Localized cutaneous leishmaniasis: A case report

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ABSTRACT:

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Leishmaniasis is not a common disease in Thailand. There are many species of *Leishmania* , which cause several forms of leishmaniasis. The diagnosis is based on the identification of the parasite by direct visualization in various clinical specimens, by cultures, and by molecular technique. The treatment option is based upon the clinical form as well as the causative species. We report a case of 61-year-old Thai male with localized cutaneous leishmaniasis caused by *Leishmania major*, which he contracted while working in Saudi Arabia. He was successfully treated with oral fluconazole combined with cryotherapy.

Key word: Leishmaniasis, Cutaneous leishmaniasis, Leishmania

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บทคัดย่อ:

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หน่วยโรคผิวหนัง ภาควิชาอายุรศาสตร์ คณะแพทยศาสตร์โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล

Leishmaniasis เป็นโรคที่พบไม่บ่อยในประเทศไทย เชื้อโปรโตซัวในวงศ์ *Leishmania* ที่เป็นสาเหตุของโรคนี้มีหลายชนิด ซึ่งก่อโรคได้หลายแบบ การวินิจฉัยทำได้โดยการตรวจพบเชื้อโปรโตซัวจากการดูด้วยกล้องจุลทรรศน์ การเพาะเชื้อ และการตรวจวิเคราะห์ทางอณูชีวโมเลกุล วิธีการรักษาผู้ป่วยขึ้นกับชนิดของโรคและเชื้อโปรโตซัวที่เป็นสาเหตุ รายงานผู้ป่วยฉบับนี้ นำเสนอผู้ป่วยโรค leishmaniasis เฉพาะที่ผิวหนัง ซึ่งเกิดจากเชื้อ *Leishmania major* ซึ่งผู้ป่วยได้รับขณะทำงานที่ประเทศซาอุดิอาระเบีย ได้รับการรักษาด้วยยา fluconazole ชนิดรับประทาน ร่วมกับการพ่นไนโตรเจนเหลว

คำสำคัญ: ลีชมาเนีย, โรคลีชมาไนอะสิส

Case report

A 61-year-old Thai man with alcoholic cirrhosis was admitted for the treatment of upper gastrointestinal hemorrhage. A dermatological consultation on a solitary plaque on his left cheek was made. The lesion was first noticed 7 months earlier as a small papule, which gradually enlarged. He recalled being bitten by an insect on his left cheek a few weeks before the lesion appeared, while he was working as a labor in Saudi Arabia. A local physician attempted an aspiration from the lesion, and did not give him any other topical or systemic treatment. After his return to Bangkok, he was treated by an internist with fusidic acid cream, which was of no avail. He denied any other skin lesions, weight loss, or prolonged fever. He has a past history of alcoholic cirrhosis and esophageal varices, but was otherwise healthy. Physical examination revealed a solitary, well-defined, slightly elevated, erythematous plaque with verrucous surface, scales, and crusts on the left cheek. (Figure 1) No fever, lymphadenopathy, or hepatosplenomegaly was noted. Complete blood count showed anemia, which was due to the gastrointestinal bleeding, but normal leukocyte and platelet counts. The liver enzymes were within normal limits. Anti-HIV was negative. Approximately 0.1 ml of normal saline solution was injected into the border of the lesion, then aspirated back and sent for Giemsa stain. Punch biopsy was performed on the border of the lesion and sent for histopathology, cultures, and PCR for species identification of *Leishmania*.

Giemsa stain of the aspirated fluid showed numerous parasites in amastigote form within white blood cells. (Figure 2) Histopathology revealed a dense diffuse inflammatory cell infiltrate of epithelioid histiocytes, surrounded by lymphocytes and plasma cells in the entire dermis. The cytoplasm of histiocytes

were filled with blue-gray, round-to-oval (Donovan) bodies which were stained positive with Giemsa (Figure 3) but negative with PAS and GMS stains. Tissue cultures for aerobes, fungi, and mycobacteria were negative. Tissue PCR was positive for *Leishmania major*. Thus, the diagnosis of cutaneous leishmaniasis was made.

Figure 1 Before treatment.

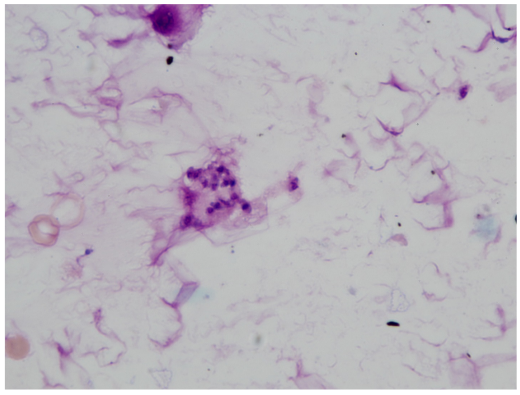

Figure 2 Giemsa stain of lesional aspirate.

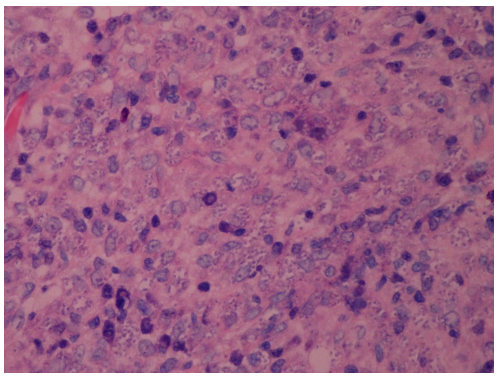

Figure 3 Giemsa stain of skin biopsy.

Figure 4 After treatment with 4 sessions of cryotherapy and 18 weeks of oral fluconazole.

The treatment with oral fluconazole 200 mg daily and cryotherapy with liquid nitrogen sprayed from a nozzle held 2 cm away from the lesion and a freeze-thaw-freeze time of 15-20-15 seconds fortnightly for 6 weeks were originally planned. However, at the end of the initial 6 weeks there was some induration remaining in the lesion. Therefore, an additional course of oral fluconazole was continued until the induration completely disappeared, which took 18 weeks in total. (Figure 4) At the 3-month post-treatment visit, there were no signs of recurrence.

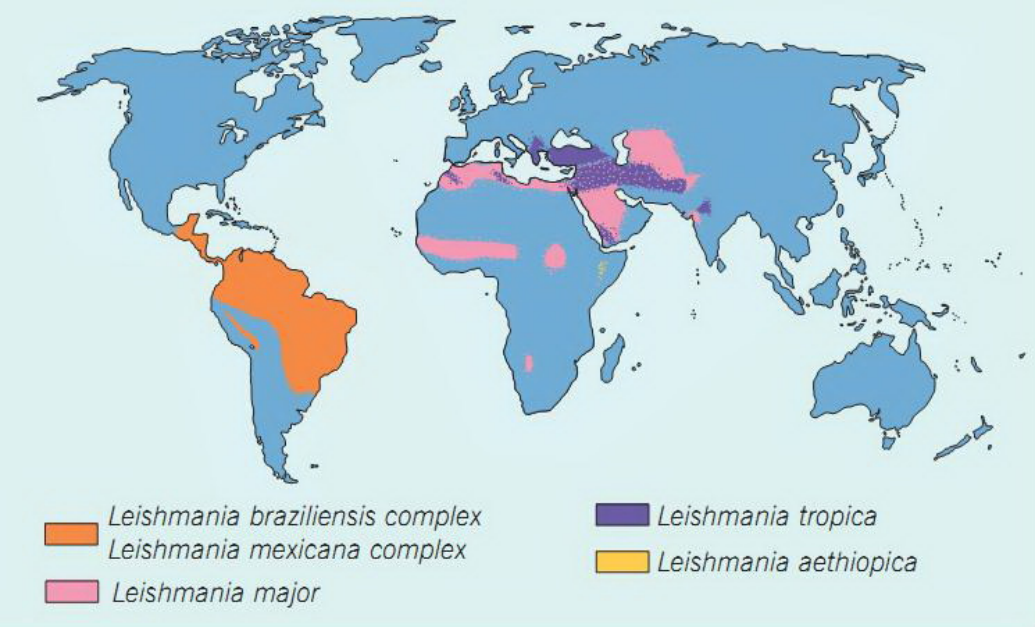

Figure 5 Geographic distribution of cutaneous leishmaniasis according to causative organism.[11]

Discussion

Leishmaniasis is a group of diseases caused by several species of the protozoa in the genus *Leishmania*. There are several forms of leishmaniasis, the major ones of which are cutaneous leishmaniasis, diffuse cutaneous leishmaniasis, mucocutaneous leishmaniasis, and visceral leishmaniasis. The species of *Leishmania* may be classified on the basis of their geographic distribution into 2 main groups: [1] old world *Leishmania* spp such as *L. major*, *L. tropica*, *L. aethiopica*, *L. donovani* which cause the disease in Africa, Asia, and Europe, and [2] new world *Leishmania* spp including *L. braziliensis* complex and *L. mexicana* complex which are the causative agents in Central and South America.[1] (Figure 5) The skin lesions of cutaneous leishmaniasis typically begins as a papule which occurs after the sandfly bite, enlarges to a nodule, and ulcerates over 1-3 months. Flat, verrucous, or hyperkeratotic lesions can also develop in old world cutaneous leishmaniasis.[2]

Although *L. siamensis* was recently identified as a species causing several cases of autochthonous visceral leishmaniasis in both HIV-infected and normal hosts in Thailand,[3-5] in the overall leishmaniasis is a very rare disease in this country. Autochthonous cutaneous leishmaniasis has also been reported in a 3-year-old healthy Thai girl, but the species of the causative *Leishmania* could not be identified.[6]

Table 1 Laboratory methods for diagnosing cutaneous leishmaniasis.

Method	Time required	Advantages	Disadvantages
Giemsa stain of • Skin scraping • Lesional aspirate • Biopsy smear	Minutes to hours	• Inexpensive • Easy to perform	• Less sensitive • Not able to identify species
Histopathology	Days		
Culture and PCR	Days	Able to identify species	Requiring specialized facility and personnel

Table 2 Treatment regimens for cutaneous leishmaniasis.[2]

Causative organism		Treatment regimen	Cure rate at 3 months
Old world	*L. major*	Observation alone	60-70%
		Pentavalent antimony: IL 1 ml per lesion every other day X 8–15 injections or every 1–2 wk X 3–8 injections	≥ 75%
		Pentavalent antimony: IM/IV 20 mg/kg/day X 10 days	N/A
		Fluconazole: oral 200 mg once-daily X 6 weeks	90%
		Paromomycin: topical bid X 2 weeks	N/A
	L. tropica	Pentavalent antimony: IL (as above) weekly X 8–11 (average)	≥ 90%
		Pentavalent antimony: IM/IV 20 mg/kg/day X 10 days	Not well documented
New world	*L. mexicana*	Observation alone	> 75%
		Pentavalent antimony: IM/IV 20 mg/kg/day X 10 days	90%
	L. panamensis	Pentavalent antimony: IM/IV 20 mg/kg/day X 20 days	80-90%
		Miltefosine: oral 2.5 mg/kg/day X 28 days	80-90%
		Pentamidine: IM 2 mg/kg every other day X 7 injections	60-95%
	L. braziliensis	Pentavalent antimony: IM/IV 20 mg/kg/day X 20 days	80-90%
		Pentamidine: IM 2 mg/kg every other day X 7 injections	< 50%
	Other species	Pentavalent antimony: IM/IV 20 mg/kg/day X 20 days	80-90%

Despite the development of the PCR-based molecular techniques, parasitological diagnosis remains the gold standard in diagnosing cutaneous leishmaniasis.[7] This can be made through microscopic demonstration of the parasites in amastigote form in Giemsa stain of biopsy smears, skin scrapings, aspirates, or histopathological specimens, and through cultures. Wright stain may also be used for skin scrapings when Giemsa stain is not available.[8] Identification of the species can be done by PCR or cultures, which are particularly useful in research or clinical settings in non-endemic countries.[7] (Table 1)

Our patient presented with a chronic, scaly, and verrucous plaque on the face which led to the initial differential diagnosis of chronic infection (e.g., tuberculosis verrucosa cutis, chromoblastomycosis), non-infectious inflammation (e.g., hypertrophic discoid lupus erythematosus), and neoplasia (e.g., squamous cell carcinoma), which are common diseases in dermatological practice in Thailand. However, his history of having worked and having been bitten by an insect in Saudi Arabia inevitably put cutaneous leishmaniasis in the differential diagnosis. The diagnosis of cutaneous leishmaniasis was made by visualizing amastigotes in lesional aspirate and biopsy specimen. The causative agent was identified as *L. major* by PCR.

Most lesions of old world cutaneous leishmaniasis can spontaneously resolve within 2-4 months (*L. major*) or 6-15 months (*L. tropica*), and therefore may require no treatment.[2] However, treatment is likely to be given for persistent (longer than 6 months), multiple, or large lesions, and for lesions located on joints or on the face.[7] Parenteral antimony was reported to be successful in treating both old world and new world cutaneous leishmaniasis. However, this drug was not available in our hospital. The choice of treatment can be made according to the causative species.[2,9] Treatment with oral fluconazole 200 mg daily for 6 weeks was reported to yield high cure rates. Our patient was decided to receive treatment because he had a persistent, large lesion on the face. He could not visit our clinic every week and therefore could not receive the weekly cryotherapy regimen which was previously reported to produce a high cure rate.[10] As a result, the frequency of cryotherapy was reduced to every 2 weeks and oral fluconazole was used in combination with cryotherapy. At the end of the first 6 weeks of treatment, most part of the lesion became depigmented as a result of cryotherapy, but there was still some induration. Consequently, cryotherapy was stopped, and oral fluconazole therapy was continued until the lesion became completely flat. The total treatment duration was 18 weeks. On his follow-up visit at 3 months post-treatment, there were no signs of recurrence.

In conclusion, we report a case of imported cutaneous leishmaniasis caused by *L. major*. He was successfully treated with an extended course of oral fluconazole, and 4 sessions of cryotherapy which had depigmentation as a complication.

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