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Dermoscopic findings in psoriasis and seborrheic dermatitis on the scalp and correlation with disease severity**Sezin Ficicioglu, Suleyman Piskin***Trakya University Medical Faculty, Department of Dermatology, Edirne, Turkey*

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Abstract

Dermoscopy has frequently been used for hair and scalp disorders. Dermoscopic examinations of psoriasis and seborrheic dermatitis lesions yielded different morphologies. This study aimed to investigate the usefulness of dermoscopy in the clinical differentiation of psoriasis and seborrheic dermatitis on the scalp and additionally to evaluate its capacity in determining disease severity. The study included 46 psoriasis and 50 seborrheic dermatitis patients who were clinically diagnosed and had scalp lesions. Dermoscopic images taken from lesional scalp were then reviewed for microvascular patterns. In addition, we assessed the severity of scalp disease and looked for a correlation with these patterns. The frequency of twisted loops, glomerular vessels, red dots/globules, and polymorphous beaded lines/circles were statistically higher in the psoriasis group, whereas the frequencies of simple loops and arborizing vessels were statistically higher in the seborrheic dermatitis group ($p < 0.001$). There was no significant difference in the frequency of featureless areas between two groups ($p = 0.579$). There was no correlation with disease severity and dermoscopic findings. In conclusion, dermoscopy is a valuable and easy-to-use tool for differentiating psoriasis and seborrheic dermatitis on the scalp even if it doesn't have enough strength to determine disease severity. In addition, there is some diversity and ambiguity concerning terminology, which can be resolved with future studies and the establishment of conventional terms.

Keywords: Dermoscopy, psoriasis, dermatitis, seborrheic**Introduction**

Dermoscopy use in general dermatology is greatly increasing, as it is a noninvasive, practical tool. This approach helps to elucidate the pathogenesis of disease by enabling observation of morphological structures that cannot be seen by the naked eye; therefore, it improves diagnostic capability. It can be helpful in investigating inflammatory, infectious and tumoral skin diseases other than pigmented lesions [1-3]. In addition, scalp and hair diseases can be diagnosed by dermoscopy. The term "trichoscopy" is also used to describe this method [4-8]. Zalaudek et al. [9] even described dermoscopy as "the dermatologist's stethoscope" because of its increasing importance and daily use.

Psoriasis and seborrheic dermatitis are both inflammatory skin diseases presenting with erythematous squamous lesions. Differential diagnosis between psoriasis and seborrheic dermatitis can be extremely difficult in some cases, especially when the lesions are limited to the scalp. Biopsy may be needed; even so, there are times when histopathological investigation can be inadequate for

diagnosis. Dermoscopic examinations of psoriasis and seborrheic dermatitis lesions yielded different morphologies especially in the microvascular structures so it can be useful in differentiating these diseases [10-19]. In this study we investigated the usefulness of dermoscopy in the clinical differentiation of psoriasis and seborrheic dermatitis on the scalp and as distinct from previous studies, we also evaluated correlation of dermoscopic findings with disease severity.

Material and Methods

The study included 46 psoriasis and 50 seborrheic dermatitis patients with scalp lesions. They were diagnosed according to anamnesis, clinical features, and follow-up data. We excluded patients who received topical or systemic treatment within 1 month. Patients who had diseases affecting the microvascular structures, such as connective vascular diseases, were also excluded, along with pregnant or breastfeeding women. Patients whose differential diagnosis between psoriasis and seborrheic dermatitis was not clear were not included in study.

The ethics committee from Trakya University Medical Faculty approved the study and informed consent was taken from all patients. Images were obtained from lesions on scalp, after removing the squams with a lancet, using a dermoscope (Dermlite

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III, 10X magnification; 3Gen, LLC, CA, USA) attached to a digital camera (Canon EOS 550D, Canon Zoom Lens EF-S 18-55 mm; Canon, Tokyo, Japan) and 60° alcohol was used as an interface solution. After transferring them to a computer, the images were analyzed for the appearance of vascular structures (twisted loops, simple loops, arborizing vessels, red dots/globules, glomerular vessels, polymorphous beaded lines/circles) and featureless areas. In most of our patients, we observed more than one pattern on lesional skin, so we also compared the frequency of different combinations of patterns between the groups. In addition, we assessed the severity of scalp lesions in the psoriasis group using the Psoriasis Scalp Severity Index (PSSI); with this tool, we scored erythema, infiltration, and desquamation separately on a scale of 0–4 and then multiplied the sum with the affected area score (0–6).

In the seborrheic dermatitis group, because of the absence of such an index, we used same formulation and called it the Seborrheic Dermatitis Scalp Severity Index (SDSSI). We then looked for a correlation between our findings and the PSSI and SDSSI.

Statistical analyses were performed using SPSS version 15.0 (SPSS Inc., Chicago, IL, USA). These included the chi-square test between groups and Spearman correlation analyses for scalp

disease severity; the results were considered statistically significant when $p < 0.05$.

Results

The psoriasis group included 21 (45.7%) female and 25 (54.3%) male patients, and the median age was 36 years (range: 19–73). The seborrheic dermatitis group comprised 25 (50%) female and 25 (50%) male patients, and the median age was 28 years (range: 19–73). The median values of PSSI and SDSSI were both 3, with ranges of 1–21 and 1–24, respectively. The frequencies of simple loops and arborizing vessels were significantly higher in seborrheic dermatitis than in psoriasis ($p < 0.05$). The frequencies of twisted loops, glomerular vessels, red dots/globules, polymorphous beaded lines/circles were significantly higher in the psoriasis than in the seborrheic dermatitis group ($p < 0.05$). There was no statistically significant difference between groups for featureless areas. Only the frequency of simple loop-arborizing vessel combination was significantly higher in seborrheic dermatitis; all other combinations were more frequent in the psoriasis group (Table 1). There was no relationship between the scalp disease severity indexes (PSSI, SDSSI) and our findings (Table 2).

Table 1. Vessel Characteristics of Study Groups Determined by Dermoscopy

	Psoriasis (n=46) n(%)	Seborrheic dermatitis (n=50) n(%)
Simple loops*	3 (6.5)	40 (80)
Twisted loops*	37 (80.4)	10 (20)
Arborizing vessels*	1 (2.2)	25 (50)
Featureless areas***	3 (6.5)	2 (4)
Glomerular vessels*	28 (60.9)	2 (4)
Red dots/globules**	10 (21.7)	2 (4)
PBLC*	33 (71.7)	4 (8)
Simple loop + arborizing vessel*	0 (0)	18 (36)
Twisted loop + glomerular vessel*	26 (56.5)	2 (4)
Twisted loop + red dot/globule**	7 (15.2)	0 (0)
Twisted loop + PBLC*	33 (71.7)	2 (4)
Glomerular vessel + red dot/globule*	9 (19.6)	0 (0)
Glomerular vessel + PBLC*	21 (45.7)	0 (0)
Red dot/globule + PBLC**	7 (15.2)	0 (0)
Glomerular vessel + red dot/globule + PBLC**	6 (13)	0 (0)
Twisted loop + glomerular vessel + red dot/globule + PBLC**	6 (13)	0 (0)

Abbreviations: PBLC, Polymorphous beaded lines/circles.

Chi-square test p values: * $p < 0.001$; ** $p < 0.05$; *** $p > 0.05$

Table 2. Correlation Between Vascular Structures and Scalp Disease Severity

	PSSI		SDSSI	
	r	p	r	p
Simple loop	-0.155	0.303	0.094	0.517
Twisted loop	0.267	0.073	-0.191	0.183
Arborizing vessel	-0.229	0.126	-0.133	0.357
Featureless area	-0.078	0.608	0.014	0.921
Glomerular vessel	0.091	0.550	-0.134	0.354
Red dot/globule	0.182	0.226	-0.069	0.636
Polymorphous beaded line/circle	0.255	0.087	0.162	0.261

Abbreviations: PSSI: Psoriasis Scalp Severity Index, SDSSI: Seborrheic Dermatitis Scalp Severity Index

Spearman correlation analyses, r: Spearman correlation coefficient

Discussion

Dermoscopic evaluations of psoriasis lesions on the trunk or extremities represented a homogenous vascular pattern of red dots/globules [10-14]. Videodermoscopic observations of psoriasis lesions on the scalp often reveal interfollicular twisted loops, which are seen as red dots/globules at lower magnifications and as polymorphous beaded circles at higher magnifications when the probe is positioned vertically on the scalp [15]. These vascular structures correspond to elongated, dilated capillaries in the dermal papilla and seem to correlate with disease activity [15-17]. Kim et al. [18] used the term “glomerular vessels” for these dilated capillaries. In addition, Kibar et al. [19] called a new term “signet ring vessels”; however, we followed the same terminology as in Ross et al.’s [15] report, calling the same structures “polymorphous beaded circles.” Ross et al. [15] also stated that interfollicular simple loops correspond to normal capillaries in the papillary dermis, and they can be seen on normal healthy scalp and all scalp dermatoses except discoid lupus erythematosus, as this involves atrophy.

The videodermoscopic examinations of seborrheic dermatitis showed that arborizing vessels and interfollicular simple loops were prominent patterns and that twisted loops, red dots/globules, and glomerular vessels were absent. In seborrheic dermatitis, epidermal hyperplasia is not prominent, and horizontally proliferating vessels along the subpapillary plexus are seen as arborizing vessels [4,15,18].

In our study findings, which were compatible with the literature, the frequencies of interfollicular twisted loops, red dots/globules, polymorphous beaded lines/circles, and glomerular vessels in psoriasis were significantly higher than those in seborrheic dermatitis. As distinct from previous reports, we also compared the frequencies of different combinations of these patterns between groups and we found that the frequencies of all combinations were significantly higher in psoriasis. Thus, when we detect one or more of the vascular structures mentioned above, it strongly suggests psoriasis.

The frequencies of interfollicular simple loops and arborizing vessels were significantly higher in seborrheic dermatitis than in psoriasis, a finding that is compatible with literature. Furthermore, combination of simple loops and arborizing vessels was not detected in any of the psoriasis patients. Consequently, we think that psoriasis can be disregarded when both simple loops and arborizing vessels are seen together in lesions (Figure 1).

Because there was no difference for featureless areas between groups, in our view, this is not a useful pattern for differentiating the two diseases. In addition, we found no correlation between scalp disease severity and vascular findings so we thought that dermoscopy can’t tell us disease severity score but this result may have arisen because of limited patient number or because we did not score the whole body and needs further studies to be assured.

Although we evaluated them separately, we think that red dots/globules, glomerular vessels, polymorphous beaded lines/circles, and interfollicular twisted loops all represent dilated and elongated capillaries in the dermal papilla in psoriasis, and that the variety of names results from terminological preferences. We observed that polymorphous beaded lines/circles, which were detected when the dermoscope was placed perpendicularly, started to be seen as twisted loops when the dermoscope was placed tangentially (Figure 2), as Ross et al. [15] noted. As a result, we think that dermoscopy can be useful in differentiating psoriasis and seborrheic dermatitis, as it allows us to apprehend morphological structures that are otherwise invisible to the naked eye. However,

there is some diversity and ambiguity concerning terminology, which can be resolved with future studies and the establishment of conventional terms. These microvascular patterns are usually identified through videodermoscopy, but the possibility of showing them with handheld dermoscopes attached to digital cameras, which are easier to use, increases the efficacy and usability of this approach. In addition, when such a technique is used, the need for biopsy will decrease, and it will be possible to obtain objective data during therapy.

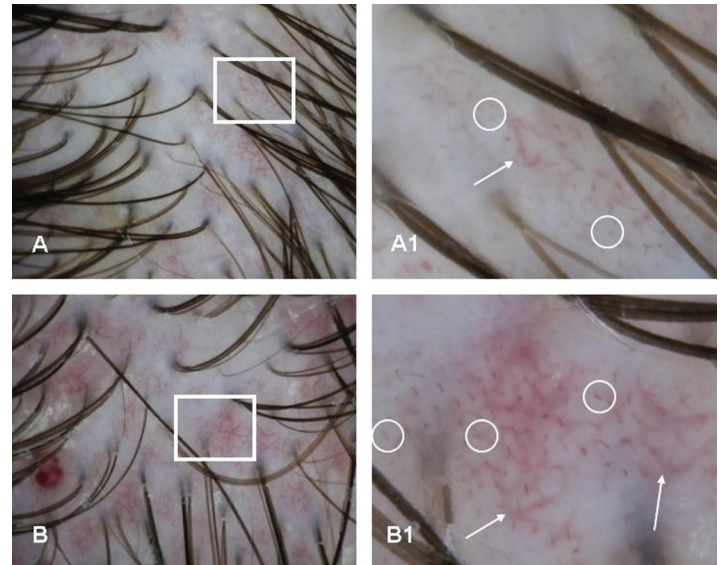


Figure 1. Simple loops (circles) and arborizing vessels (arrows) of two seborrheic dermatitis patients (A1: A, inset ; B1: B, inset)

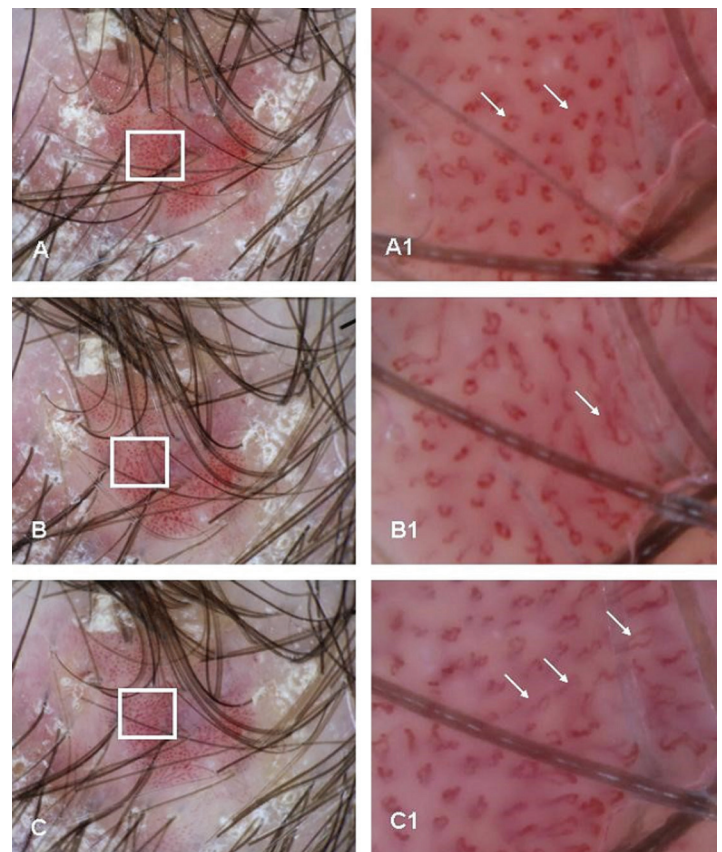


Figure 2. Polymorphous beaded lines/circles, which were detected when the dermoscope was placed perpendicularly started to be seen as twisted loops as the dermoscope was placed tangentially in a psoriasis patient (A1: A, inset ; B1: B, inset ; C1: C, inset. A is the perpendicular view; B and C are tangential views of the lesion)

Conclusions

In conclusion, dermoscopy is a valuable and easy-to-use tool for differentiating psoriasis and seborrheic dermatitis on the scalp even if it doesn't have enough strength to determine disease severity. In addition, there is some diversity and ambiguity concerning terminology, which can be resolved with future studies and the establishment of conventional terms.

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References

1. Errichetti E, Stinco G. Dermoscopy in general dermatology: A Practical Overview. *Dermatol Ther (Heidelb)*. 2016;6(4):471-507.
2. Lacarrubba F, Verzi AE, Dinotta F, Scavo S, Micali G. Dermoscopy in inflammatory and infectious skin disorders. *G Ital Dermatol Venereol*. 2015;150(5):521-31.
3. Zalaudek I, Argenziano G, Di Stefani A, Ferrara G, Marghoob AA, Hofmann-Wellenhof R, Soyer HP, Braun R, Kerl H. Dermoscopy in general dermatology. *Dermatology*. 2006;212(1):7-18.
4. Miteva M, Tosti A. Hair and scalp dermoscopy. *J Am Acad Dermatol*. 2012;67(5):1040-8.
5. Alkurt Kayıkçı M, Arıcan Ö. Dermoscopic findings of patients with alopecia areata. *Türkiye Klinikleri J Med Sci*. 2012;32(4):1064-71.
6. Rudnicka L, Olszewska M, Rakowska A, Slowinska M. Trichoscopy update 2011. *J Dermatol Case Rep*. 2011;5(4):82-8.
7. Rudnicka L, Rakowska A, Olszewska M. Trichoscopy: how it may help the clinician. *Dermatol Clin*. 2013;31(1):29-41.
8. Olszewska M, Rudnicka L, Rakowska A, Kowalska-Oledzka E, Slowinska M. Trichoscopy. *Arch Dermatol*. 2008;144(8):1007.
9. Zalaudek I, Lallas A, Moscarella E, Longo C, Soyer HP, Argenziano G. The dermatologist's stethoscope-traditional and new applications of dermoscopy. *Dermatol Pract Concept*. 2013;3(2):67-71.
10. Lallas A, Kyrgidis A, Tzello TG, Apalla Z, Karakyriou E, Karatolias A, Lefaki I, Sotiriou E, Ioannides D, Argenziano G, Zalaudek I. Accuracy of dermoscopic criteria for the diagnosis of psoriasis, dermatitis, lichen planus and pityriasis rosea. *Br J Dermatol*. 2012;166(6):1198-205.
11. Pan Y, Chamberlain AJ, Bailey M, Chong AH, Haskett M, Kelly JW. Dermoscopy aids in the diagnosis of the solitary red scaly patch or plaque-features distinguishing superficial basal cell carcinoma, intraepidermal carcinoma, and psoriasis. *J Am Acad Dermatol*. 2008;59(2):268-74.
12. Zalaudek I, Argenziano G. Dermoscopy subpatterns of inflammatory skin disorders. *Arch Dermatol*. 2006;142(6):808.
13. Vázquez-López F, Manjón-Haces JA, Maldonado-Seral C, Raya-Aquado C, Perez-Oliva N, Marghoob AA. Dermoscopic features of plaque psoriasis and lichen planus: new observations. *Dermatology*. 2003;207(2):151-6.
14. De Angelis R, Bugatti L, Del Medico P, Nicolini M, Filosa G. Videocapillaroscopic findings in the microcirculation of the psoriatic plaque. *Dermatology*. 2002;204(3):236-9.
15. Ross EK, Vincenzi C, Tosti A. Videodermoscopy in the evaluation of hair and scalp disorders. *J Am Acad Dermatol*. 2006;55(5):799-806.
16. Rosina P, Zamperetti MR, Giovannini A, Girolomoni G. Videocapillaroscopy in the differential diagnosis between psoriasis and seborrheic dermatitis of the scalp. *Dermatology*. 2007;214(1):21-4.
17. Tosti A, Torres F. Dermoscopy in the diagnosis of hair and scalp disorders. *Actas Dermosifiliogr*. 2009;100:114-9.
18. Kim GW, Jung HJ, Ko HC, Kim MB, Lee SJ, Kim DW, Kim BS. Dermoscopy can be useful in differentiating scalp psoriasis from seborrheic dermatitis. *Br J Dermatol*. 2011;164(3):652-6.
19. Kibar M, Aktan Ş, Bilgin M. Dermoscopic findings in scalp psoriasis and seborrheic dermatitis; two new signs; signet ring vessel and hidden hair. *Indian J Dermatol*. 2015;60(1):41-5.