

Treatment of a Complex Ulcerative Lesion Caused by Leishmaniasis: A Case Report

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ABSTRACT

Cutaneous leishmaniasis, a neglected tropical disease caused by *Leishmania* parasites, poses a public health challenge in Mexico, particularly in endemic regions where *L. mexicana* predominates. Transmitted via *Lutzomyia* sandflies, the disease manifests primarily as skin ulcers, with "chiclero's ulcer" being a notable variant. Diagnosis relies on clinical suspicion, epidemiological context, and laboratory confirmation, utilizing parasitological (smear microscopy, culture, biopsy) and molecular (PCR) techniques. A case is presented of a 25-year-old male from Venezuela, recently arrived in Mexico, who developed multiple suppurative cutaneous lesions following arthropod bites. Initial treatments were ineffective, but diagnosis via lesion culture revealed *Leishmania* co-infected with *Staphylococcus haemolyticus*, leading to targeted antibiotic therapy followed by intravenous meglumine antimoniate (Glucantime), resulting in clinical improvement and re-epithelialization of the ulcers. Treatment strategies for cutaneous leishmaniasis in Mexico encompass both local and systemic options, requiring individualized approaches based on patient and lesion characteristics, as well as adherence to national and international guidelines. This case underscores the importance of considering leishmaniasis in the differential diagnosis of cutaneous ulcers, even in non-endemic areas, and highlights the successful management of a complex case with systemic antimoniate therapy.

KEYWORDS: Cutaneous Leishmaniasis, *Leishmania mexicana*, Mexico, Case Report, Diagnosis, Treatment, Meglumine Antimoniate, Skin Ulcer, Neglected Tropical Disease, PCR, Parasitology, *Staphylococcus haemolyticus*.

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INTRODUCTION

Leishmaniasis encompasses a group of diseases caused by protozoan parasites of the genus *Leishmania*. The etiological agent is a dimorphic protozoan parasite belonging to the order Kinetoplastida and the family Trypanosomatidae, with over 20 species identified as pathogenic to humans. Within Mexico, *Leishmania (Leishmania) mexicana* is the primary species responsible for localized cutaneous leishmaniasis (LCL), although other species may also be implicated in the pathology.

Transmission of the disease occurs through the bite of infected female sandflies of the genus *Lutzomyia*. In Mexico, *Lutzomyia olmeca* has been identified as a proven vector. Leishmaniasis is endemic in several countries of the Americas, including Mexico. In the past eight years, transmission has been reported in the states of Campeche, Chiapas, Jalisco, Nayarit, Oaxaca, Quintana Roo, Sinaloa, Tabasco, Veracruz, and Yucatán, with Tabasco and Quintana Roo reporting the highest number of cases between 2017 and 2020. Cutaneous leishmaniasis is the

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most common clinical form in Mexico, representing approximately 99% of reported cases.

The predominance of *L. mexicana*, particularly in the Yucatán Peninsula where "chiclero's ulcer" is prevalent, suggests that case reports in Mexico should pay close attention to the characteristics and treatment responses associated with this species. While the disease is endemic in specific regions, increased travel and migration may lead to cases presenting in non-endemic areas within the country, underscoring the importance of considering travel history, even within Mexico, for diagnosis.

From a public health perspective, leishmaniasis is considered a neglected tropical disease by the World Health Organization (WHO). It primarily affects the most vulnerable populations with limited access to healthcare services. Cutaneous leishmaniasis can cause significant morbidity due to disfiguring scars and associated social stigma, particularly in women and children. Furthermore, the disease has economic implications for both affected individuals and healthcare systems, due to treatment costs. Globally, including the Americas, an increase in the number of cases has been observed due to various factors such as environmental changes, population displacement, and urbanization. The "neglected" status of leishmaniasis, despite its prevalence and potential for disfigurement, highlights the need for increased awareness and research efforts in Mexico. This point should be emphasized in the introduction to underscore the importance of clinical case reporting.

The objective of this background is to provide a comprehensive review of the current knowledge on cutaneous leishmaniasis in Mexico, establishing a solid foundation for the subsequent case report by detailing relevant aspects of the disease.

CLINICAL MANIFESTATIONS

The typical clinical presentation of cutaneous leishmaniasis in Mexico often begins as a small, painless erythematous papule at the site of the sandfly bite. This papule gradually evolves into a nodule that may ulcerate in the center, forming a characteristic ulcer with a raised, well-defined, and sometimes hyperpigmented border. The ulcer typically presents with a clean, pink base with granulation tissue, rounded and elevated edges, and an indurated base. Although usually painless, it can become painful if secondary bacterial infection occurs. Ulcers can be dry or exudative and may be covered by a crust.

The incubation period for cutaneous leishmaniasis can vary widely, from two weeks to several months, and even up to a year after the sandfly bite. Lesions typically progress from a small papule to a nodule and then to an ulcer over time. Satellite lesions and regional lymphadenopathy may be observed around the ulcer. Untreated cutaneous leishmaniasis can persist for months or years, resolving spontaneously in some cases and

leaving a characteristic atrophic scar for life.

DIAGNOSIS

The clinical approach to diagnosing cutaneous leishmaniasis in Mexico should consider the patient's epidemiological history, including residence or travel to endemic areas of the country. A thorough physical examination should document the characteristics of the cutaneous lesion(s), including size, location, morphology, and any associated signs such as lymphadenopathy. Chronicity of the lesion and lack of response to common treatments for other skin conditions (e.g., antibiotics, corticosteroids) should raise suspicion of leishmaniasis. It is crucial to emphasize the importance of epidemiological history, even within Mexico given regional endemicity, for timely diagnosis. Clinical suspicion based on lack of response to typical treatments for skin infections is a key diagnostic clue in primary care.

Diagnostic confirmation is achieved through laboratory methods, primarily parasitological techniques. Smear microscopy, involving microscopic examination of stained samples (Giemsa stain) obtained by scraping, aspiration, or biopsy of the lesion to identify amastigotes, is a rapid and inexpensive technique. However, it may not identify the species, and its sensitivity can vary (around 85%). Parasite culture in specialized media (e.g., NNN medium) from lesion samples is considered the definitive diagnostic method and allows for species identification, although it can be slow (up to 4 weeks) and have low sensitivity (around 40%) due to contamination; microculture techniques may have higher sensitivity. Skin biopsy with histopathological examination of hematoxylin and eosin-stained samples to visualize amastigotes within macrophages is also useful and can help rule out other conditions, although its sensitivity may be around 60% and it does not identify the species. Polymerase chain reaction (PCR) is a highly sensitive and specific molecular technique for detecting *Leishmania* DNA in lesion samples, allowing for rapid diagnosis and species identification; it can be particularly useful in cases with low parasite load or to rule out infection by *L. braziliensis*. The availability and performance characteristics of the different diagnostic techniques (sensitivity, specificity, speed, cost, species identification) should guide method selection based on the clinical context and resources available in Mexico. PCR stands out as a valuable tool, especially in certain situations. Information on sample collection techniques (e.g., from the base or edge of the ulcer) and the importance of proper lesion preparation are practical considerations for accurate diagnosis.

Immunological tests, such as serological tests for antibody detection, have limited value in cutaneous leishmaniasis, as many patients do not develop a significant antibody response, and cross-reactivity with *Trypanosoma cruzi* can occur. They

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are more useful for visceral leishmaniasis. The Montenegro skin test (leishmanin skin test) is not approved in the United States, and its availability in Mexico is not explicitly mentioned in the fragments. It detects a delayed-type hypersensitivity response to *Leishmania* antigens and is usually positive in cutaneous and mucocutaneous leishmaniasis but negative in active visceral leishmaniasis. It is important to emphasize the limited utility of serological tests in cutaneous leishmaniasis to avoid reliance on these methods for diagnosis of this form of

the disease. Cutaneous leishmaniasis can mimic various other skin conditions, making differential diagnosis crucial. Differential diagnoses to consider in Mexico include insect bites, traumatic ulcers, pyogenic granulomas, foreign body granulomas, mycobacterial infections (cutaneous tuberculosis, atypical mycobacteria), fungal infections (paracoccidioidomycosis, histoplasmosis), leprosy, sarcoidosis, sporotrichosis, syphilis, and skin tumors

Table: Diagnostic Methods for Cutaneous Leishmaniasis in Mexico:

Diagnostic Method	Sample Type	Advantages	Disadvantages	Sensitivity (approx.)	Specificity (approx.)	Species Identification
Smear (direct smear)	Lesion scraping, aspiration, biopsy	Fast, economical	Not always species-identifying, variable sensitivity	85%	Unavailable	No
Cultivation	Aspiration of the lesion, biopsy	Definitive diagnosis, allows identification of the species	Slow (up to 4 weeks), low sensitivity, risk of contamination	40%	Unavailable	Yes
Biopsy	Skin biopsy	Helps rule out other conditions	Moderate sensitivity, does not identify species, invasive	60%	Unavailable	No
PCR	Lesion scraping, aspiration, biopsy	High sensitivity and specificity, fast, identifies species	Cost, not always wide availability	High	High	Yes
Serology	Blood	Useful for visceral leishmaniasis	Limited value in cutaneous leishmaniasis, possible cross-reactivity	Casualty	Casualty	No

Treatment: The general goals of cutaneous leishmaniasis treatment include clinical cure, scar reduction, and prevention of parasitic spread and relapse. Treatment decisions should

consider the number, size, and location of lesions, the species of *Leishmania* (if known), the risk of mucosal involvement, the patient's immune status, and potential drug toxicities. Many

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localized infections can resolve spontaneously, but treatment can speed healing and reduce the risk of complications. It is important to emphasize the goal of clinical cure over parasitological cure. The multifactorial approach to treatment planning underscores the need for individualized patient management based on comprehensive assessment.

Clinical case: A 25-year-old male patient with the following important history: allergies to medicines and foods: denied, surgical: tonsillectomy at 7 years, no complications, traumatological denied, hospitalizations in the last 6 months: denied, chronic-degenerative diseases: asthma since childhood without treatment currently, infectious and contagious diseases of childhood: chickenpox and hepatitis C without specifying age and/or treatment.

Male patient originally from Venezuela, with a history of recent admission to Mexico (Chiapas, December 18, 2024) and subsequent transfer to the State of Mexico (December 22, 2024). He reported multiple bites by arthropods (ticks/flies) during his stay in Chiapas.

Her current condition began on approximately December 19, 2024, with the appearance of a skin lesion in the right anterior tibial region. Subsequently, he progressively develops additional injuries in: anterior region of the right knee, posterior region of the right thigh, anterior region of the left knee and distal anterior region of the left biceps. All lesions were clinically characterized as suppurative, with erythema, heat, and local pain. (fig.1), (fig.2), (fig.3)



Figure 1 Skin ulcers in the proximal third of the left lower limb



Figure 2 Suppurative ulcer anterior tibial region of the right lower limb



Figure 3 Multiple skin ulcers in the lower limbs

The patient received multiple therapeutic regimens in previous outpatient clinics without obtaining significant clinical improvement. These included courses of oral antibiotics (doxycycline, dicloxacillin), nonsteroidal anti-inflammatory drugs (naproxen, ibuprofen), antihistamines (loratadine), antiparasitics (ivermectin, albendazole), and various topical treatments (combination

betamethasone/clotrimazole/gentamicin, fusidic acid, gauze impregnated with Triticum vulgare/2- Phenoxyethanol).

Given the persistence and torpid evolution (fig. 4), (fi.5), a culture of the secretion from one of the lesions was performed on February 24, 2025, the result of which (received on March 14, 2025) reported **serum leishmaniasis** and bacterial superinfection by *Staphylococcus haemolyticus*. After the etiological diagnosis, treatment was instituted with oral linezolid, topical fusidic acid, and ibuprofen. The patient denies accompanying systemic symptoms such as fever, asthenia,

dynamia, attack on general condition or respiratory distress. He is afebrile, tolerates the oral route and has preserved diuresis.

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Figure 4 suppurative skin ulcers lower limbs **Figure 5** suppurative ulcer right knee

Treatment of skin ulcers with cures continued. Antibiotic therapy directed according to antibiogram, with clinical improvement of skin lesions. Subsequently, treatment is started with GLUCANTIME ampule (meglumine antimoniate) 1.5 (fig.6) (fig.7)

grams/5 milliliters box with 5 ampoules, dilute 3 ampoules in 250 milliliters of 5% glucose solution in continuous intravenous infusion to pass in 30 minutes, for 20 DAYS.



Figures 6,7 Wounds in the process of re-epithelialization



Figure 8 Wound of the middle third of the left lower limb in the process of reepithelialization



Figure 9 Wound on knee and left lower limb in the process of reepithelialization

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Takeaways:

Management of Suspected Cutaneous Leishmaniasis

1. Patient Presentation:

- Patient presents with cutaneous ulcer(s) or nodule(s).

2. Initial Assessment:

- Obtain detailed history:
 - Travel history (specifically to endemic regions within Mexico or internationally)
 - Residence history
 - History of insect bites
 - Timeline of lesion development
 - Previous treatments and their responses
- Perform a thorough physical examination:
 - Document lesion characteristics (size, location, morphology, borders, base, presence of satellite lesions, etc.)
 - Assess for lymphadenopathy.

3. Differential Diagnosis:

- Consider and rule out other potential causes of cutaneous ulcers (e.g., bacterial infections, fungal infections, mycobacterial infections, traumatic ulcers, tumors, etc.).

4. Diagnostic Testing (if suspicion remains):

○ Parasitological Tests (Priority):

- **Smear Microscopy:** Obtain sample via scraping, aspiration, or biopsy. Stain with Giemsa. Examine for amastigotes.
- If positive: Presumptive diagnosis of cutaneous leishmaniasis. Proceed to treatment (Step 6).
- If negative: Consider other tests due to imperfect sensitivity.
- **Culture:** Inoculate lesion sample into specialized media (e.g., NNN).
- If positive: Confirmed diagnosis of cutaneous leishmaniasis. Species identification possible. Proceed to treatment (Step 6).
- If negative: Consider other tests due to imperfect sensitivity, particularly if clinical suspicion is high.
- **Biopsy:** Obtain skin biopsy for histopathology. Stain with hematoxylin and eosin. Examine for amastigotes within macrophages.

○ Molecular Tests (Highly Recommended, if available):

- **PCR:** Perform PCR on lesion sample to detect *Leishmania* DNA.
- If positive: Confirmed diagnosis of cutaneous leishmaniasis. Species identification possible. Proceed to treatment (Step 6).
- If negative: Consider other diagnoses or repeat testing if suspicion remains very high.

○ Immunological Tests (Limited Value):

- Serology: Generally not recommended for cutaneous leishmaniasis due to low sensitivity and potential for cross-

reactivity.

5. Diagnosis Confirmation:

- Based on clinical findings and laboratory results, confirm or reject the diagnosis of cutaneous leishmaniasis.
- If *Leishmania* is confirmed, attempt species identification if possible (important for treatment decisions).
- Assess for secondary bacterial infections (culture and sensitivity testing if indicated).

6. Treatment Planning:

- Consider the following factors:
 - Number, size, and location of lesions
 - *Leishmania* species (if known)
 - Risk of mucosal involvement
 - Patient's immune status and comorbidities
 - Potential drug toxicities
- Develop an individualized treatment plan based on these factors and national/international guidelines.

7. Treatment Options:

- **Local Treatment:** (May be suitable for small, uncomplicated lesions)
 - Intralesional antimonials
 - Thermotherapy
 - Cryotherapy
- **Systemic Treatment:** (For multiple lesions, lesions near mucosal sites, or treatment failures)
 - Pentavalent antimonials (e.g., meglumine antimoniate/Glucantime)
 - Miltefosine
 - Amphotericin B
 - Azoles (e.g., ketoconazole, itraconazole)
- **Address Secondary Infections:**
 - Appropriate antibiotics based on culture and sensitivity results.

8. Monitoring and Follow-Up:

- Monitor patient for treatment response and potential adverse effects.
 - Follow-up to assess for clinical cure (resolution of lesions) and scar formation.
 - Consider further treatment if relapse occurs.

Notes:

- This is a simplified algorithm and should be used in conjunction with clinical judgment and current guidelines.
- The availability of specific diagnostic tests and treatments may vary depending on the location and resources.
- Consult with a specialist in infectious diseases or dermatology for complex cases.
- The specific treatment regimen should be tailored to the individual patient.

CONCLUSIONS

Cutaneous leishmaniasis represents a significant public health

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problem in Mexico, especially in certain endemic regions. Its main clinical manifestation is skin ulcer, with "gum ulcer" as a distinctive variant. Diagnosis is based on clinical suspicion, supported by epidemiological history and confirmation by various laboratory techniques, with parasitological (smear, culture, biopsy) and molecular (PCR) being the most relevant. Treatment of cutaneous leishmaniasis in Mexico is multifaceted, with local options such as intralesional antimonials, thermotherapy, and cryotherapy, and systemic treatments including pentavalent antimonials, miltefosine, amphotericin B, and azoles. The choice of treatment should be individualized considering the characteristics of the patient, the lesion and national and international guidelines.

REFERENCES

- I. Secretaría de Salud. Guía para la Atención Médica de la Leishmaniasis en México. 2022.
- II. WHO. Leishmaniasis.
- III. Dialnet. Leishmaniasis cutánea: Revisión clínica, epidemiológica y terapéutica. 2022.
- IV. Dermatología CMQ. Leishmaniasis cutánea en placa, una forma inusual de presentación clínica. 2024.
- V. Revista Médica Sinergia. Leishmaniasis: evaluación clínica y diagnóstico. 2022.
- VI. Revista UNIANDES de Ciencias de la Salud. Revisión al diagnóstico y prevención de 7. Leishmaniasis en el Mundo en humanos. 2025.
- VII. Revista de Enfermedades Infecciosas en Pediatría. ARTÍCULO ORIGINAL-Estudio de seroprevalencia de leishmaniasis en Ensenada, Baja California, México. 2021.
- VIII. Revista Médica Sinergia. Leishmaniasis cutánea: una mirada a la clínica, diagnóstico y tratamiento de esta enigmática enfermedad. 2021.
- IX. Revista Mexicana de Dermatología. Tratamiento alternativo de la leishmaniasis cutánea.
- X. Revista Biomédica. Leishmaniasis cutánea en el estado de Quintana Roo, México. 2008.
- XI. Dermatología Cosmética, Médica y Quirúrgica. Leishmaniasis cutánea. Evolución natural de un caso y su tratamiento. 2015.
- XII. Dermatología Cosmética, Médica y Quirúrgica. Leishmaniasis tratado con itraconazol. 2021.
- XIII. Revista Biomédica. Leishmaniosis, a 110 años de su primera publicación. 2023.
- XIV. Revista Mexicana de Pediatría. Diagnóstico y tratamiento de la leishmaniasis visceral infantil. 2010.
- XV. LOS Neglected Tropical Diseases. Efficacy of azole therapy for tegumentary leishmaniasis: A systematic review and meta-analysis. 2017.
- XVI. Infection and Chemotherapy. Treatment of cutaneous leishmaniasis and information on
- XVII. Journal of Public Health and Emergency. Diagnostic methods for tegumentary leishmaniasis: a review of the literature. 2023.
- XVIII. Case Reports in Dermatology. Cutaneous Leishmaniasis in a Non-endemic Area in Mexico. 2023.
- XIX. Revista Centro Dermatológico Pascua. Leishmaniasis cutánea localizada. 2020.