Dermatology Practical & Conceptual

Dermoscopy of Early-Stage Mycosis Fungoides: Comparative Study with Inflammatory Dermatoses

Amel Chabbouh[1,2], Noureddine Litaiem[1,2], Houda Hammami[2,3], Mourad Mokni[2,4], Faten Zeglaoui[1,2]

1 Department of Dermatology, Charles Nicolle Hospital, Tunis, Tunisia
2 Faculty of Medicine of Tunis, University of Tunis El Manar, Tunis, Tunisia
3 Department of Dermatology, Habib Thameur Hospital, Tunis, Tunisia
4 Department of Dermatology, La Rabta Hospital, Tunis, Tunisia

Key words: Mycosis fungoides, Psoriasis, Eczema, Dermatoscopy, Dark phototype

Citation: Chabbouh A, Litaiem N, Hammami H, Mokni M, Zeglaoui F. Dermoscopy of Early-Stage Mycosis Fungoides: Comparative Study with Inflammatory Dermatoses. *Dermatol Pract Concept*. 2025;15(1):4693. DOI: https://doi.org/10.5826/dpc.1501a4693

Accepted: September 4, 2024; **Published:** January 2025

Funding: None.

Competing Interests: None.

Authorship: All authors have contributed significantly to this publication.

Corresponding Author: Noureddine Litaiem, MD, Department of Dermatology, Charles Nicolle Hospital; Bd du 9 Avril 1938, 1006, Tunis, Tunisia. E-mail: Noureddine.litaiem@fmt.utm.tn

ABSTRACT

Introduction: The diagnosis of early-stage mycosis fungoides (MF) is challenging and may be confused with plaque psoriasis (PP) and chronic dermatitis (CD).

Objectives: Our study aimed to describe the dermoscopic features of early-stage MF and compare them with PP and CD.

Methods: This was a multicenter cross-sectional study conducted in three tertiary referral dermatology departments in Tunisia between January 2021 and December 2021, including 89 patients with phototype III-V. For all patients, up to three representative cutaneous lesions were selected and examined using dermoscopy. Both clinical and dermoscopic photos were recorded for each selected lesion. Dermoscopic photos were interpreted by two independent evaluators.

Results: Vascular structures significantly associated with the diagnosis of early-stage MF included polymorphic, coiled, serpentine, and linear vessels, in an unspecific distribution. Perpendicular white lines, white circles, and spermatozoa-like vessels were only noted in MF. Branched vessels were only observed in granulomatous MF. Conversely, monomorphous vessels in uniform distribution were associated with PP, whereas CD was associated with monomorphous vessels with unspecific distribution. Non-vascular structures associated with the diagnosis of MF included reticular lines, orange background color, and structureless areas. Pink background was more prevalent in PP and CD. Additionally, yellow clods were more frequently observed in patients with CD.

Conclusions: This study highlights the characteristic dermoscopic features of early-stage MF compared with PP and CD. Perpendicular white lines, white circles, and spermatozoa-like vessels were only seen in MF. Follicular plugs and clods were features of folliculotropic MF and can help guide skin biopsy sites in difficult cases.

Introduction

Mycosis fungoides (MF) is the most prevalent cutaneous T-cell lymphoma, accounting for 50% to 54% of all cases [1–3]. Early-stage MF can be difficult to differentiate from inflammatory skin diseases such as plaque psoriasis (PP) and chronic dermatitis (CD) [4,5]. Only a few studies have reported the use of dermoscopy for the differential diagnosis of these skin disorders, enrolling mainly patients with fair skin. Our study aimed to describe the dermoscopic features of early-stage MF and compare these characteristics with those observed in PP and CD in patients with phototype III-V.

Methods

The study was initiated following approval from the Institutional Review Board, Charles Nicolle Hospital (approval letter available in Mendeley Data; https//doi.org/ 10.17632/r9xfjgsyrx.1). All participants provided written informed consent.

Patient Selection

This was a multicenter cross-sectional study conducted in three tertiary referral dermatology departments in Tunisia (Charles Nicolle Hospital, La Rabta Hospital, and Habib Thameur Hospital) between January 2021 and December 2021. It involved 89 patients with phototype III–V and early-stage MF, PP, or CD. Only patients with confirmed diagnosis of early-stage MF (Ia, Ib, IIa) based on histopathological and immunohistochemical features were considered for inclusion. Patients under age 18 and those with exclusive involvement of the scalp, soles, palms, nails, elbows, or knees were excluded, as were cases of generalized pustular psoriasis, erythrodermic psoriasis, guttate psoriasis, and psoriatic arthritis.

Dermoscopic Analysis

For all included patients, up to three representative cutaneous lesions were selected and examined using dermoscopy (DermLite DL4©, 3GEN, US). Both clinical and dermoscopic photos were recorded for each selected lesion. Dermoscopic photos were interpreted by two independent evaluators (AC and NL). Any discrepancy was resolved by consensus.

Consensual dermoscopic terminology by the International Dermoscopy Society was used [6, 7]. Descriptive terminology was preferably adopted. Based on this consensual terminology, vascular structures were described as dots, clods, linear, coiled, looped, serpentine, helical, curved, monomorphous, or polymorphous vessels. These vessels could be arranged in nine patterns: radial, serpiginous, branched, centered dots, uniform, clustered, peripheral, reticular, and nonspecific. Scales were described in four distinct patterns: diffuse, central, peripheral, or patchy. Follicular features consisted of follicular plugs, follicular red dots, perifollicular white coloration, and perifollicular pigmentation. A few metaphorical terms were employed when intuitive descriptive equivalents were lacking, including spermatozoa vessels, linearly arranged scales, spicules, short hairs, and coiled hairs.

Statistical Analysis

All data were electronically compiled and analyzed using IBM SPSS version 19. T-test and Chi-squared test were respectively employed for comparison of continuous or parametric variables, and Fisher's exact bilateral test was employed in case of invalidity of the Chi-squared test. Data supporting this study are available in Mendeley Data (https//doi.org/ 10.17632/r9xfjgsyrx.1). A p-value of less than 0.05 was considered significant.

Results

Eighty-nine patients with early-stage MF (38%), PP (43%), or CD (19%) were enrolled. Demographic and clinical characteristics of included patients are summarized in Table 1.

Dermoscopic features of early-stage MF, PP, and CD are described in Table 2. Vascular structures significantly associated with the diagnosis of early-stage MF included polymorphic (65% in MF vs 4% in PP and CD, P <0.001), coiled (16% in MF vs 2% in PP and CD, P=0.005), serpentine (19% in MF vs 0 in PP and CD, P <0.001), and linear vessels (60% in MF vs 0 in PP and CD, P <0.001) in an unspecific distribution (74% in MF vs 25% in PP and CD, P <0.001) (Table 3). Branched vessels were only seen in granulomatous MF. Conversely, monomorphous vessels in uniform distribution were associated with PP, whereas CD was associated with monomorphous vessels with unspecific distribution.

Non-vascular structures associated with the diagnosis of MF included reticular lines (37% in MF vs 0% in PP and CD, P <0.001), orange background color (35% in MF vs

Table 1. Clinical Characteristics of Included Patients.

	Early-stage Mycosis fungoides (N=34) N, (%)	Plaque Psoriasis (N=37) N, (%)	Chronic Dermatitis (N=18) N, (%)
Number of selected lesions	43	38	18
Sex			
Female	19 (56)	13 (35)	10 (56)
Male	15 (44)	24 (65)	8 (44)
Median age (year)	48	52	30
Disease duration			
Median (week)	17	13	4
Min-max	1-104	1-108	2-108
Body surface area			
Min-max	2- 40%	1-60%	1-23%
Type of MF			
Classic form	20 (47)		
Folliculotropic	10 (23)		
Hypopigmented	7 (16)		
Hyperpigmented	4 (9)		
Granulomatous	2 (5)		
Stage			
IA	28 (65)		
IB	15 (35)		
IIA	0		

Table 2. Dermoscopic Findings.

	Early-stage Mycosis fungoides (N, %)	Plaque Psoriasis (N, %)	Chronic Dermatitis (N, %)
Vessel type			
Dots	29, 85	37, 100	17, 100
Linear	26, 77	1, 3	-
Spermatozoa-like vessels	41%	-	-
Polymorphic	28, 82	2, 5	-
Monomorphous	6, 18	35, 95	17, 100
Serpentine	14, 24	-	-
Coiled	7, 21	1, 3	-
Vessel arrangement			
Uniform	-	36, 97	2, 12
Nonspecific	32, 94		14, 82
Clustered	-	1, 3	1, 6
Branched	2, 6	-	-
Scale color			
White	33, 97	29, 91	11, 85
Yellow	1, 2	3, 9	2, 15
Scale arrangement			
Diffuse	1, 3	29, 91	1, 8
Patchy	33, 97	3, 9	12, 92

Table2 continues

Table 2. Dermoscopic Findings. *(continued)*

	Early-stage Mycosis fungoides (N, %)	Plaque Psoriasis (N, %)	Chronic Dermatitis (N, %)
Linear scales	3, 9	5, 13	2, 11
Structureless area color			
Orange	2, 5	-	-
White	8, 19	-	-
Yellow	-	-	1, 6
Background color			
Red	1, 2	3, 8	-
Orange	15, 35	2, 5	-
Yellow	1, 2	-	-
Pink	23, 54	33, 87	18, 100
Follicular structures			
Follicular spicules	6, 14	-	-
Follicular plugs	5, 12	-	-
Perifollicular white color	3, 7	-	-
Perifollicular pigmentation	1, 2	-	-
Comedo-like openings	3, 7	-	-
Dystrophic hairs	3, 7	-	-
Lines			
Reticular lines	16, 37	-	-
Perpendicular white lines	1, 2	-	-
Clods color			
White	7, 19	4, 11	-
Yellow- orange	10, 23	-	17, 100
Gray	1, 2	-	-
Circle	2, 5	-	-

Table 3. Dermoscopic Signs associated with Mycosis Fungoides as compared with Psoriasis and Eczema.

	Mycosis fungoides group	Psoriasis and eczema groups	P-value	Sensitivity (%)	Specificity (%)
Vessels					
Coiled vessels	7/34	1/56	0.003	20.59	98.15
Serpentine vessels	8/34	0/56	<0.001	23.53	100
Branched vessels	2/34	0/56	0.071	5.88	100
Spermatozoa-like vessels	14/34	0/56	<0.001	41.18	100
Polymorphous vessels	28/34	2/56	<0.001	82.35	96.3
Vessel arrangement					
Nonspecific distribution	32/34	14/56	<0.001	94.12	74.07
Follicular structures					
Spikes	6/34	0/56	0.01	17.65	100
Follicular plugs	5/34	0/56	0.009	14.71	100
Comedo-like openings	3/34	0/56	0.05	8.82	100
Dystrophic hair	3/34	0/56	0.05	8.82	100

Table 3. Dermoscopic Signs associated with Mycosis Fungoides as compared with Psoriasis and Eczema. *(continued)*

	Mycosis fungoides group	Psoriasis and eczema groups	P-value	Sensitivity (%)	Specificity (%)
Other dermoscopic features					
Structureless areas	10/34	1/56	0.001	23.26	98.21
Reticular lines	16/34	0/56	<0.001	37.21	100
Orange background color	15/34	0/56	<0.001	44.12	100

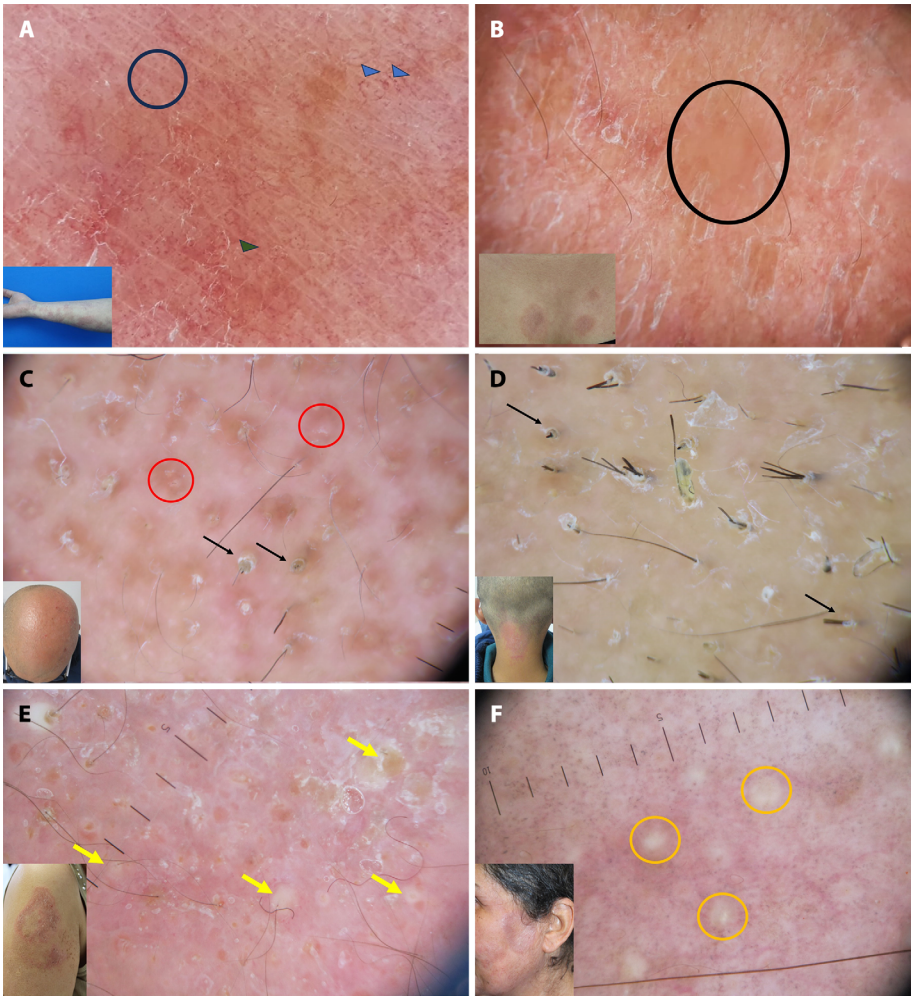

Figure 1. Dermoscopic images. A, B) Plaque-type mycosis fungoides on the forearm (A) and trunk (B). A) orange background, dotted vessels (blue circles), linear vessels (blue arrow), spermatozoa-like vessels (green arrow). B) Orange structureless area (black circle). C,D,E,F) Folliculotropic mycosis fungoides on the scalp (C,D), arm (E), and face (F). C) Perifollicular erythema (red circles), scales, and broken hairs (black arrow). D) dystrophic and broken hair (black arrow). E) multiple follicular white and yellow clods (yellow arrow). F) white clods (orange circles) corresponding to follicular mucinosis associated with gray dots related to pigmentary incontinence.

4% in PP and CD, *P* <0.001), and structureless areas (23% in MF vs 2% in PP and CD, *P*=0.001) (Figure 1). Pink background color was more prevalent in PP (87% in PP vs 67% in MF and CD, *P*=0.002) and CD (100% in CD vs 69% in MF and PP, *P*=0.003) (Figures 2 and 3). Additionally, in patients with CD, yellow clods were more frequently observed (94% in CD vs 10% in MF and CD, *P*<0.001).

Spermatozoa-like vessels, follicular plugs, comedo-like openings (Figure 1), spicules, dystrophic hairs, perifollicular hypo- or - hyperpigmentation, circles, reticular lines, and perpendicular white lines were exclusively observed in the MF group (Table 3). Notably, there was a significant association between folliculotropic MF and the presence of follicular clods (*P*= 0.009) and follicular plugs (*P*= 0.008).

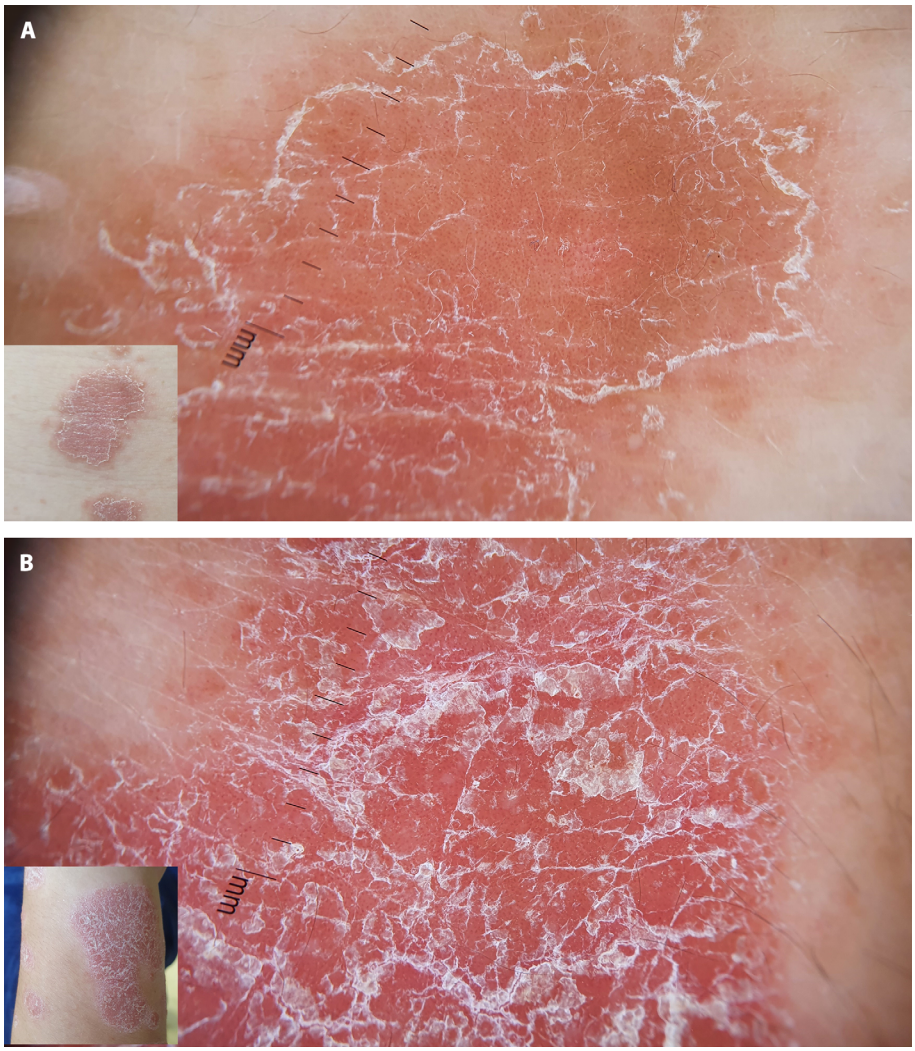

Figure 2. Dermoscopic aspects of plaque psoriasis showing regular distribution of red dots and white scales. White scales are peripheral (A) or diffuse (B).

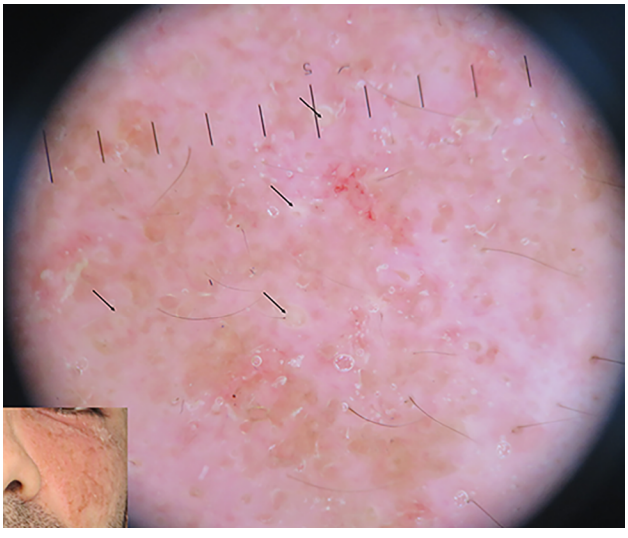

Figure 3. Dermoscopy of eczema on the cheeks showing multiple yellow clods (black arrow) and clustered red dots.

Discussion

Our findings highlight a significant association between early-stage MF and polymorphic, coiled, tortuous, spermatozoa-like, and linear vessels with unspecific distribution as well as structureless areas, reticular lines, and orange background color. Notably, dermoscopic features related to hair follicle involvement were associated and/or exclusively noted in early-stage MF, namely follicular clods or plugs, spicules, dystrophic hair, and perifollicular hypo- or hyperpigmentation.

Our results are consistent with previous findings. The most commonly described dermoscopic features of early-stage MF were spermatozoa-like vessels, linear vessels in an unspecific distribution, and orange-yellow structureless areas. The background color was mostly pink followed by orange [5,8–15]. Our study identified exclusive dermoscopic

features in MF, including perpendicular white lines, white circles, and spermatozoa-like vessels. Branched vessels were identified in 29.4% of cases in the study of Ozturk et al. [12]. Soliman et al. noted the presence of branched vessels in all cases of poikilodermatous (four cases) and folliculotropic MF (four cases) [15]. Conversely, Bosseila M et al. reported branched vessels only in cases of poikilodermatous MF [16]. These findings were consistent with our results. In our study, branched vessels were exclusively observed in granulomatous MF. Errichetti et al, in a study enrolling 118 cases of MF including tumoral (28 cases), patch-type (24 cases), plaque-type (23 cases), erythrodermic (nine cases), folliculotropic (26 cases), and poikilodermatous MF (eight cases), highlighted other specific dermoscopic signs of MF, including a higher prevalence of white scales and the presence of curved vessels [17]. Histologically, capillaries proliferate vertically along the dermal papillae and extend horizontally within the subpapillary dermis in MF. On dermoscopy, linear vessels correspond to the vessels horizontally distributed parallel to the epidermis, while spermatozoa-like vessels correspond to both horizontal and vertical vessels that appear connected [5].

In folliculotropic MF, perifollicular white color is an early sign suggestive of folliculotropic involvement [18]. The lack of hair and dilated follicles are more commonly associated with folliculotropic MF [17]. Soliman et al. noted the presence of blue-gray clods in folliculotropic MF [15]. In our study, the most frequently observed features of folliculotropic MF were clods, spicules, and follicular plugs. The presence of spicules was clinically observed in two studies comprising eight and 20 cases of folliculotropic MF, respectively [19,20]. These dermoscopic findings not only allow differentiation between MF and other inflammatory dermatoses but can also guide therapeutic decisions towards more targeted treatments [21–23]. Indeed, folliculotropic MF often requires more aggressive treatment targeting the deep structures of the skin.

In our study, characteristic dermoscopic signs of PP were uniformly distributed dotted vessels with a pink background color. These findings were consistent with previous reports [5,12,24]. Linear vessels are rarely encountered in PP (4% of cases) [24]. Radially arranged dotted vessels correspond histologically to the proliferation of blood capillaries within regularly elongated dermal papillae [25]. The typical dermoscopic features with CD are nonspecifically arranged dotted vessels, associated with yellow or white scales, in a pink or red background color [5,13]. Yellow clods, corresponding histologically to spongiosis, were initially described by Navarini et al. [26] and have been found in subsequent studies [14,24].

This study identified characteristic dermoscopic features of early-stage MF. The main limitation was the absence of data regarding particular locations, such as the scalp, soles, palms, nails, elbows, or knees. Those locations were excluded to obtain a homogenous series and to avoid biases. Furthermore, due to the uncommon nature of MF, our cohort primarily included previously diagnosed patients and repeating biopsies was not necessary. Therefore, the evaluation of dermoscopic and histopathological correlation was not possible.

In conclusion, this multicenter comparative study identified the dermoscopic aspects that help differentiate MF from inflammatory dermatosis. Interestingly, the existence of follicular plugs and clods are features of folliculotropic MF and can help guide skin biopsy sites in difficult cases.

References

1. Willemze R, Cerroni L, Kempf W, et al. The 2018 update of the WHO-EORTC classification for primary cutaneous lymphomas. *Blood*. 2019;133(16):1703-1714. Blood. 2019 Sep 26; 134(13):1112. doi: 10.1182/blood.2019002852. Erratum for: Blood. 2019 Apr 18;133(16):1703-1714. DOI: 10.1182/blood -2018-11-881268. PMID: 31558559; PMCID: PMC6764272.
2. Bradford PT, Devesa SS, Anderson WF, Toro JR. Cutaneous lymphoma incidence patterns in the United States: a population-based study of 3884 cases. Blood. 2009 May 21;113(21):5064-73. DOI: 10.1182/blood-2008-10-184168. Epub 2009 Mar 11. PMID: 19279331; PMCID: PMC2686177.
3. Wain EM, Orchard GE, Whittaker SJ, Spittle M Sc MF, Russell-Jones R. Outcome in 34 patients with juvenile-onset mycosis fungoides: a clinical, immunophenotypic, and molecular study. *Cancer*. 2003;98(10):2282-2290. DOI:10.1002/cncr.11780. PMID: 14601100.
4. Sidiropoulos KG, Martinez-Escala ME, Yelamos O, Guitart J, Sidiropoulos M. Primary cutaneous T-cell lymphomas: a review. *J Clin Pathol*. 2015;68(12):1003-1010. DOI:10.1136/jclinpath -2015-203133. PMID: 26602417.
5. Xu C, Liu J, Wang T, Luo Y, Liu Y. Dermoscopic patterns of early-stage mycosis fungoides in a Chinese population. *Clin Exp Dermatol*. 2019;44(2):169-175. DOI:10.1111/ced.13680. PMID: 29876963.
6. Kittler H, Marghoob AA, Argenziano G, et al. Standardization of terminology in dermoscopy/dermatoscopy: Results of the third consensus conference of the International Society of Dermoscopy. *J Am Acad Dermatol*. 2016;74(6):1093-1106. DOI:10.1016/j. jaad.2015.12.038. PMID: 26896294; PMCID: PMC5551974.
7. Errichetti E, Zalaudek I, Kittler H, et al. Standardization of dermoscopic terminology and basic dermoscopic parameters to evaluate in general dermatology (non-neoplastic dermatoses): an expert consensus on behalf of the International Dermoscopy Society. *Br J Dermatol*. 2020;182(2):454-467. DOI:10.1111/bjd .18125. PMID: 31077336.
8. Dereure O, Guilhou JJ. Invisible mycosis fungoides: a new case. *J Am Acad Dermatol*. 2001;45(2):318-319. DOI:10.1067 /mjd.2001.114561. PMID: 11464203.

9. Pujol RM, Gallardo F, Llistosella E, et al. Invisible mycosis fungoides: a diagnostic challenge. *J Am Acad Dermatol*. 2002;47 (2 Suppl):S168-S171. DOI:10.1067/mjd.2002.107231. PMID: 12140452.
10. Hwong H, Nichols T, Duvic M. "Invisible" mycosis fungoides?. *J Am Acad Dermatol*. 2001;45(2):318. DOI:10.1067 /mjd.2001.114568. PMID: 11464202.
11. Engin B, Keçici AS, Uzun AÖ, Yalçın M. Psychiatric comorbidity, depression, and anxiety levels and quality of life of the patients with mycosis fungoides. *Dermatol Ther*. 2020;33(6):e13922. DOI:10.1111/dth.13922. PMID: 32594601.
12. Ozturk MK, Zindancı I, Zemheri E. Dermoscopy of stage llA mycosis fungoides. *North Clin Istanb*. 2019;7(2):174-179. Published 2019 Oct 8. DOI:10.14744/nci.2019.02439. PMID:32259040.
13. Lallas A, Apalla Z, Lefaki I, et al. Dermoscopy of early stage mycosis fungoides. *J Eur Acad Dermatol Venereol*. 2013;27(5):617-621. DOI:10.1111/j.1468-3083.2012.04499.x. PMID: 22404051.
14. Suh KS, Park JB, Yang MH, Choi SY, Hwangbo H, Jang MS. Diagnostic usefulness of dermoscopy in differentiating lichen aureus from nummular eczema. J Dermatol. 2017;44(5):533-7. PMID: 27914108.
15. Soliman SH, Ramadan WM, Elashmawy AA, Sarsik S, Lallas A. Dermoscopy in the Diagnosis of Mycosis Fungoides: Can it Help? Dermatol Pract Concept. 2023 Oct 1;13(4):e2023284. DOI: 10.5826/dpc.1304a284. PMID: 37992354; PMCID: PMC10656187.
16. Bosseila M, Sayed Sayed K, El-Din Sayed SS, Abd El Monaem NA. Evaluation of Angiogenesis in Early Mycosis Fungoides Patients: Dermoscopic and Immunohistochemical Study. Dermatol Basel Switz. 2015;231(1):82-6. PMID: 26044542.
17. Errichetti E, Apalla Z, Geller S, Sławińska M, Kyrgidis A, Kaminska-Winciorek G, et al. Dermoscopic spectrum of mycosis fungoides: a retrospective observational study by the International Dermoscopy Society. J Eur Acad Dermatol Venereol JEADV.2022;36(7):1045-53.PMID:35285088;PMCID: PMC10239555.
18. Toncic RJ, Drvar DL, Bradamante M, Rados J, Jerkovic-Gulin S, Caccavale S, et al. Early dermoscopic sign of folliculotropism in patients with mycosis fungoides. Dermatol Pract Concept. 2018;8(4):328-9. PMID: 30479867; PMCID: PMC6246061.
19. Tomasini C, Kempf W, Novelli M, Fava P, Annessi G, Rongioletti F, et al. Spiky follicular mycosis fungoides: a clinicopathologic study of 8 cases. J Cutan Pathol. 2015;42(3):164-72. PMID: 25355400.
20. Souissi A, Ben Lagha I, Jendoubi F, Drissi H, Chelly I, Mokni M. Spiky follicular mycosis fungoides: a trichoscopic feature. J Eur Acad Dermatol Venereol. 2019 Jul;33(7):e252-e253. DOI: 10.1111/jdv.15365. Epub 2019 Apr 22. PMID: 30472744.
21. Gerami P, Rosen S, Kuzel T, Boone SL, Guitart J. Folliculotropic mycosis fungoides: an aggressive variant of cutaneous T-cell lymphoma. Arch Dermatol. 2008;144(6):738-46. PMID: 18559762.
22. Wieser I, Wang C, Alberti-Violetti S, Lyons G, Tran C, Talpur R, et al. Clinical characteristics, risk factors and long-term outcome of 114 patients with folliculotropic mycosis fungoides. Arch Dermatol Res. 2017;309(6):453-9. PMID: 28516243.
23. Hodak E, Amitay-Laish I, Atzmony L, Prag-Naveh H, Yanichkin N, Barzilai A, et al. New insights into folliculotropic mycosis fungoides (FMF): A single-center experience. J Am Acad Dermatol. 2016;75(2):347-55. PMID: 27245278.
24. Bilgic SA, Cicek D, Demir B. Dermoscopy in differential diagnosis of inflammatory dermatoses and mycosis fungoides. *Int J Dermatol*. 2020;59(7):843-850. DOI:10.1111/ijd.14925. PMID: 32406102.
25. Vázquez-López F, Zaballos P, Fueyo-Casado A, Sánchez-Martín J. A dermoscopy subpattern of plaque-type psoriasis: red globular rings. *Arch Dermatol*. 2007;143(12):1612. DOI:10.1001 /archderm.143.12.1612. PMID: 18087028.
26. Navarini AA, Feldmeyer L, Töndury B, Fritsche P, Kamarashev J, French LE, et al. The yellow clod sign. Arch Dermatol. 2011; 147(11):1350. PMID: 22106141.