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## Document heading

## Leishmaniasis in the knee area

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## ABSTRACT

Leishmaniasis is a parasitic infection caused by species leishmaniae, which can produce two types of manifestations: visceral and cutaneous. In south America cutaneous leishmaniasis is more common than visceral leishmaniasis. A case of primary cutaneous leishmaniasis from Bolivia is presented for its rarity. The patient of our case showed an ulcerated lesion of the knee. Montenegro's intradermal test was positive. Giemsa-stained touch preparation of the skin biopsy revealed amastigotes inside macrophages, consistent with leishmaniasis. The patient was treated with meglumine antimoniate intramuscular (20 mg of Sb+/kg/day) three weeks, with complete cicatrization of the lesion.

## 1. Introduction

Leishmaniasis designates a human disorder produced by protozoan parasites of the genus *Leishmania*. There are four major clinical types of this infection: cutaneous, diffuse cutaneous, mucocutaneous, and visceral[1]. The clinical manifestations of leishmaniasis depend on the interaction between the characteristic virulence of the species and the host's immune response[2]. The cutaneous form of the disease, is one of the most important causes of chronic ulcerative skin lesions. Cutaneous leishmaniasis (CL) is characterized by the development of single or multiple localized lesions on exposed areas of skin that typically ulcerate and generally heal spontaneously within 3–6 months[1]. We present one case of cutaneous leishmaniasis in the knee area, a very unusual localization.

## 2. Case report

A man of 52 years old silver mine worker from Cerro Rico, Potosi Municipality, Bolivia, presented with a two-months history of an ulcerative lesion over the knee. At physical examination, an ulcerated lesion of 8 cm×13 cm in diameter, with an indurated base and raised, infiltrative borders was noted (Figure 1). The rest of the skin was normal. There was no history of pain and tenderness. He had no history of fever, weight loss or weakness. Clinical

examination showed no significant abnormality. No regional lymphadenopathy or clinical signs of visceral involvement were detected. On investigations, chest X-ray did not show any abnormality. A complete blood cell count and blood chemistries gave results within normal limits. *Leishmanin* skin test was positive: indurated papule, 22 mm diameter. An excision biopsy of the lesion was done and routine histopathological examination was done. Histopathological study showed ulceration of epidermis and a diffuse inflammatory infiltrate in the dermis composed of lymphocytes, histiocytes, plasma cells and giant cells with granuloma formation and presence of *Leishmania amastigotes*. Culture was attempted in RE III medium but was unsuccessful because of overgrowth of yeast. The diagnosis of cutaneous leishmaniasis was made. The patient was treated with meglumine antimoniate intramuscular (20 mg of Sb+/kg/day) during three weeks and with fully healed lesion at the end of therapy. The patient tolerated the medication well and did not require hospitalization. 2 years followup showed no evidence exists of cutaneous, mucous, or visceral involvement.

## 3. Discussion

*Leishmania* is a protozoa that may infect the skin, mucous, and viscera. The geographical distribution of CL is mainly determined by the sandfly vectors. CL is an infectious disease caused by protozoa of the gender *Leishmania*, transmitted by stings of female insects of the gender *Phlebotomus* in the old world and *Lutzomyia* in the new world. The old world cutaneous leishmaniasis comprise three species - *Leishmania tropica*, *Leishmania major* and

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*Leishmania aethiopica*. The areas of disease are Middle East, Northern Africa, Sub Saharan Africa, East Asia and Southern Europe. The species of cutaneous leishmaniae of the new world are more numerous and more difficult to classify. They produce disease that are more chronic than old world. The species are—*Leishmania braziliensis*, *Leishmania mexicana*, *Leishmania guyanensis*, *Leishmania panamensis*, *Leishmania peruviana*. The areas of disease are South America and the Carribean Islands where the preferred term is "Tegumentary" or mucocutaneous leishmaniasis. Morphology and histology of the cutaneous leishmania of the old and new world are similar<sup>[3]</sup>.



**Figure 1.** Clinical aspects of the lesion when the patient sought treatment at the University Hospital.

In the last years, an increment of the number of cutaneous leishmaniasis in in the poor working conditions of Cerro Rico in Potosi, Bolivia, have been observed. In this patient, the clinical characteristics of the lesion suggested CL. After biopsy and histopathological study, the diagnosis of leishmaniasis was confirmed. The patient informed the habit of sleeping undressed and outside the house. There are few published cases of leishmaniasis located in the knee area, settling down in most of them that the lesions are due to direct inoculation of the parasite<sup>[1]</sup>. Some authors suggest that the genital localization can result in the possible blood dissemination. The diagnosis of cutaneous leishmaniae is usually made on clinical grounds like endemic area, clinical presentation and origin of the patient<sup>[2,4]</sup>.

While low-grade silver is still extracted from the Cerro Rico mines, zinc is now the most profitable metal for the miners of Potosi. The silver "boom" days gradually came to an end in the early 1800's as the mines became depleted. However, as many as 8 000 miners still try to earn a living in the Cerro Rico mines, also known as Cerro Potosi. The miners, many of whom are local Quechua-speaking Indians, now work in small co-operatives. They work, albeit collectively for themselves. While the days of slavery have thankfully come to an end, conditions and techniques within the mines of Cerro Rico have changed little. The shaft network is primitive, poorly lit and inadequately ventilated, with temperatures often reaching 48 °C<sup>[5]</sup>.

Where power cables are present, they are often poorly maintained and often exposed. Elevators are not installed for moving between levels. The Bolivian miners squeeze through small crawl spaces and climb old wooden ladders to access the deep-cut extremes of the Potosi mines. Within the cramped depths of the Cerro Rico mine the workers

hammer iron rods into the rock face, progressing slowly before removing the rod and sliding dynamite into the newly formed hole. Retreating to a supposedly safe distance, fuses are then used to detonate the explosives. This process creates a newly exposed area in which to mine<sup>[5]</sup>.

In areas where leishmaniasis is endemic such as in the south America countries, even in the absence of an appropriate history of exposure to *Leishmania*, such a possibility may be kept in mind for any ulcerated lesion<sup>[6]</sup>. The definitive diagnosis depends on demonstrating either amastigotes in tissue or promastigotes in culture<sup>[7]</sup>. The diagnosis in our case was based on the presence of amastigotes in the stains with Giemsa technique and hematoxylin and eosin, which may quickly yield a diagnosis in some patients. Differential diagnosis for CL includes secondarily infected insect bite, sporotrichosis, or more rarely cutaneous tuberculosis; early detection of the infection is necessary in order to start effective treatment and prevent more serious complications<sup>[8]</sup>. The reported case presented an unusual localization of cutaneous leishmaniasis, which should be outlined mainly in those patients coming from endemic areas, being the key to practice necessary complementary exams to confirm the diagnosis<sup>[9]</sup>.

### Conflict of interest statement

We declare that we have no conflict of interest.

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