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Original Article

Dermatoscopical features of cutaneous leishmaniasis

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Abstract

Introduction Cutaneous leishmaniasis can be diagnosed clinically. Skin smear, culture and polymerase chain reaction are helpful in the diagnosis. Dermatoscopy as diagnostic noninvasive technique used previously in some cases but with limited number of reports.

Materials and Methods Cross sectional study conducted on 26 patients with 152 cutaneous leishmaniasis lesions. These lesions were distributed into two groups; facial lesions (n=51) and lesion on other parts of the body (n=101). The obtained data analyzed through specialized software SPSS version 22.

Results Twenty six patients, 23(88.4%) males and 3 (11.6%) were females. Among facial lesions of cutaneous leishmaniasis the most common features was erythema (90.2%) while in case of skin lesions in other parts of the body central ulceration (90.1%) was the most common feature seen on dermatoscopy. Regarding blood vessels on dermatoscopy that was most frequently found were comma shaped structures (49%) and linear irregular blood vessels (51.5%) in facial and other parts of the body respectively.

Conclusion Findings of dermatoscopy vary according to body location of the skin lesions. Generalize erythema and central ulceration were the commonest features found on dermatoscopy of cutaneous leishmaniasis.

Key words
Cutaneous leishmaniasis, dermatoscopy, facial lesions, body lesions.

Introduction

Leishmaniasis are a group of diseases caused by several species of the protozoan parasite belongs to the genus Leishmania,[1,2] including (leishmania major, leishmania tropica, leishmania aethiopica, leishmania infantum) for old world leishmaniasis, and (Leishmania amazonensis, L. chagasi, L. mexicana, L. braziliensis) for new world leishmaniasis.[3,4]

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Transmission is by female phlebotomine sand-fly, more than 70 types identified, Phlebotomus in the Old world, and Lutzomyia in the new world leishmaniasis are the commonest types.[5]

Cutaneous leishmaniasis (CL) is the commonest form of leishmaniasis and has an estimated 1.5 million infections annually worldwide,[1] usually affect uncovered sites of the body such as face upper limbs and lower extremities. Initially, an erythematous papule is seen at the site of inoculation, papule enlarges and breaks, forming a painless ulcer with a well-demarcated raised border, making 0.5 to 10 cm diameter.[6] Eventually, the lesion becomes crusted at the center. When the crust is removed, a shallow ulcer is found, often with a raised and somewhat indurated border. In some cases the central part

of the nodule becomes hyperkeratotic, and a firmly adherent horn develops over the lesion. Small satellite papules may also be found at the periphery of the lesion. Occasionally subcutaneous nodules develop along the course of the proximal lymphatics.[7] A depressed scar is the final result after healing, which constitutes the main problem of this disease.[6] It may take 3–18 months to heal in over 90% of cases.[8]

In an endemic area, cutaneous leishmaniasis can be diagnosed by its clinical appearance. Laboratory diagnostic techniques such as slit skin smear, impression smears, culture and skin biopsy are required to facilitate diagnosis when the lesions of cutaneous leishmaniasis appear in a non-endemic area, when superadded infection alters the clinical picture or when any unusual variant is seen.[9]

Dermatoscopy is a noninvasive in vivo diagnosing technique that allows better visualization of the changes in superficial layers of the skin.[10,11] This technique provides additional information at a submacroscopic level that may help the dermatologist differentiate between two or more conditions that are hardly distinguishable with the naked eye.[12]

Now a days it is easy to diagnose pigmented skin tumors by using dermatoscope.[13,14] And more recently it is also used for non-pigmented skin disorders such as non-pigmented skin tumors, and inflammatory and infectious diseases.[15,16] There are a limited number of reports on dermatoscopic findings of cutaneous leishmaniasis.[10,11]

Material and Methods

Cross sectional study conducted on 26 patients with cutaneous leishmaniasis attending Erbil dermatology teaching center. Patients were diagnosed clinically by two separate dermatologists then the diagnosis confirmed microscopically by finding Donovan's body in the smears from the skin lesions. After that patients were evaluated dermatoscopically by experienced dermatoscopist. Totally the number of the lesions were 152. These lesions were distributed into two groups; facial lesions (n=51) and lesion on other parts of the body (n=101). Tools used in this study were special case sheet registry for evaluation of patients and the lesions of cutaneous leishmaniasis were examined by (Heine Delta 20 dermatoscope) adapted to (canon photo camera EOS 700 D). Photo for each lesion captured and saved for identification of dermatoscopic features. The obtained data analyzed through specialized software SPSS version 22.

Results

Total of 152 CL lesions been evaluated dermatoscopically out of 26 patients. Males were 23 (88.4%) and females were 3 (11.6%). Predominantly (21, 80.8%) the patients were Peshmargas forces members (official army of Kurdistan Region- Iraq) **(Table 1)**.

Duration of the disease was ranging from 1.0-5.5 months. Mean number of the lesions per one patient was 5.3±2.1. Majority of the lesions were nodular (103 lesions, 67.7%) (**Table 2)**.

Dermatoscopic features Facial lesions and body lesions were evaluated separately; taking in

Table1 General characteristics of the patients.

Characteristics	*No. (%)*
Age/ years (mean±SD)	24.3±10.9
Sex	
Male	23 (88.4%)
Female	3 (11.6%)
Occupation	
Child	2 (7.7%)
Student	2 (7.7%)
House wife	1 (3.8%)
Peshmarga	21 (80.8%)

Table2 Characteristics of CL lesions.

Character of lesions	*No. (%)*
Mean number of lesions/ patient±SD	5.3±2.1
Type of the lesions	
Papule	28 (18.4%)
Plaque	21 (13.8%)
Nodule	103 (67.8%)
Duration of lesions/ months (range)	1.0-9.5
Site of lesions	
Face	51 (33.5%)
Other sites of body	101 (66.5%)

Table 3 Dermatoscopic findings of CL lesions.

Dermatoscopic feature	*Face* *No (%)*	*Body* *No (%)*
Erythema	46 (90.2)	71 (70.3)
Hyperkeratosis	35 (68.6)	68 (67.3)
Yellow tears	30 (58.8)	50 (49.5)
Central ulceration	37 (72.5)	91 (90.1)
Central crust	7 (13.7)	45 (44.6)
Milia like cyst	1 (2.0)	16 (15.8)
Black dotes/ globules	11 (21.6)	10 (9.9)
White starburst pattern	28 (54.9)	60 (59.4)
Peripheral scaling	0 (0)	19 (9.9)
Peripheral erythema	1 (2.0)	12 (11.9)
Vascular structures:		
Red globule	3 (5.9)	16 (15.8)
Linear irregular	17 (33.3)	52 (51.5)
Arborizing	18 (35.3)	41 (40.6)
Hairpin	11 (21.6)	28 (27.7)
Glomerular	9 (17.6)	7 (6.9)
Dotted	12 (23.5)	50 (49.5)
Comma shaped	25 (49.0)	38 (37.6)
Polymorphous	23 (45.1)	41 (40.6)

consideration that dermatoscopy of the face skin is different from other parts of the body. We found 10 dermatoscopic features in the lesions and 8 vascular structures. The most common feature was erythema (90.2%) in facial lesions while in body lesions the commonest dermatoscopic features was central ulceration (90.1%) **(Table 3)**.

Facial lesions Following features were found: central ulcer (72.5%), hyperkeratosis (68.6%), yellow tears (58.8%), star burst pattern (54.9%), black dots/ globules (21.6%), central crust (13.7%) and milia like cyst (2.0%) **(Figure 1)**.

Body lesions Erythema (70.3%), hyperkeratosis (67.3%), white starburst pattern (59.4%), yellow tears (49.5%), central crust (44.6%), milia like cyst (15.8%), black dotes/ globules (9.9%) and peripheral scaling (9.9%) **(Figure 2)**.

Vascular structures In facial lesions the most common vascular structure was comma shaped structures (49%) followed by polymorphus blood vessels (45.1%), arborizing (35.3%), linear irregular (33.3%), dotted (23.5%), hairpin (21.6%) and red globule (5.9%) **(Table 1)**.

In other body regions most common vascular structure found on dermatoscopy was linear irregular blood vessels (51.5%) followed in order of frequency by dotted blood vessels (49.5%), polymorphus (40.6%), arborizing (40.6%), hairpin (27.7%), red globules (15.8%) and glomerular (6.9%) **(Table 1)**.

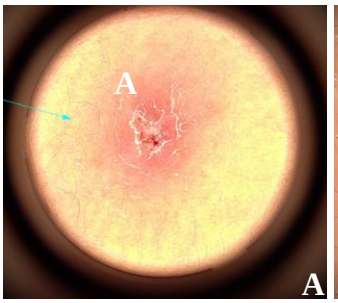
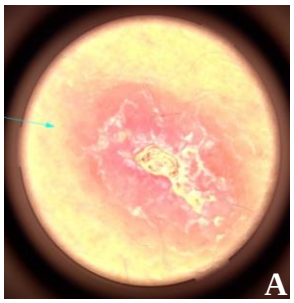


Figure1 Cutaneous leishmaniasis lesion on the face. A. Macro view B. Dermatoscopic view (20X): Scaling, erythema, ulceration.



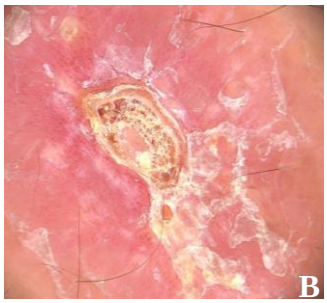


Figure 2 Cutaneous leishmaniasis lesion on the right leg. A. Macro view B. Dermatoscopic view (20X): Scaling, erythema, ulceration, yellow dots.

Discussion

One of the difficult moments of cutaneous leishmaniasis management is the diagnosis, as it can mimic a number of other dermatoses like, folliculitis, furuncle, cutaneous tuberculosis, pyogenic granuloma and sarcoidosis. In other hand in majority of situations especially in Iraq diagnostic tools are insufficient so that introduction of dermatoscope as a real time noninvasive diagnosis is significant.

Dermatoscopic findings and features of cutaneous leishmaniasis have been studied previously in the form of cases studies and some medium sized samples. As Iraq is one of endemic areas for cutaneous leishmaniasis, we tried to start investigating dermatoscopy of this disease in more details. We found out that there are some differences between our data and previous studies for e.g. Lambrich A and his co-authors[10] indicated that generalized erythema is present in all cases while in our study we found out that this feature is only available in 90.2% of facial lesions and 70.3% of body lesions. These differences may be due to fairer and thinner type of skin in their subjects than ours which could make erythema more obvious. This justification is also rational for the significant difference between erythema in facial and other body parts in the sample of our study, as the skin of face is more thin and delicate than other parts of the body.

The most common dermatoscopic feature of our study was erythema (90.2%) in facial lesions, this is mostly consistent with the studies done before, while central ulceration was the commonest feature in the lesions of other parts of the body (90.1%) this is significantly higher than previous data in the literature.[10]

The next significant dermatoscopic feature is yellow tears like structures which was present in 58.8% in facial lesions and 49.5% in body lesions. These frequencies are little bit higher than other studies findings. This may be due to more follicular hyper-keratinization in reaction to the more virulent species of leishmania in our locality.[10]

Hyperkeratosis another common dermatoscopic feature of CL lesions (facial lesion 68.6% and body lesions 67.3%), this is higher than that of Taheri AR *et al.* (33.3%).[17] This increases in hypekeratosis and yellow tear like structure, as mentioned formerly, signifies the idea of more strong reaction of epidermis in response to the disease which may again be due to more virulent species of CL in our region.

Vascular structures, however they are considered to be nonspecific, that were most commonly found is comma shaped vessels (49%) in facial lesions, this is much higher than data in other studies.[10,17] The commonest vascular structure in other body lesions was linear irregular blood vessels (51.5%), this is consistent with the findings of Yücel A *et al.*[18] which was present in 53.8% of the lesions.

In spite of the some differences between frequencies of dermatoscopic structures in comparison to other studies data, also within our study data there are differences of frequencies of dermatoscopic structures between lesions of face and those which are located on other parts of the body (upper limbs and lower limbs). These findings is alerting about the differences between the topographic locations of lesions that could have different appearance on dermatoscopy. Porriño-Bustamante *et al.* put data of different studies regarding dermatoscopic findings of CL,[19] in order to make our date versus mentioned studies to be presentable we added our findings to former mentioned author's table in the **Table 4 and 5.**

Table 4 Results of dermatoscopic features of CL: comparison our results with other studies.

Our study		*Lambirch A et al.*	*Taheri et al.*	*Yucel et al.*
Face	*Other body areas*			
Generalized erythema (90.2%)	Central ulceration (90.1%)	Generalized erythema (100%)	Generalized erythema (81.9%)	Generalized erythema (100%)
Central ulceration (72.5%)	Generalized erythema (70.3%)	Yellow tears (53%)	White starburst pattern (60.4%)	Yellow tears (40%)
Hyperkeratosis (68.6%)	Hyperkeratosis (67.3%)	Hyperkeratosis (50%)	Central ulceration (59%)	Central ulceration (35.2%)
Yellow tears (58.8%)	White starburst pattern (59.4%)	Central erosion/ ulceration (46%)	Yellowish hue (43.8%)	White starburst-like pattern (18.6%)
White starburst pattern (54.9%)	Yellow tears (48.5%)	Hyperkeratosis + erosion /ulceration (38%)	Yellow tear (41.7%)	Salmon colored ovoid structures (13.1%)
Black dotes/ globules (21.6%)	Central crust (44.6%)	White starburst-like pattern (38%)	Hyperkeratosis (33.3%)	Perilesional hypopigmented halo (2.8%)
Central crust (13.7%)	Milia like cyst (15.8%)		Milia-like cysts (4.9%)	
Peripheral erythema (2%)	Peripheral erythema (11.9%)			
Milia like cyst (2%)	Peripheral scaling (9.9%)			
	Black dotes/ globules (9.9%)			

Table 5 Results of dermatoscopic vascular patterns of CL: comparison our results with other studies.

Our study		*Lambirch A et al.*	*Taheri et al.*	*Yucel et al.*
Face	*Other body areas*			
Comma shaped vessels (49%)	Linear irregular vessels (51.5%)	Comma shaped vessels (73%)	Dotted vessels (61.1%)	Linear irregular vessels (53.8%)
Polymorphous/atypical vessels (45.1%)	Dotted vessels (49.5%)	Linear irregular vessels (57%)	Hairpin vessels (37.5%)	Arborizing telangiectasia (36.6%)
Arborizing telangiectasia (35.3%)	Arborizing telangiectasia (40.6%)	Dotted vessels (53%)	Linear irregular vessels (30.6%)	Hairpin vessels (17.2%)
Linear irregular vessels (33.3%)	Polymorphous/ atypical vessels (40.6%)	Polymorphous/ atypical vessels (26%)	Comma shaped vessels (29.9%)	Glomerular like vessels (16.6%)
Dotted vessels (23.5%)	Comma shaped vessels (37.6%)	Hairpin vessels (19%)	Glomerular like vessels (22.9%)	Dotted vessels (15.9%)
Hairpin vessels (21.6%)	Hairpin vessels (27.7%)	Arborizing telangiectasia (11%)	Arborizing telangiectasia (10.4%)	Comma shaped vessels (4.1%)
Glomerular like vessels (17.6%)	Glomerular like vessels (6.9%)	Glomerular like vessels (7%)	Corkscrew vessels (4.2%)	Polymorphous/ atypical vessels (2.8%)
		Corkscrew vessels (7%)		Corkscrew vessels (0%)

Conclusions

Dermatoscopy is a useful non-invasive real time diagnostic tool for cutaneous leishmaniasis. Findings of dermatoscopy vary according to topographic location of CL lesion. Facial lesions common finding is generalized erythema (90.2%), while commonest one in other body locations is central ulceration (90.1%). Further studies to be conducted to evaluate specificity of dermatoscopic finding on in CL.

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