Research letter

Trichoscopy as an additional tool for the differential diagnosis of tinea capitis: a prospective clinical study

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Dear Editor, Current recommendations advise the use of mycological examination to confirm the diagnosis of tinea capitis (TC).[1] However, culture may take up to 6 weeks, postponing treatment in some cases. This delay might have an epidemiological impact given the associated risk of contagion. Trichoscopy has been suggested as a fast and inexpensive tool to diagnose TC. However, specific dermoscopic patterns remain to be established.

We performed a prospective clinical study that aimed to characterize trichoscopic findings in children with clinical findings suggestive of TC, and to correlate them with mycological examination results. The study was performed at our dermatology department during a 1-year period. All patients under 13 years of age with a clinical suspicion of TC were included. Patients treated with systemic antifungal medication in the 3 months prior to observation were excluded. Baseline trichoscopy images were obtained with a nonpolarized light videodermoscope (Microderm®; Visiomed, Bielefeld, Germany). Mycological examination (direct microscopic observation with 40% potassium hydroxide and culture in mycobiotic agar incubated at 24 °C) was performed in all patients, and repeated once if initially negative. The study was approved by the institution's ethics committee, and signed informed consent was obtained from each child's legal guardian.

The study population included 50 patients, of whom 38 (76%) were male. The mean age was 4·7 years (range 1–11). Most patients (42, 84%) were of African descent, and the remainder were white. The mean duration of disease was 17 weeks.

Mycological examination was positive in 38 patients (group A) and negative in 12 (group B). No significant differences concerning sex, age or race distribution between the groups were found. In group A, the most commonly identified dermatophytes were *Microsporum audouinii* (23 patients, 60%) and *Trichophyton soudanense* (11, 29%), while *Trichophyton tonsurans* was isolated in two patients and *Trichophyton mentagrophytes* and *Microsporum ferrugineum* in one each. Mycologically negative (group B) patients were followed up and eventually diagnosed with other conditions such as alopecia areata, traction alopecia and atopic dermatitis. None exhibited signs of progressive TC in the absence of antifungal treatment.

Clinically, the presence of multiple small alopecia patches was the most frequent pattern (observed in 40% and 50% of patients in groups A and B, respectively), followed by a pattern made of a large lesion with multiple small ones in 42% and 25%, respectively, while a single alopecia patch was observed in about 18% and 25% of the patients in groups A and B, respectively. There was no significant difference concerning the alopecia pattern between groups.

The frequency of the observed trichoscopic findings in each group is presented in Table 1. The most common findings were perifollicular scaling, diffuse scaling and broken hairs, observed in the majority of the patients with TC. On the other hand, black dots, corkscrew hairs, pustules and comma hairs were seen in about one-third or fewer of those patients.

The frequency of each trichoscopic finding did not differ significantly between the groups, meaning that not one of these features alone could have been a predictor of TC. Nonetheless, the association of perifollicular scaling and the presence of any type of dystrophic hair correlated significantly with a positive culture ($P < 0·001$). The analysis of each type of dystrophic hair combined with perifollicular scaling showed that only the association between broken hairs and perifollicular scaling (Table 1, Fig. 1) was statistically

Table 1 Trichoscopic findings in patients with tinea capitis (group A) and controls (group B)

Trichoscopic findings	Group A (n = 38)	Group B (n = 12)	Statistical analysis
Scaling	34 (90)	9 (75)	
Perifollicular scaling	36 (95)	9 (75)	The association of perifollicular scaling and broken hairs was higher in group A than in group B ($P = 0·007$)
Broken hairs	28 (74)	6 (50)	
Black dots	13 (34)	4 (33)	The combination of perifollicular scaling with any type of dystrophic hair (broken, corskscrew, comma, block, zizag, bent, i-hairs and hair casts) was more frequently seen in group A than in group B ($P < 0·001$)
Corkscrew hairs	10 (26)	2 (17)	
Comma hairs	5 (13)	2 (17)	
Block hairs	2	0	
Hair casts	2	0	
Zigzag hairs	2	0	
Bent hairs	2	0	
i-Hairs	2	0	
Pustules	6 (16)	1 (8)	

Values are n or n (%).

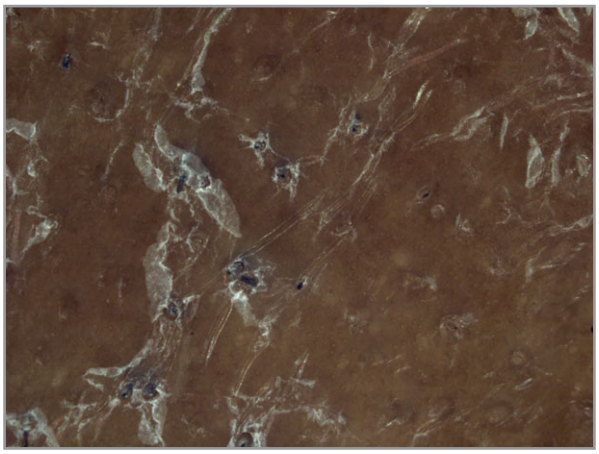

Fig 1. Short broken hairs and perifollicular scaling (digital trichoscopy, magnification × 30).

significant ($P = 0{\cdot}007$). No statistically significant correlation was found between trichoscopic findings and any clinical alopecia pattern, dermatophyte, sex or species.

Only a few small studies describing trichoscopy in patients with TC have been published. In 2008, Slowinska *et al.*[2] described the presence of comma hairs in two patients with TC and suggested them as specific markers for the condition. This association has been further corroborated by other isolated cases and small series of patients with TC.[3–7] However, comma hairs were less commonly observed (55–67%) in three recent series of 15–20 patients,[8–10] and were even less common in our study (13%). Additionally, we observed them in two patients with repeatedly negative mycological examinations and no evidence of disease progression in the absence of antifungal treatment. This challenges the concept that comma hairs are a specific dermoscopic marker for TC.

Regarding corkscrew hairs, these have also been described as specific findings for TC,[7–9] particularly in black patients.[4] We observed them in 10 (26%) of our patients with TC, including one white child, and also in two patients with negative mycological examinations. In fact, our data differ from previously published observations, as none of the studied trichoscopic findings alone proved to be specific for the diagnosis of TC. In contrast, the presence of both perifollicular scaling and dystrophic hair or broken hairs correlated with a positive mycological examination, thus suggesting this association as a more reliable indicator of TC in clinical practice.

We acknowledge some limitations to our study. The small sample size in both groups and group asymmetry limited the power of statistical analysis in subgroups of trichoscopic findings. However, we must emphasize that this is the largest series so far analysed. Additionally, we believe that, as a case–control study, this provides more insight into this subject.

In conclusion, our results suggest that the association of perifollicular scaling with any type of dystrophic hair or with broken hairs could represent a specific trichoscopic pattern of TC. While mycological examination remains the gold standard in TC diagnosis, further investigations are needed to validate the role of trichoscopy as a diagnostic tool per se for TC. It can be a tool to help the dermatologist in the diagnosis of this disorder, but always with the combination of clinical and mycological examinations to enable definitive diagnosis.

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