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Research

Cutaneous leishmaniasis in travellers and migrants: a 10-year case series in a Canadian reference centre for tropical diseases

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Abstract

Background: Cutaneous leishmaniasis is increasingly encountered in returned travellers and migrants to nonendemic countries. We sought to describe the clinical characteristics and treatment outcomes of cases of cutaneous leishmaniasis diagnosed at our reference centre over a 10-year period.

Methods: This case series included all laboratory-confirmed cases of cutaneous leishmaniasis in travellers and migrants for whom complete clinical data were available, diagnosed between January 2008 and October 2018 at the J.D. MacLean Centre for Tropical Diseases in Montréal. We examined the number of cases each year. We used descriptive statistics to summarize variables (e.g., demographic characteristics, travel history, clinical presentation, diagnostic methods, treatments, adverse events) extracted from the patients' electronic medical records. The primary outcome for evaluating clinical response to treatment was defined as the complete re-epithelialization of the wound surface at 1 year.

Results: We identified 48 patients who received diagnoses of cutaneous leishmaniasis in the 10-year study period, including 33 exposed in the Americas and 15 exposed in other regions (median age 43.5 [range 1–75] yr); 28 [58%] males). The annual number of cases increased from 9 in 2008/09 to 16 in 2017/18. The median time from onset to diagnosis was 89 (IQR 58–134) days. Liposomal amphotericin B was the most commonly used initial treatment (20 [53%] patients). Thirty-five patients completed their follow-up, and 11 had successful response to 1 course of liposomal amphotericin B. Adverse events (including acute kidney injury, increased pancreatic enzymes and fatigue) were reported in 6 (30%) patients. Clinical cure was achieved within 1 year for 32 (91%) of the 35 patients who completed follow-up.

Interpretation: This study showed an increase in the number of cases of cutaneous leishmaniasis seen in our centre over the study period, likely because of increased travel and migration. This diagnosis should be considered in travellers and migrants with a chronic cutaneous lesion.

Cutaneous and mucosal leishmaniasis are protozoan infections transmitted by the bite of female sandflies. This tropical disease affects 700 000 to 1 million new individuals annually.[1] Close to 20 species of *Leishmania*, belonging to 2 main subgenera (*Leishmania* and *Viannia*), are involved in human leishmaniasis. Cases of cutaneous leishmaniasis mainly occur in the Americas (New World leishmaniasis), as well as in the Mediterranean basin, the Middle East and Central Asia (Old World leishmaniasis).

The clinical presentation of cutaneous leishmaniasis depends on various factors, including the acquired species, strains and virulence factors, as well as host characteristics, such as age, gender and immune status.[2,3] The lack of awareness of this disease among physicians in nonendemic countries, as well as varied clinical manifestations, may result in delayed diagnosis.[4]

Competing interests: Momar Ndao reports funding from the McGill Interdisciplinary Initiative in Infection and Immunity. Cédric Yansouni reports funding from Fonds de recherche du Québec, consulting fees from Medicago, participation on an independent data monitoring committee for a phase 3 trial of a SARS-CoV-2 vaccine and a role as scientific advisor with the COVID-19 Immunity Task Force. Makeda Semret reports participation with data safety monitoring boards for SARS-CoV-2 vaccine studies and with the COVID-19 Immunity Task Force. Michael Libman reports funding from the Centers for Disease Control and Prevention, consulting fees for participation with an advisory board on education in travel medicine and a role as chair of the Committee to Advise on Tropical Medicine and Travel with the Public Health Agency of Canada. All competing interests are outside the submitted work. No other competing interests were declared.

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Polymerase chain reaction (PCR) has better sensitivity (97%–100%) for the diagnosis of leishmaniasis than direct visualization of the parasite (33%–57%) or culture (67%).[5] Speciation is an important step in the diagnosis of cutaneous leishmaniasis and an invaluable tool to inform therapeutic approaches and prognosis; it should be performed when available.[2,6]

Treatment of cutaneous leishmaniasis can be challenging, as there is no universally applicable approach. Management should be individualized according to several factors, such as the *Leishmania* species, host immune status, mucosal involvement, and the location, size and number of lesions.[6] Treatment may be local (e.g., paromomycin preparations, cryotherapy, heat therapy) or systemic (e.g., pentavalent antimonials, miltefosine, azoles and amphotericin B) and is believed to reduce scarring and to prevent disease progression, dissemination, subsequent mucosal leishmaniasis and relapse.[5–7]

A recent study by the GeoSentinel Surveillance Network of cutaneous and mucosal leishmaniasis in travellers and migrants in the past 20 years showed a slow increase of cases per 10 000 travellers encountered in the past decade.[8] Very few studies have reported the clinical experience of tropical medicine clinics in North America regarding diagnosis and outcomes of cutaneous leishmaniasis.[9,10]

We sought to describe the clinical and microbiological characteristics and treatment-related outcomes of all cases of cutaneous leishmaniasis encountered over a 10-year period in our centre. By sharing our experience, we aim to raise awareness of this disease among clinicians who may encounter these cases in their practices, including primary care physicians, dermatologists and infectious diseases specialists.

Methods

Study design and setting

We conducted a retrospective descriptive study of patients with cutaneous leishmaniasis diagnosed or referred to the outpatient clinic at the J.D. MacLean Centre for Tropical Diseases, Montréal, between January 2008 and October 2018. The J.D. MacLean Centre for Tropical Diseases, one of the largest tropical medicine centres in North America, provides medical care to travellers and migrants. It is also part of the GeoSentinel Surveillance Network (www.geosentinel.org). This case series was reported using the Preferred Reporting of Case Series in Surgery (PROCESS) checklist.[11]

Participants

We included all patients (returned travellers and migrants of all ages) assessed in our centre who had a confirmed diagnosis of cutaneous leishmaniasis by a positive smear, histopathology, culture or PCR. Exclusion criteria were the absence of a laboratory-confirmed diagnosis of cutaneous leishmaniasis and cases of post–kala-azar dermal leishmaniasis, since it is a complication of visceral leishmaniasis. We also excluded patients assessed only by teleconsultation and cases where expert opinion was provided to the treating physician without assessing the patient.

Data sources

We identified patients from our paper and electronic logbook, in which all patients from the clinic are reported, using the search term "cutaneous leishmaniasis." We collected data from the patients' electronic medical charts using a data extraction form. Data were extracted from charts by 1 of 2 reviewers (A.L. and F.L.) from January to June 2018. Data were verified for accuracy by the expert reviewer (S.B.).

Outcome and variables

Our primary outcome was the clinical response to treatment, defined as the complete re-epithelialization (regeneration of the epithelium covering the wound surface) at 1 year after the initiation of treatment, as evaluated by the treating physician.[12] We extracted demographic characteristics, travel history, clinical presentations, previous consultations, diagnostic methods, treatments and adverse events. The purpose of travel was adapted from GeoSentinel Surveillance Network definitions.[8]

We evaluated the immune status of every patient from their medical charts. We defined immunosuppression as the presence of any of the following: primary immunodeficiency; hematologic malignancies; oncologic malignancies; hematopoietic stem cell transplantation (allogenous or autologous); solid organ transplantation, HIV infection; rheumatologic, connective tissue or other autoimmune disorders; and iatrogenic conditions. The latter included cancer chemotherapy, radiation therapy, long-term high-dose steroid treatment (i.e., prednisone equivalent of ≥ 2 mg/kg/d or 20 mg/d if weight > 10 kg, for ≥ 14 d), cytotoxic drugs, calcineurin inhibitors, biological response modifiers and antibodies that target lymphocytes.[13]

Statistical analysis

We determined the number of cases per year over the study period. We used descriptive statistics to summarize patient demographic, epidemiologic and clinical data. Missing data were excluded from the analysis. We grouped patients by exposure region (Old World or New World). Categorical variables were expressed as frequencies and percentages; we compared Old World and New World groups using χ^2 and Fisher exact tests, where appropriate. Continuous variables were expressed as means and standard deviations or as median and interquartile ranges (IQRs); we compared Old World and New World groups using the Student *t* test or the Mann–Whitney Test (for non-normally distributed variables). Differences between groups were considered significant if p values were less than 0.05. We evaluated the sensitivity of the different methods of detecting cutaneous leishmaniasis using a composite reference standard, defined as a lesion that was clinically and epidemiologically consistent with leishmaniasis and at least 1 positive laboratory test.[14] Statistical analyses were performed using STATA version 14.2.

Ethics approval

The study was approved by the McGill University Health Centre research ethics review board.

Results

We identified 52 patients from our centre's records over the 10-year study period. Of these, we excluded 4 patients who did not have a laboratory-confirmed diagnosis of cutaneous leishmaniasis. Twenty-eight patients (58%) were male, and the median age was 43.5 years (IQR 24.5–58.5 yr, range 1–75 yr) (Table 1). Five patients (10%) were younger than 18 years (range 1–12 yr). The patients' regions and countries of birth are presented in Appendix 1, Supplemental Table 1, available at www.cmajopen.ca/content/10/2/E546/suppl/DC1. The median time from initiation of symptoms to diagnosis was 89 (range 11–496) days. Patients consulted a median of 2 physicians before being seen in our centre.

Table 1: Demographic and clinical characteristics of 48 returned travellers and migrants with cutaneous leishmaniasis, 2008–2018

Characteristic	No. (%) of patients*			*p* value
	Total *n* = 48	Old World exposure *n* = 15	New World exposure *n* = 33	
Gender				0.3
Male	28 (58)	7 (47)	21 (64)	
Female	20 (42)	8 (53)	12 (36)	
Age, yr, median (IQR)	43.5 (24.5–58.5)	53 (31.5–62)	36 (24–54)	0.2
Traveller type				0.6
Returned traveller	43 (90)	14 (93)	29 (88)	
Migrant	5 (10)	1 (7)	4 (12)	
Immune status				0.6
Immunocompetent	46 (96)	14 (93)	32 (97)	
Immunocompromised	2 (4)	1 (7)§	1 (3)¶	
Region of exposure				–
North or Central America	24 (50)	–	24 (73)	
South America	9 (19)	–	9 (27)	
North Africa	5 (10)	5 (33)	–	
Sub-Saharan Africa	3 (6)	3 (20)	–	
Middle East	5 (10)	5 (33)	–	
South or Central Asia	1 (2)	1(7)	–	
East Asia	1 (2)	1(7)	–	
Purpose of travel (among returned travellers, *n* = 43)				0.02
Tourism	24 (56)	5 (33)	19 (58)	
Visiting friends and relatives	7 (16)	6 (40)	1 (3)	
Work or business	5 (12)	2 (13)	3 (9)	
Education or research	2 (5)	0 (0)	2 (6)	
Volunteer or aid worker	5 (12)	1 (7)	4 (12)	
Duration of travel (among returned travellers, *n* = 43), d, median (IQR)	42 (21–90)	60 (23–94)	36 (27–75)	0.5
Time from initiation of symptoms to diagnosis, d, median (IQR)	89 (58–134)	98.5 (90–146)	84 (57–127)	0.2
No. of physicians consulted before visit to reference centre, median (range)†	2 (0–5)	2 (1–5)	2 (0–3)	0.3
No. of course of systemic or topical antibiotics before visit to reference centre, median (range)‡	1 (0–4)	1 (0–3)	1 (0–4)	0.4

Note: IQR = interquartile range.
*Unless indicated otherwise.
†Data missing for 2 patients.
‡Data missing for 1 patient.
§Patient with systemic lupus erythematosus on low-dose prednisone and hydroxychloroquine.
¶Patient with HIV with CD4 count at low end of normal range.

Of the 15 patients with cutaneous leishmaniasis exposed in Old World regions, the most common regions of exposure were the Middle East (*n* = 5, 33%), North Africa (*n* = 5, 33%) and sub-Saharan Africa (*n* = 3, 20%). Of the 31 patients with cutaneous leishmaniasis exposed in New World regions, the most common countries of exposure were Costa Rica (*n* = 11, 35%) and Mexico (*n* = 7, 23%). Appendix 1, Supplemental Table 2 presents a list of all countries of exposure.

Among the 43 patients who were returned travellers, the most common purposes of travel were tourism (*n* = 24, 50.0%) and visiting friends and relatives (*n* = 7, 14.6%). Travellers exposed in New World regions were more likely to travel for tourism, and those exposed in Old World countries were more likely to visit friends and relatives ($p = 0.028$). Migration-related cases accounted for 10% of patients (*n* = 5); 3 patients were refugees (from Iran, Syria and Haiti), including two 12-year-old children who presented with chronic lesions of 6–12 months' duration. The median duration of travel was 42 (IQR 21–90) days, and 12.5% of patients travelled for 2 weeks or less.

Eleven (22.9%) patients had a diagnosis of cutaneous leishmaniasis established before coming to our centre. Nineteen (40%) patients consulted a dermatologist before being referred for suspicion of cutaneous leishmaniasis. Two (10%) of those 19 patients had a diagnosis of cutaneous leishmaniasis confirmed before being referred. We noted a gradual increase in the number of annual cases of cutaneous leishmaniasis throughout the years, from 9 (2008/09) to 16 cases (2017/18).

Clinical characteristics

Patients with Old World cutaneous leishmaniasis presented more often with a plaque (*n* = 9, 60%), whereas most of the patients with New World cutaneous leishmaniasis presented with an ulcer (*n* = 28, 85%; $p < 0.001$) (Table 2). Nine (19%) patients presented with adenopathy, all of whom were exposed in New World regions ($p = 0.02$). No patient in this study had mucosal involvement. The face and neck (*n* = 14, 29%) and the lower extremities (*n* = 15, 31%) were the main areas involved (Figure 1). Figure 2 presents clinical photographs of the lesions from some patients.

Table 2: Clinical characteristics of the lesions from cutaneous leishmaniasis

Characteristic	No. (%) of patients*			*p* value
	Total *n* = 48	Old World exposure *n* =15	New World exposure *n* = 33	
No. of lesions				0.2
Single	23 (48)	5 (33)	18 (55)	
Multiple	25 (52)	10 (67)	15 (45)	
Mean	2.54	3.00	1.00	0.08
Median (IQR)	2 (1–3)	2 (1–4.5)	1 (1–3)	
Range	1–11	1–11	1–11	
Size†				0.8
> 5	35 (75)	12 (80)	23 (72)	
< 5	12 (25)	3 (20)	9 (28)	
Longest diameter, cm, mean ± SD	3.5 ± 2.3	3.4 ± 2.5	3.6 ± 2.2	0.2
Morphology				< 0.001
Ulcer	33 (69)	5 (33)	28 (85)	
Plaque	12 (25)	9 (60)	3 (9)	
Nodule	3 (6)	1 (7)	2 (6)	
Lymphangitis				0.3
Yes	7 (15)	1 (7)	6 (18)	
No	41 (85)	14 (93)	27 (82)	
Adenopathy				0.02
Yes	9 (19)	0 (0)	9 (27)	
No	39 (81)	15 (100)	24 (73)	
Bacterial coinfection				0.7
Yes	11 (23)	3 (20)	8 (24)	
No	37 (77)	12 (80)	25 (76)	

Note: IQR = interquartile range, SD = standard deviation.
*Unless indicated otherwise.
†*n* = 47 for this variable.

Diagnostic methods

Polymerase chain reaction had the best sensitivity (98%) compared with the other diagnostic methods (64%–68%) (Table 3). Speciation was available for 43 of the 48 cases. The top 3 species were *L. (V.) panamensis* (53.5%), *L. mexicana* (16.3%) and *L. major* (16.3%) (Appendix 1, Supplemental Table 3).

Treatment

Information regarding the treatment plan was available for 47 patients (Table 4). Patients who did not receive treatment were either lost to follow-up or were clinically cured when referred to our centre. Of the 38 patients who received a first-line treatment, the most used treatment was liposomal amphotericin B (n = 20, 53%). Thirteen patients received a second-line treatment. The most used second-line treatments were liposomal amphotericin B (n = 4, 31%) and oral fluconazole (n = 3, 23%).

Clinical outcomes

Thirty-five of the 48 patients (73%) had a complete follow-up 1 year after initiation of treatment. Of these, 32 (91%) were cured. Among patients who completed their follow-up and received only 1 course of liposomal amphotericin B, 11 (69%) responded successfully. When liposomal amphotericin B was used either as the first- or second-line treatment, 75% of patients were clinically cured at 1 year.

Adverse events were evaluated for 20 (80%) patients of the 24 who received liposomal amphotericin B. A total of 6 patients (30%) had adverse events; 3 (50%) of these patients had acute kidney injury. The other adverse events reported were shortness of breath during infusion, increased pancreatic enzymes and fatigue.

In patients with Old World cutaneous leishmaniasis, 12 (80%) had a complete follow-up after 1 year and 10 (83%) were cured; among patients with New World cutaneous leishmaniasis, 23 (70%) had a follow-up after 1 year and 22 (96%) were cured.

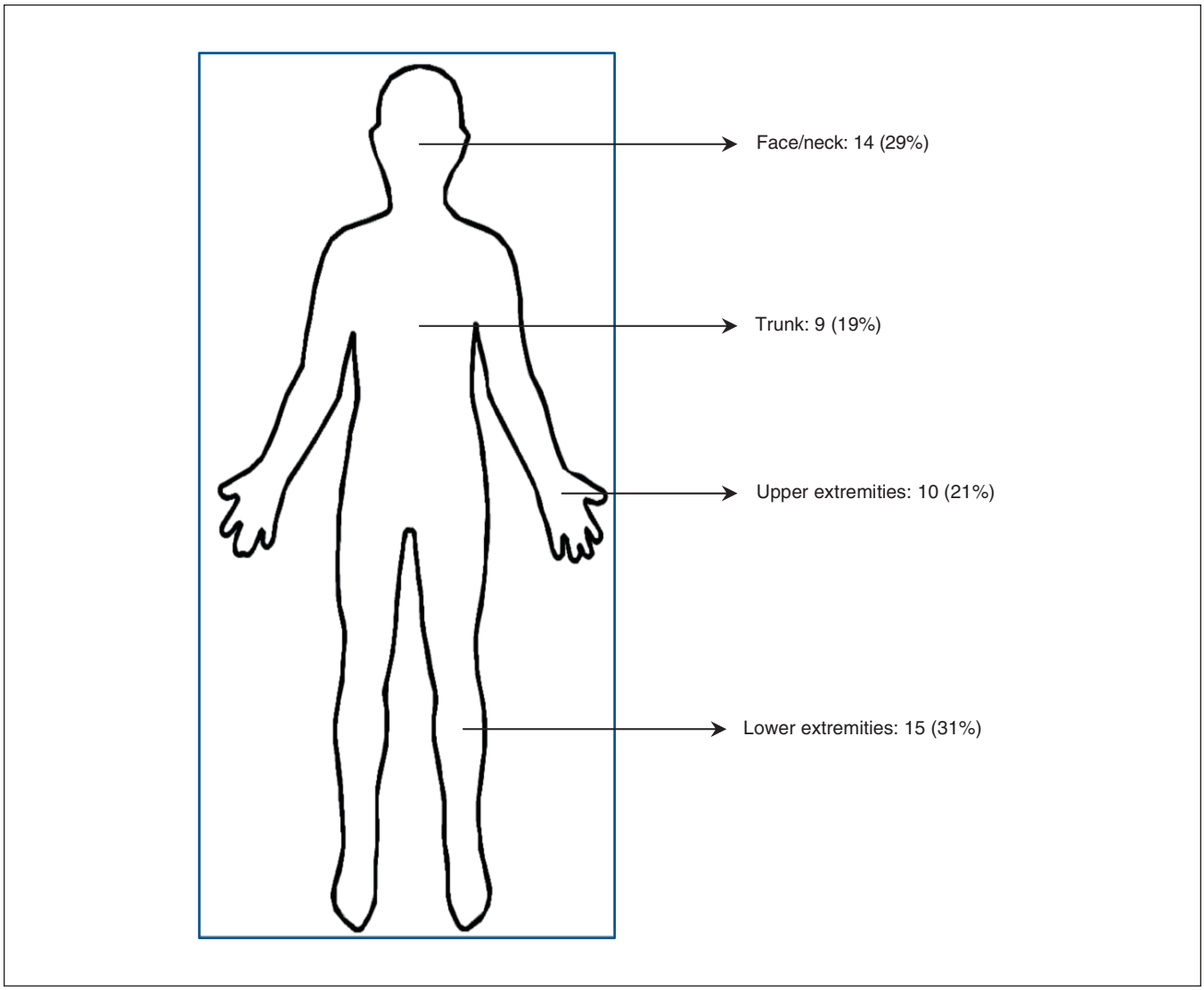

Figure 1: Locations of the main (i.e., most prominent) lesion for each patient (n = 48). We did not identify any significant differences in location between patients with cutaneous leishmaniasis who were exposed in the Old World (Mediterranean basin, Middle East, Central Asia) or the New World (Americas) (p = 0.24).

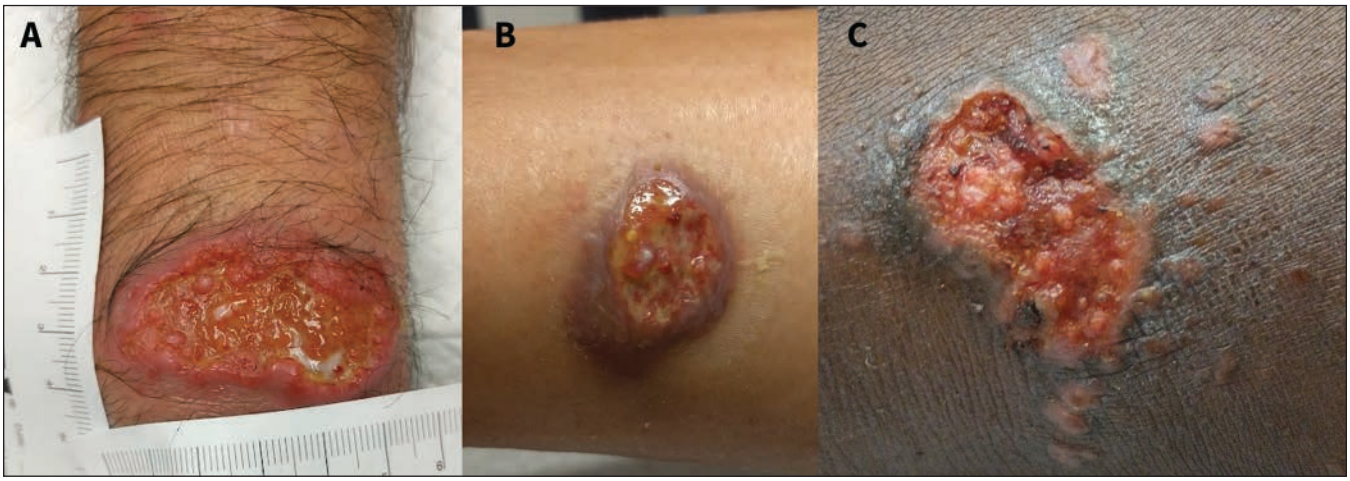

Figure 2: Clinical photographs of cutaneous leishmaniasis. A) A solitary ulcer with raised erythematous borders, caused by an infection of *Leishmania (Viannia) braziliensis* acquired in French Guinea. B) An ulcer with thick violaceous and raised borders, caused by an infection of *L. tropica cutaneous leishmaniasis* acquired in Pakistan. C) A large, crusted ulcer with satellites papules, caused by an infection of *L. (Viannia) panamensis* acquired in Colombia. All photographs from Sapha Barkati, McGill University Health Centre, Montréal, Que.

Table 3: Sensitivity of diagnostic methods

Method	No. of cases	No. of cases with positive result	Sensitivity,* %
Smear	37	25	68
Histopathology	28	18	64
Culture	37	24	65
PCR	43	42†	98

Note: PCR = polymerase chain reaction.
*We evaluated sensitivity using a composite reference standard, namely a lesion that was clinically and epidemiologically consistent with cutaneous leishmaniasis and at least 1 positive test result.
†One specimen was negative by PCR and positive by histopathology. In that case, fresh tissue was not available and PCR was performed from fixed, paraffin-embedded tissue, decreasing PCR sensitivity.

Interpretation

Our clinic saw an increased number of annual cases of cutaneous leishmaniasis over the 10-year study period, from 9 cases (2008/09) to 16 cases (2017/18). An increase in cases has also been reported by the GeoSentinel Surveillance Network, as well as in a recent retrospective observational study in Sweden.[8,15]

In our study, patients with cutaneous leishmaniasis who were exposed in New World regions were more likely to travel for tourism, particularly to Costa Rica and Mexico. In Central America, Costa Rica reports the highest burden of cutaneous leishmaniasis, with an estimated annual incidence of 3500 to 5700 cases.[16] As previously reported, New World cutaneous leishmaniasis is increasingly seen in tourist travellers and may represent a change in popular travel destinations, as travel in Latin America is increasingly common.[8,17] Traveller behaviour, such as ecotourism, may also result in increased risk. Conversely, we observed that Old World cutaneous leishmaniasis was seen mostly among travellers to North Africa, West Africa and the Middle East who were visiting friends and relatives. This finding reflects the regions of origin of the migrant population in Montréal.

A similar difference in purpose of travel between patients with cutaneous leishmaniasis who were exposed in Old World or New World regions has been described recently.[8] In our study, 10% of cases were related to migration and 3 patients were refugees from Iran, Syria and Haiti. Two of the refugees were children, both age 12 at diagnosis and both presenting with chronic lesions of 6–12 months' duration before the diagnosis was made. This highlights the vulnerability of this group to acquire leishmaniasis, as well as their difficulties in accessing care.[18]

In our study, the median duration of travel was 42 (IQR 21–90) days, but in 12.5% of cases, the travel duration was 2 weeks or less, which illustrates that cutaneous leishmaniasis is not only an infection of long-term travellers.[8] This also reinforces the need for better pretravel counselling about protective measures to minimize vector exposure.[6]

In our study, the median time between symptom onset and diagnosis was 89 (range 11–496) days, and patients consulted a median of 2 (range 0–5) physicians before being referred to our centre. These findings illustrate the diagnostic challenges and lack of awareness of cutaneous leishmaniasis in non-endemic settings, but could also partly be explained by referral bias, with more complex and atypical cases being referred to

Table 4: First- and second-line treatments used to treat cutaneous leishmaniasis

Treatment	No. (%) of patients who received first-line treatment			No. (%) of patients who received second-line treatment		
	Total *n* = 47	Old World exposure *n* = 15	New World exposure *n* = 32	Total *n* = 16	Old World exposure *n* = 8	New World exposure *n* = 8
Local	2 (4)	2 (13)	0 (0)	4 (25)	3 (38)	1 (12)
Systemic	36 (77)	12 (80)	24 (75)	9 (56)	3 (38)	6 (75)
No treatment	9 (19)	1 (7)	8 (25)	3 (19)	2 (25)	1 (12)
Specific treatment*	38 (81)	14 (93)	24 (75)	13 (81)	6 (75)	7 (88)
Liposomal amphotericin B	20 (53)	4 (29)	16 (67)	4 (31)	1 (17)	3 (43)
Oral fluconazole	10 (26)	5 (36)	5 (21)	3 (23)	1 (17)	2 (29)
IV pentavalent antimonial	4 (11)	3 (21)	1 (4)	2 (15)	1 (17)	1 (14)
Topical paromomycin	1 (2.5)	1 (7)	0 (0)	2 (15)	1 (17)	1 (14)
Pentamidine	1 (2.5)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
Topical paromomycin with fluconazole	1 (2.5)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
IL pentavalent antimonial	1 (2.5)	1 (7)	0 (0)	1 (8)	1 (17)	0 (0)
Cryotherapy	0 (0)	0 (0)	0 (0)	1 (8)	1 (17)	0 (0)

Note: IL = intralesional, IV = intravenous.
*Percent frequencies are a proportion of all patients who received a specific treatment.

our centre. Delayed diagnosis has also been observed in other case series.[19–21] Diagnostic delay has also been observed in endemic settings such as Spain.[20]

Although the numbers are small in our study, it appears that there is a difference in morphology at initial presentation between Old World and New World cutaneous leishmaniasis. We observed that Old World cutaneous leishmaniasis initially presented more often as plaques, whereas New World cutaneous leishmaniasis presented more commonly as ulcers. New World cutaneous leishmaniasis was also more frequently associated with adenopathy. *L. (V.) panamensis* was the most common species diagnosed in our patients, illustrating the propensity of species of the *Viannia* subgenus to cause a substantial inflammatory response with lymphatic involvement.[17,19,22]

L. major was the most identified species among cases of Old World cutaneous leishmaniasis, with 57% of the lesions presenting as plaques. Patients received diagnoses between 50–102 days after the initiation of symptoms. *L. major* can spontaneously heal within 2 to 6 months; therefore, the healing process may have started in those patients before a diagnosis was made, with an impact on the morphology seen at initial presentation to our centre.[6]

No cases of mucosal leishmaniasis were seen in our centre during the study period. Several species of the *Viannia* subgenus have a strong association with mucocutaneous and mucosal leishmaniasis, *L. (V.) braziliensis* having the strongest association. In our study, only 3 patients had *L. (V.) braziliensis*; *L. (V.) panamensis* was the most common *Viannia* species in our study. The GeoSentinel Surveillance Network analysis on cutaneous leishmaniasis has also shown that all travel-related cases of mucocutaneous leishmaniasis were caused by *L. (V.) braziliensis*, despite *L. (V.) panamensis* being the most reported *Viannia* subgenus species.[8]

The diagnostic method with the highest sensitivity was PCR (98%), confirming the findings of others.[3] The other methods (smear, culture and histopathology) had sensitivities ranging from 64% to 68%. These numbers are consistent with what has been described in the literature.[5] The importance of speciation has been increasingly recognized as it facilitates the choice of optimal treatment and has an important prognostic value. Species can sometimes be inferred from region of exposure, but travellers may have multiple possible exposures and the geographic distributions of some species are evolving. Systemic treatment is usually recommended for *Viannia* subgenus infection because it appears to reduce the risk for subsequent mucosal involvement.[2,6] Molecular speciation has not been well standardized, but various methodologies are available in most high-resource settings.[2]

Liposomal amphotericin B was used to treat over half of the patients, which represents the most used first-line treatment in our study. Among patients who completed the follow-up, 69% were cured at 1 year. The clinical cure rate was 75% when patients received liposomal amphotericin B as either the first- or second-line treatment. Liposomal amphotericin B may be better tolerated and is more readily available than pentavalent antimony in Canada, which explains why it is the most used agent in our centre. There are no controlled clinical trials of liposomal amphotericin B for cutaneous leishmaniasis. Available data come mainly from observational studies. The treatment response rate is variable, in the range of 72%–88% in some studies of Old World and New World species; more recent studies have described response rates as low as 46% when looking at clinical cure at 90 days and 63%

when delayed healing and a second course of liposomal amphotericin B were included.[23–29] In our study, 30% of patients who received liposomal amphotericin B had adverse events, with acute kidney injury being the most common (50%). Rates of adverse events with liposomal amphotericin B in the treatment of cutaneous leishmaniasis have been reported to be as high as 46%–53%.[26,28]

Limitations

Although this study represents a small number of individuals, a strength of our study is the inclusion of detailed clinical and outcome data. Our centre includes the national reference laboratory for parasitology, which allows easy access to speciation, and results were available for most of our cases. Documentation of treatment response at standardized time points was difficult to obtain retrospectively. Furthermore, 27% of patients were lost to follow-up within a year. Some of these returned to their consulting institution for further treatment and follow-up, but others may have been cured. Thus, our clinical cure rate may be an underestimation.

Conclusion

This study showed an increase in the number of cases of cutaneous leishmaniasis over the study period, likely because of increased travel and migration. The use of liposomal amphotericin B is common in North America because it is familiar and easily available, but we add to the literature showing that treatment response rates are modest and adverse events are common. More studies are needed to quantify the effectiveness of liposomal amphotericin B for cutaneous leishmaniasis compared with other agents. Physician awareness is essential to identify patients with skin lesions who are at risk for cutaneous leishmaniasis.

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