



Clinical Case Report

Gaining a “Foothold” on the Diagnosis of Leishmaniasis

Brent M. Troy^{1*}, MD, MPH; Rebecca Hart¹, MD, MSc; Naviyot Vidwan¹, MD, MPH; Bethany Hodge¹, MD, MPH

¹University of Louisville Department of Pediatrics, Louisville, KY, USA

*brentm.troy@gmail.com

Abstract

Pediatric refugees and immigrants may present with unusual diagnoses due to their extensive migration and potential harsh conditions in travel. Trauma and family separation add to the difficulty of obtaining a history of exposures. We report a case of one of the more commonly neglected tropical diseases, Leishmaniasis. A 15-year-old male refugee patient presented to the hospital with ulcerative lesions to his legs. His migration history was extensive, starting in Central Africa with travel to South America, followed by migration through Central America to Texas. The patient developed ulcerative lesions on his legs, and he was brought to the children's hospital by his refugee organization, where the diagnosis was ultimately confirmed as Leishmaniasis. Providers should become familiar with tropical diseases that refugees, as well as local populations, may acquire from travel. Specifically, pediatricians should become familiar with the more prevalent “neglected” tropical diseases as recommended by the World Health Organization.

Introduction

Medicine, as a whole, in the United States (U.S.) is evolving with increased travel among the patient population, along with the introduction of refugee populations. Patients may present to U.S. hospitals with unique/rare findings after spending time in other regions throughout the world. We present a patient who is a refugee with an extensive travel history including portions of Central America, South America, and Central Africa. The patient presented to the hospital with ulcerative skin lesions on his lower extremities for approximately 6 months and was diagnosed with Leishmaniasis.

Case Presentation

A 15-year-old male refugee patient presented to the pediatric emergency department with ulcerative skin lesions on his bilateral lower extremities that began approximately six months prior to his attention to medical care. The patient was born in the Democratic Republic of Congo, but he left that country at an early age, living in Angola and Brazil until the past year. Subsequently, the patient's family traveled overland with other migrants from Brazil to the U.S./Mexico border. He then spent time in a Texas immigration center prior to being placed in Kentucky by a refugee commission. The patient was reluctant or unable to remember many details from his long and traumatic journey, making the timeline and location of exposures very difficult. Further complicating the history, he had been separated from his family at several points in his life (including at the U.S./Mexico border). Additionally, he spoke a different language than his mother. He recalled an unknown insect bite prior to the initial lesion development, as well as several scratches and minor injuries, but denied any major trauma to the area.

He was initially treated at a rural hospital in Kentucky near his assigned refugee housing. There, he received wound care with topical cleaning, a one-time dose of Ceftriaxone, and was discharged with oral Cephalexin and bandages. The outside hospital treatment team and local refugee workers were concerned that the wound was quite large and had not improved after several weeks with this treatment regimen, so he was referred to our facility (a tertiary, urban children's hospital) for further evaluation. On arrival, his physical exam was unremarkable except for the lesions (**Figure 1** and **Figure 2**) and he was afebrile. He complained only of pruritus and mild discomfort with walking and running.

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Figure 1. This is a photo of the patient's original presentation skin lesion.



Figure 2. This is a photo of the patient's original presentation skin lesion.

X-ray imaging of his bilateral lower extremities demonstrated only soft tissue involvement with no signs of osteomyelitis. A blood culture was obtained and negative. Malaria, Syphilis and Tuberculosis testing were also negative. A fungal panel including *Coccidioides*, *Blastomyces*, *Aspergillus* and *Histoplasma* serology was negative. Wound aerobic, anaerobic, fungal, and acid-fast bacilli stain/culture of the skin were negative. Dermatology was then consulted for skin biopsies of the lesions. Initial pathology was negative for intracellular organisms, fungal elements, acid-fast organisms, spirochetes, and malignancy with a final diagnosis of marked nonspecific chronic dermatitis and reactive change with plasma cells present. Consultation with Infectious Diseases led to increased suspicion for Leishmaniasis due to the presence of ulcerative skin lesions in the setting of recent immigration through Central America. As a result, the case was discussed with the CDC Leishmaniasis division. Universal bacterial and fungal PCRs were sent to the University of Washington for further testing, of which his universal fungal PCR resulted positive for Leishmaniasis.

Discussion

Leishmaniasis is a parasitic disease that most commonly causes skin sores and can, in certain cases, impact the internal organs. In review of CDC data, the disease is found in approximately 90 countries and on every continent except for Antarctica and Australia. [1] Despite its prevalence, Leishmaniasis is considered one of the "neglected" tropical diseases due to the number of people impacted annually, as well as the limited financial support for treatment and research of the disease. [2,3] The disease can be found in diverse settings from deserts to rain forests, and it is strongly associated



Figure 3. This is a photo of the patient's skin lesion after treatment.

with malnutrition, migrant populations, poor housing conditions, and those with immune deficiencies. [2] Leishmaniasis is also strongly associated with poverty, which often leads to a delay in diagnosis and potential treatment to decrease morbidity and mortality. [4] Leishmaniasis is transmitted via an infected female phlebotomine sand fly. The sand fly ingests the parasite when feeding on an infected mammal host, and then infects other potential hosts when biting the skin with the parasite in its mouth. Symptoms typically develop weeks to months after the bite. [1] An estimated 1.6 million new cases occur each year. [5]

Per CDC guidelines, there are 3 major types of Leishmaniasis: mucosal, visceral and cutaneous. [1] Cutaneous Leishmaniasis is the most common form of the disease, presenting with localized skin findings beginning as papules, then developing into nodules and eventually ulcerative lesions with central depression and circumferential crusting (**Figures 1 and 2**). [1] In addition to the typical skin findings, visceral Leishmaniasis carries the highest risk of mortality, as it affects the internal organs within the first few months of the disease. Mucosal Leishmaniasis is the least common, presenting with skin manifestations along with involvement of the mucosa of the nose, mouth, or throat. [1] Our patient suffered from the most common form, cutaneous Leishmaniasis, with symptoms localized to the lower extremities and no other evidence of disease involvement.

Cutaneous Leishmaniasis can be classified as New or Old World disease. Old World disease is found in Asia, Europe, and Africa, while New World disease is found in the tropical and subtropical regions of the Americas. [6] The differentiating factor between the two is the genus of sand fly that causes the disease. Both types start with a painless papule that occurs within a few weeks of a sand fly bite and can progress to an ulcer over the next few months, but New World Leishmaniasis is more commonly associated with a destructive mucocutaneous lesion. [6]

Per CDC guidelines, treatment is first directed at appropriate classification of the type of Leishmaniasis. [1] Cutaneous Leishmaniasis is often self-resolving, but treatment should be considered when the wound is large, persistent, or causing comorbidity, particularly if there is a risk for mucosal/visceral development or to help accelerate skin lesion healing. [7] Treatment with oral Miltefosine for 28 consecutive days is typically adequate, with assessment at the end of the 28-day period to consider continuing the medication. Important to note, large ulcers, as seen in this case, will not fully heal and resolve until after completion of Miltefosine therapy. [1] Treatment may be more challenging among patients co-infected with human immunodeficiency virus (HIV), and is unfortunately very costly, leading to poor outcomes among poverty-stricken populations. [4] Additionally, in some communities, there is a growing resistance to routine therapy leading to difficulties in treatment. [8]

Our patient was originally discharged from the hospital on Gentamicin, Mupirocin, and Ketoconazole along with wound care while pathology and the CDC evaluated the biopsies. At initial dermatology clinic follow-up, he was started on Fluconazole due to limited improvement. Due to the progressive nature of his disease, once PCR confirmed the diagnosis of Leishmaniasis, he was started on Miltefosine in discussion with the CDC. At later follow-up, the patient had significant improvement in the ulcerative lesions while completing therapy with Fluconazole and Miltefosine along with daily topical Mupirocin (**Figure 3**).

Conclusion

Pediatric refugee and immigrant children may present with unusual diagnoses due to the extensive international movement and harsh conditions they experience as part of migration. Trauma and family separation may add to the difficul-

ty of obtaining history of exposures. Providers should consider not only the country of origin, but also all the places the child has lived or moved through when contemplating possible diagnoses.

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Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. Norton Children's Hospital has the original consent form signed by patient and medical staff. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Author Contributions

Drs. Brent Troy, Rebecca Hart, Navjyot Vidwan, and Bethany Hodge conceptualized and designed the study, drafted the initial manuscript, and reviewed and revised the manuscript. All authors approve the final manuscript as submitted and agree to be accountable for all aspects of the work.

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