abdomen.



Figures 4: (a and b) Histopathological sample of an ulcer biopsy: Granulomatous inflammatory infiltrate made up of abundant mixed inflammatory infiltrate with neutrophils, plasma cells, and vacuolated histiocytes, some of which present rounded intracytoplasmic structures aligned to the positive periphery to PAS and Grocott staining compatible with amastigotes.

without evidence of microorganisms (negative Giemsa, PAS, gram, and Grocott stains). Other physical findings and routine laboratory tests were normal. A diagnosis of mucocutaneous leishmaniasis secondary to *Leishmania panamensis* was established.

Given the urgency of treatment due to the disease presentation, Liposomal amphotericin B (LAmB) at the dose of 3 mg/kg was initiated in February 2024. After twelve days of treatment, she developed acute kidney injury (serum creatinine: 5.7 mg/dL), and since the cumulative target dose of 40 mg/kg had been reached, treatment was discontinued. She remained

hospitalized for seven days, during which her renal function was monitored, and she received intravenous hydration. After a total hospital stay of twenty days, the skin lesions on her forehead and abdomen had shown slight improvement. As she no longer met the criteria for hospitalization, she was discharged for outpatient follow-up. Thirty days later, she returned to the outpatient clinic for a check-up, showing visible improvement. After a four-month follow-up, the patient remained asymptomatic, with no new skin lesions and no recurrence of the previous lesions (Figs. 3a – 3o).

DISCUSSION

The WHO recognizes leishmaniasis as an emerging, undercontrolled, and neglected infection affecting millions each year. Increased conflict and forced displacement in endemic areas of cutaneous leishmaniasis have led to a surge in cases, both in endemic countries and in clinics worldwide, with imported cases being reported in non-endemic countries [5,6]. One case was reported in the United States in an immunocompromised immigrant, where diagnosis was made thanks to the high index of suspicion of the healthcare personnel [7]. In Turkey, Şakru et al. published a systematic review on leishmaniasis among migrants and refugees, with the majority of cases reported in Syrian people [8]. Another case involved a pediatric patient from Venezuela

diagnosed in the north of Mexico, a region historically free of leishmaniasis [9]. Lemieux et al. described a ten-year case series in Canada in which the rise in cases was attributed to increased travel and migration. In this series, the median time for diagnosis was 89 days, and LAmB was the most commonly used treatment [10].

These cases highlight how a disease once confined to specific regions has become an emerging global health concern. This infection spreads rapidly in overcrowded camps, which provide ideal conditions for sandfly breeding. Migrants often experience delayed diagnosis and treatment due to reduced healthcare access. Furthermore, in many areas, even those bordering endemic countries, healthcare providers may lack the awareness and experience needed to diagnose and treat leishmaniasis effectively [11].

The epidemiology of cutaneous leishmaniasis in the Americas is complex, characterized by multiple circulating *Leishmania* species, several reservoir hosts and sandfly vectors, and variable clinical manifestations and therapy response. *L. panamensis* strains may exhibit different levels of virulence [12]. While cutaneous leishmaniasis is generally considered mild, 1–10% of patients infected with a strain from the *Viannia* subgenus subsequently develop mucocutaneous leishmaniasis, which can be life-threatening and highly disfiguring [13]. *L. panamensis* is also associated with diffuse cutaneous leishmaniasis, but this is more frequently seen in immunocompromised patients [14]. The lesional parasites in MCL are rarely present, but there have been reports of a good treatment response, especially with pentamidine for *L. panamensis* [15].

Clinical suspicion is essential, although some differentials can be taken into account, depending on the context of the person's case. These differentials include cutaneous cryptococcus, cutaneous histoplasma, coccidioidomycosis, paracoccidioidomycosis, sporotrichosis, chromoblastomycosis, yaws, mycobacterial infections, cutaneous neoplasms, *Balamuthia mandrillaris* infection, and partially healed bacterial skin infections [6].

Although no single reference test exists, the observation of amastigotes in a clinical specimen confirms the diagnosis [16]. Given the limited sensitivity of tissue-sampling approaches, a combination of methods is recommended, especially molecular techniques that amplify nuclear or kinetoplast DNA. Recently developed real-time kDNA PCR assays have demonstrated high

accuracy in detecting and quantifying *Viannia* species in lesion biopsies [17]. Treatment decisions are driven by the need to accelerate cure, reduce scarring, and prevent progression to mucocutaneous leishmaniasis. This may be supported by diagnosis and species identification.

Historically, pentavalent antimonials have been considered the first-line treatment, but they are associated with toxicity and risk of resistance. Amphotericin B (including lipid formulations) emerged as second-line therapy [18]. Due to the limited availability of pentavalent antimonials, liposomal amphotericin B is often used for the urgent management of these conditions. Observational studies have suggested pan-species cure rates with liposomal amphotericin B of 80% to 90%, but no controlled trials have been conducted [4]. Only one case of *L. panamensis* has been described, associated with a Mexican hospital in a returning traveler [19].

CONCLUSION

Global migration has contributed to the rising burden of leishmaniasis. At the same time, management remains challenging due to low index of suspicion, limited sensitivity of diagnostic tests, and limited availability of molecular methods. Access to pentavalent antimonials is limited, and their toxicity is high; the need for other treatments or first-line agents is essential, considering the difficulty of follow-up in migrant populations. Further research is needed to address evidence gaps, improve therapeutic options, understand pathogenesis, mitigate adverse drug effects and resistance.

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms, in which the patients gave their consent for images and other clinical information to be included in the journal. The patients understand that their names and initials will not be published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

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