Journal of Pakistan Association of Dermatologists. 2026;**36(3)**:469-477.

Original Article

Trichoscopic Features of Tinea Capitis in Iraqi Pediatric Patients: A Cross-Sectional Observational Study

Zainab K. Al-Radhawi*, Ihsan A. Al-Turfi

Dermatology and Venereology Center, Medical City, Baghdad, Iraq.

Abstract

Background Tinea capitis (TC) is a common pediatric dermatophyte infection. Trichoscopy serves as a rapid, non-invasive alternative diagnostic tool, yet data correlating specific trichoscopic patterns with distinct clinical variants in the Middle Eastern population are scarce.

Objective To evaluate the trichoscopic features of TC in an Iraqi pediatric cohort and to correlate these findings with clinical variants.

Methods This observational cross-sectional study included 100 pediatric patients with clinically suspected TC and positive 10% potassium hydroxide mounts. Trichoscopic evaluation was performed using polarized and non-polarized dermoscopy (Dermlite DL4).

Results Grey patch was the most common variant (61%), followed by kerion (18%), pustular (13%), and black dot (8%). The most frequent overall trichoscopic findings were perifollicular scaling (94%) and broken hairs (94%). Perifollicular scaling differed across variants (P=0.012), most frequent in black dots (100%) and grey patch (98.4%). Black dots variant was associated with black dots, comma hairs, and corkscrew hairs (P<0.001, P=0.010, P<0.001). Kerion was associated with erythema and hemorrhagic crusts (both P<0.001) and the pustular variant was linked to follicular pustules (P<0.001). Additionally, loss of follicular ostia was observed in 20% of cases, predominantly within the inflammatory variants.

Conclusion Trichoscopy demonstrates distinct patterns corresponding to different clinical variants of TC. A diagnosis can be reliably supported by identifying a combination of perifollicular scaling with any form of dystrophic or broken hair. We advocate for routine integration of trichoscopy in the initial evaluation of pediatric hair loss to expedite diagnosis and guide management.

Keywords Tinea capitis; Trichoscopy; Kerion; Dermoscopy; Alopecia; Pediatrics.

Article Received on 02.08.2026

Revised on 24.09.2026

Accepted on 24.09.2026

Published on 30.09.2026

Citation: Al-Radhawi ZK, Al-Turfi IA. Trichoscopic Features of Tinea Capitis in Iraqi Pediatric Patients: A Cross-Sectional Observational Study. *J Pak Assoc Dermatol*. 2026;**36(3)**:469-477.

Doi: https://doi.org/10.66344/jpad.v36i3.3509

Introduction

Tinea capitis (TC) is a superficial dermatophyte infection that affects the scalp and hair shafts. Pre-pubertal children are the most likely to be affected by this condition.[1] Depending on the immune response of the host and the type of the fungus that is responsible for the infection, it can present itself with a variety of clinical morphologies.[2] For example, earlier research in Iraq found zoophilic organisms such as Microsporum canis as the primary etiological agents.[3]

This indicates that the epidemiological landscape of dermatophytosis is always shifting and evolving. However, more recent data from the local area suggest that there is a trend toward anthropophilic transmission, with Trichophyton rubrum[3] and Trichophyton mentagrophytes[4] becoming more

Address for correspondence
Dr. Zainab K. Al-Radhawi,
Dermatology and Venereology Center, Medical City,
Ministry of Health, Baghdad, Iraq
Email: Zainabkj91@gmail.com

widespread.

In order to avoid the spread of disease, irreversible scarring, and improper management, it is essential to make a diagnosis that is both accurate and fast. The clinical examination can provide some suggestive signs, but mycological confirmation has generally been the most reliable method for making a conclusive diagnosis.

Although direct microscopic inspection with potassium hydroxide (KOH) is a screening tool that is both quick and easy to use,[5] the percentage of false-negative results can range anywhere from 5% to 40% depending on the quality of the samples selected and the level of competence of the observer. The routine clinical application of fungal culture is typically limited by high prices, protracted turn-around times, and a lack of laboratory availability in many settings.[6,7]

Despite the fact that fungal culture continues to be the "gold standard" for identifying the specific species of dermatophytes,[5] its application is commonly limited. In addition, modern molecular approaches provide accurate identification,[6] their implementation in routine clinical practice is limited due to the high cost of these technologies and the technical pre-requisites they require.

Trichoscopy, also known as scalp dermoscopy, has emerged as a helpful, non-invasive, and quick bedside method for monitoring hair loss.[8,9] This has allowed us to overcome the diagnostic challenges that have been encountered. Trichoscopic examination of the hair shaft in patients with tinea capitis reveals extremely distinctive morphological alterations brought on by fungal invasion.

Ectothrix infections, in particular, exhibit distinctive dystrophic signs such as comma hairs, corkscrew hairs, barcode hairs, zigzag hairs, and bent hairs.[10] These hairs are characterized by their characteristic curvature. Additional common findings include broken hairs, block hairs, black dots, and noticeable perifollicular scaling and diffuse scaling. These characteristics help identify tinea capitis from other types of alopecia that do not include inflammation, such as trichotillomania or alopecia areata.[10]

Erythema, telangiectasia, hemorrhages,[11] and follicular pustules[12] are just few of the additional symptoms that may be present in inflammatory types of TC. Furthermore, although the loss of follicular ostia is widely thought to be a trichoscopic feature of primary cicatricial alopecias,[13,14] the possibility that it may occur in severe inflammatory TC calls for additional research to be conducted.

Albeit the fact that the trichoscopic spectrum of TC has been reported on a global scale, there is a paucity of research that correlates these dermoscopic patterns with particular clinical variants in Iraqi communities. The identification of variant-specific trichoscopic signals has the potential to greatly accelerate clinical decision-making, particularly in settings with limited resources and when mycological confirmation is neither possible nor practicable.

Methods

This observational, cross-sectional study was conducted at the Baghdad Center of Dermatology and Venereology, Medical City, Baghdad, Iraq, between February 2022 and October 2023 after approval from the Scientific Committee of the Scientific Council of Dermatology and Venereology, Iraqi Board for Medical Specialisations, Baghdad, Iraq (Ref. 7485 18.01.2022).

Pediatric patients presenting with patchy hair loss and easy hair pluckability, with or without associated inflammatory changes, were eligible for enrolment based on clinical suspicion of tinea capitis (TC). All enrolled patients underwent direct microscopic examination using a 10% potassium hydroxide (KOH) wet mount alongside trichoscopic evaluation.

Exclusion criteria comprised: 1) the presence of any concomitant dermatological disease; 2) a history of topical antifungal use within the preceding 2 weeks or systemic antifungal use within the preceding 4 weeks.

Potential observer bias during trichoscopic interpretation was controlled by having two independent dermatologists-blinded to both the clinical variant and direct microscopy results-evaluate all anonymized images.

For each enrolled patient, a thorough medical history was recorded, including age, sex, residency, duration of illness, family history of dermatophyte infection, animal contact, and prior medication use. A complete dermatological examination was performed to document the clinical subtype of TC-classified as non-inflammatory (grey patch, black dots) or inflammatory (kerion, pustular variant)-and to identify any concomitant tinea infections elsewhere on the body. Standardized clinical photographs were captured using a 48-megapixel smartphone camera (OnePlus Nord).

For mycological confirmation, hair and scalp samples were collected by epilating dull, broken hairs from the lesion margins and scraping the scalp with a sterile blunt scalpel. The area was first cleaned with 70% isopropyl alcohol in an aseptic manner. The collected material was placed on a glass slide, immersed in 10% KOH, and covered with a coverslip. Following a clearing period of 15-30 minutes, the slides were examined under light microscopy at 10× and 40× magnifications for the presence of fungal hyphae and/or arthrospores within or surrounding the hair shafts.

Scalp lesions were examined using a handheld dermatoscope (Dermlite DL4) coupled with the smartphone camera via a magnetic connector clamp, providing a fixed 10-fold magnification. The examination protocol utilized both non-polarized (NPD) and polarized dermoscopy (PD) modes. Prior to imaging, the target area was cleansed with alcohol to optimize the visualization of the perifollicular epidermis, follicular ostia, and hair shafts. To prevent cross-contamination, DermLite DL4 Ice Caps were utilized and disinfected with povidone-iodine solution between patients.

All acquired clinical and trichoscopic images were transferred to a personal computer, anonymized, and organized into dedicated files. The images were independently evaluated by two senior investigators who were blinded to patient clinical TC subtypes and KOH results. Primary inter-rater concordance before consensus was high; any individual discrepancies in feature identification were resolved through joint consensus review prior to final data entry.

The investigators evaluated the images for pre-defined trichoscopic features using standardized international consensus terminology: perifollicular scaling, diffuse scaling, broken hairs, bent hairs, barcode hairs, zigzag hairs, comma hairs, corkscrew hairs, block hairs, black dots, follicular pustules, erythema, hemorrhagic crusts, telangiectasias, and loss of follicular ostia.

The calculation of sample size was carried out by applying Cochrane formula for the single proportion in the cross-sectional observational study: n=(Z^2·p·(1-p))/d^2. Using *P*=0.50 (to get the maximum possible variance and sample size in the case of presence of primary trichoscopic characteristics), confidence level 95% (Z=1.96), and margin of error 0.10, the sample size was calculated as n=96. In order to take into account possible unassessability of the trichoscopic picture, the sample size was increased to N=100.

Data analysis was performed using IBM SPSS Statistics (version 29.0, IBM Corp., Armonk, NY, USA). Categorical variables were expressed as frequencies and percentages, while continuous variables were presented as means, standard deviations (SD), and ranges. Associations between categorical variables (trichoscopic features and

clinical variants) were evaluated using the Pearson Chi-square test; Yates' correction or Fisher's exact test was applied where appropriate. A *P*-value of ≤0.05 was considered statistically significant

Results

A total of 100 patients were enrolled in the study. The mean age was 6.4±3.1 years (range: 6 months to 13 years), with no adult patients included. The 5 to 9-year age group was the most frequently affected (52%), followed by children below 5 years (29%) and those aged 10 years or older (19%). There was a male predominance, with 66 males (66%) and 34 females (34%). A family history of dermatophyte infection was reported in 62% of cases, and close contact with animals was documented in 63% **(Table 1)**.

The mean duration of the disease at presentation was 7.7±7.8 weeks (range: 1-48 weeks), with the majority of patients (56%) presenting within the first four weeks. Concomitant tinea infections elsewhere on the body were observed in 12% of the patients, most frequently tinea corporis (41.7%) and tinea faciei (41.7%). Regarding the clinical variants of tinea capitis, the grey patch was the most common, identified in 61 patients (61%), followed by kerion in 18 (18%), the pustular variant in 13 (13%), and the black dots variant in 8 (8%). No cases of favus were observed. Direct microscopic examination with 10% KOH was positive in 66 patients (66%) and negative in 34 patients (34%) **(Table 1)**.

The most frequently observed trichoscopic features across all clinical variants were perifollicular scaling and broken hairs, each present in 94 patients (94%). This was followed by diffuse scaling in 86 patients (86%), bent hairs in 71 (71%), and barcode hairs in 60 (60%). Inflammatory skin changes were also prominent, with erythema observed in 52% of patients and hemorrhagic crusts in 51%. Various dystrophic hair shafts were noted at lower frequencies, including zigzag hairs (44%), black dots (40%), block hairs (37%), corkscrew hairs (36%), and comma hairs (34%). Follicular pustules were seen in 29% of cases. Loss of follicular ostia was observed in 20 patients (20%), and telangiectasias were noted in 9 patients (9%) **(Table 2)**.

Table 1 Baseline Demographic, Clinical, and Mycological Characteristics of the Study Cohort (n=100).

Characteristic/ Subcategory	*Frequency / Value*	*P value*
Age (years)		
< 5 years	29 (29.0%)	
5-9 years	52 (52.0%)	
≥ 10 years	19 (19.0%)	
Mean±SD (Range)	6.4±3.1 (0.5-13)	
Gender		
Male	66 (66.0%)	
Female	34 (34.0%)	
Risk Factors		
Family history of infection	62 (62.0%)	
Animal contact	63 (63.0%)	
Disease Duration (weeks)		
Four	56 (56.0%)	
Eight	21 (21.0%)	
Twelve	9 (9.0%)	
Sixteen & more	14 (14.0%)	
Mean±SD (Range)	7.7±7.8 (1–48)	
Tinea Elsewhere on Body		
Yes	12 (12.0%)	0.08
No	88 (88.0%)	
Type of Tinea Elsewhere ($n = 12$)		
T. corporis	5 (41.7%)	
T. faciei	5 (41.7%)	
T. corporis & T. faciei	2 (16.7%)	
Clinical Variant		
Grey patch	61 (61.0%)	0.03*
Kerion	18 (18.0%)	
Pustular	13 (13.0%)	
Black dots	8 (8.0%)	
Direct Microscopy (10% KOH)		
Positive	66 (66.0%)	0.03*
Negative	34 (34.0%)	

* Statistically significant differences (*P*≤0.05)

Statistical analysis revealed significant associations between specific trichoscopic features and the distinct clinical variants of tinea capitis **(Table 3)**.

Perifollicular scaling was nearly universal across all variants (77.8-100%) and did not differ significantly between them (*P*=0.012). The black dots variant exhibited a significant preponderance of dystrophic hairs, including black dots (*P*<0.001), comma hairs

Table 2 Trichoscopic findings in patients with Tinea Capitis (n=100).

Trichoscopic finding	*n*	*%*
Perifollicular scales	94	94.0
Broken hairs	94	94.0
Diffuse scales	86	86.0
Bent hairs	71	71.0
Barcode hairs	60	60.0
Erythema	52	52.0
Hemorrhagic crusts	51	51.0
Zigzag hairs	44	44.0
Black dots	40	40.0
Block hairs	37	37.0
Corkscrew hairs	36	36.0
Comma hairs	34	34.0
Follicular pustules	29	29.0
Loss of follicular ostia	20	20.0
Telangiectasia	9	9.0

(P=0.010), and corkscrew hairs (P<0.001). Among the inflammatory variants, kerion was significantly associated with hemorrhagic crusts and erythema (both *P*<0.001), while the pustular variant showed the highest rates of follicular pustules (84.6%) and erythema (92.3%). Follicular pustules occurred in 77.8% of kerion cases but were absent from all black dots variant cases (*P*< 0.001).

Loss of follicular ostia was significantly associated with clinical variant (*P*<0.001). It was most frequent in kerion (55.6%) and pustular (46.2%) variants, but it also occurred in 6.6% of grey patch cases and was absent in black dots cases. Therefore, loss of follicular ostia was predominantly, but not exclusively seen in inflammatory variants.

Discussion

In this study, a comprehensive analysis of the trichoscopic spectrum of tinea capitis (TC) in an Iraqi pediatric cohort is presented. The findings of this study demonstrate that distinct clinical variants exhibit dermoscopic signatures that are statistically significant. The demographic profile of our patients is consistent with the epidemiology of TC, which has been established as a disease that affects children who are not yet adolescents. This is in line with regional data from Iraq[4,15,16] and global literature **(Table 4)**. The mean age of 6.4 years and the significant male predominance (66%) are both consistent with these findings. The majority of the time, this demographic skew can be attributed to increased exposure to the outdoors, higher rates of physical activity and sweating among boys, and frequent close contact in school environments. Furthermore, the high rates of family history (62%), as well as animal contact (63%), that were observed in our cohort shed light on the significant role that household and zoophilic transmission play in this region. This is a trend that has most likely been exacerbated by the increased ownership of pets that occurred after the COVID-19 pandemic.

The percentage is higher in the current study, which

Table 3 Comparison between trichoscopic findings and clinical variants of Tinea capitis.

Trichoscopic feature	*Grey patch (n=61)*	*Kerion (n=18)*	*Pustular (n=13)*	*Black dots (n=8)*	*χ2 value*	*p-value*
Perifollicular scales	98.4% (60)	77.8% (14)	92.3% (12)	100.0% (8)	11.03	0.012*
Diffuse scales	90.2% (55)	66.7% (12)	92.3% (12)	87.5% (7)	6.91	0.075
Black dots	27.9% (17)	61.1% (11)	30.8% (4)	100.0% (8)	19.54	<0.001*
Comma hairs	37.7% (23)	11.1% (2)	23.1% (3)	75.0% (6)	11.26	0.010*
Broken hairs	96.7% (59)	88.9% (16)	84.6% (11)	100.0% (8)	4.18	0.243
Corkscrew hairs	39.3% (24)	5.6% (1)	30.8% (4)	87.5% (7)	16.90	<0.001*
Zigzag hairs	50.8% (31)	33.3% (6)	30.8% (4)	37.5% (3)	3.04	0.385
Follicular pustules	6.6% (4)	77.8% (14)	84.6% (11)	0.0% (0)	58.52	<0.001*
Bent hairs	73.8% (45)	77.8% (14)	53.8% (7)	62.5% (5)	2.77	0.429
Barcode hairs	67.2% (41)	38.9% (7)	69.2% (9)	37.5% (3)	6.81	0.078
Erythema	36.1% (22)	88.9% (16)	92.3% (12)	25.0% (2)	26.82	<0.001*
Hemorrhagic crust	36.1% (22)	88.9% (16)	84.6% (11)	25.0% (2)	23.83	<0.001*
Telangiectasia	6.6% (4)	16.7% (3)	7.7% (1)	12.5% (1)	1.88	0.597
Loss of follicular ostia	6.6% (4)	55.6% (10)	46.2% (6)	0.0% (0)	28.67	<0.001*
Block hairs	31.1% (19)	61.1% (11)	30.8% (4)	37.5% (3)	5.60	0.133

Note: Significant differences between percentages were tested using Pearson Chi-square (χ^2) at the 0.05 level. Asterisks (*) denote statistical significance

Table 4 Comparison of different trichoscopic features of TC between this study and other published studies.

Trichoscopic features	*This study (N=100)*	*Dalal et al. (2020-21) (N=100)*	*Genedy et al. (2020) (N=60)*	*Aqil et al. (2017) (N=34)*	*Brasileiro et al. (2016) (N=50)*	*Kumar et al. (2016-18) (N=98)*
Perifollicular scales	94%	90%	85%	-	94%	46.9%
Broken hairs	94%	89%	90%	91.2%	74%	53.6%
Diffuse scales	86%	-	96%	85.3%	90%	4.08%
Bent hairs	71%	-	-	70.6%	4%	-
Barcode hairs	60%	12%	18.3%	26.5%	-	2.01%
Erythema	52%	-	-	64.7%	-	ETH* (13.2%)
Hemorrhagic crust	51%	5%	41.7%	50%	-	ETH* (13.2%)
Telangiectasia	9%	-	-	-	-	ETH* (13.2%)
Zigzag hairs	44%	24%	20%	17.6%	12%	15.3%
Black dots	40%	62%	30%	73.5%	34%	82.6%
Block hair	37%	-	-	-	5.2%	-
Corkscrew hairs	36%	-	68.3%	35.3%	30%	32.6%
Comma hairs	34%	58%	73.3%	55%	20%	57.1%
Follicular pustules	29%	-	5%	23.5%	-	-

*ETH: Erythema, Telangiectasia and Hemorrhage combined category.

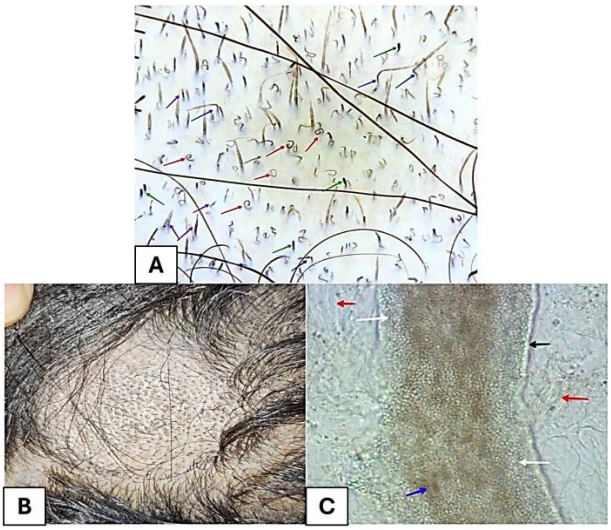


Figure 1 Grey patch Tinea capitis in a 9-year-old female. (A) Polarized dermoscopy showing comma hairs (red arrows), elbow hairs (blue arrows), block hairs (green arrows), and broken hairs (purple arrows) (original magnification ×10). (B) Clinical image showing a well-defined patch of alopecia on the scalp. (C) Direct microscopy with 10% KOH showing spores (white arrow) within the hair shaft (black arrow), shaft destruction (blue arrow), and surrounding hyphae (red arrow).

may be due to the fact that the majority of our patients were of lower socioeconomic status, living in crowded conditions with poor hygienic practices such as sharing personal equipment (such as combs and towels). Among the clinical variants, the grey patch variant was the most prevalent **(Figure 1)**, accounting for 61% of all cases. This was followed by kerion (18%) **(Figure 2)**, the pustular variant (13%), and the black dots variant (8%) **(Figure 3)**.

Interestingly, only 66% of our clinically suspected cases that were subsequently enrolled showed a positive result when the direct microscopic examination was performed with 10% potassium hydroxide. It is important to note that this highlights a limitation of KOH preparation that has been well documented: the rate of false-negative results can reach up to forty percent due to sampling errors or observer experience.[17]

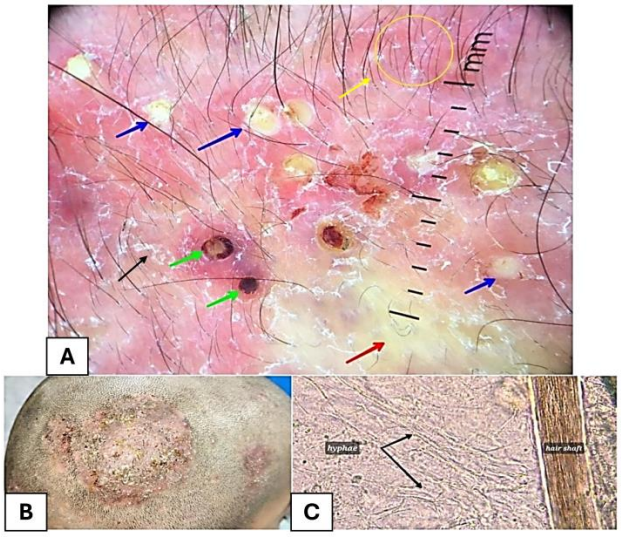


Figure 2 Kerion in a 7-year-old male. (A) Polarized dermoscopy showing follicular pustules (blue arrow), hemorrhagic crusts (green arrow), loss of follicular ostia (red arrow), erythema (yellow circle), diffuse scaling (black arrow), and perifollicular scales (yellow arrow) (original magnification ×10). (B) Clinical image showing an inflamed boggy swelling of the scalp. (C) Direct microscopy with 10% KOH showing hyphae (black arrow) surrounding the hair shaft.

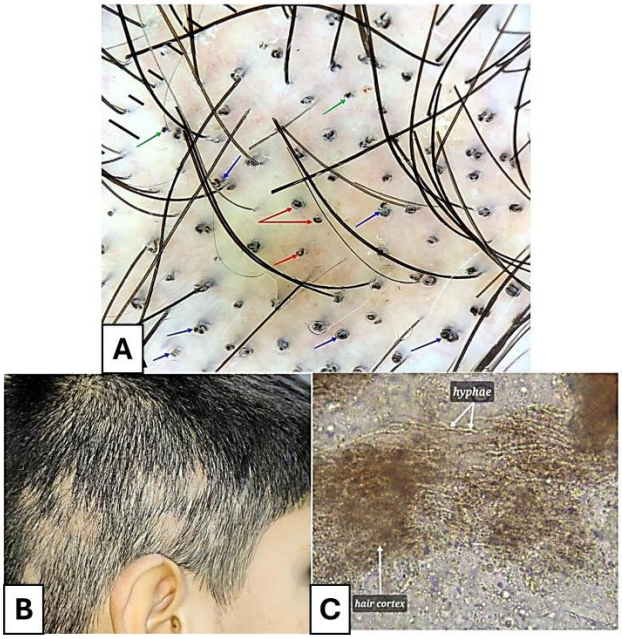


Figure 3 Black dots Tinea capitis in a 6-year-old male. (A) Polarized dermoscopy showing black dots (green arrow), comma hairs (red arrow), and corkscrew hairs (blue arrow) (original magnification ×10). (B) Clinical image showing multiple patches of alopecia. (C) Direct microscopy with 10% KOH showing hyphae destroying the hair shaft.

In these kinds of situations, trichoscopy proves to be an extremely useful diagnostic tool that is both immediate and complementary. The most common findings across all clinical variants were broken hairs (94%) and perifollicular scaling (94%). This finding is similar to the findings that Genedy *et al*; Brasileiro *et al*; and Aqil *et al*. discovered.[12,17,18] These characteristics are representative of the fundamental host response to fungal invasion, which is the disruption of the hair shaft cortex that leads to fracture, as well as the subsequent perifollicular inflammatory reaction. However, the true diagnostic utility of trichoscopy lies in its ability to differentiate between the specific variants of TC based on secondary features.

During the course of non-inflammatory TC, we noticed a distinct dichotomy. The grey patch variant was characterized by abundant perifollicular scaling (98.4%) and broken hairs (96.7%), reflecting the superficial nature of fungal invasion in this variant; however, because perifollicular scaling is common to all forms of TC (94% overall), it did not distinguish grey patch from the other variants (P=0.012)

Conversely, the black dots variant exhibited a distinct "dystrophic hair signature," with statistically significant associations with black dots (P<0.001), comma hairs (P=0.010), and corkscrew hairs (P<0.001). When comparing our trichoscopic data with global literature, distinct geographical and methodological variations emerge, particularly regarding specific dystrophic hair shafts. Lastly, the wide variation in the reported frequency of trichoscopic "black dots" across studies (ranging from 30% to 82.6%) does not necessarily reflect true epidemiological differences, but rather the clinical variant distribution of the studied cohort; studies like Kumar *et al*.[19] who reported an 82.6% prevalence of black dots, inherently enrolled a higher proportion of the "black dots" clinical variant compared to our cohort, where it represented only 8% of cases.

As fungal cultures take up to four weeks to be finalized, trichoscopy offers invaluable bedside differentiation between kerion and mimics prior to mycological results.

Bacterial impetigo & scalp abscesses: Bacterial infections are characterized by significant erythema, follicular pustules, and crusting. Nonetheless, bacteria do not involve deeper layers of epidermis and infundibulum, unlike fungus, thus not causing any changes in hair shaft morphology. Kerion contains pathognomonic dystrophic hair shaft markers interspersed among hemorrhagic crusts and perifollicular scales (77.8%).

Dissecting cellulitis: It shows double-borders 3D yellow dots (entrapped keratin/sebum inside dilated infundibula) and yellow structureless areas (pus lakes) evolving into polytrichia. There are no dermatophytic coiling and shaft fracturing patterns (comma, corkscrew, barcode hairs). Kerion presents with acute loss of follicular ostia (55.6%) due to inflammation, but without any skin clefts or hair tufting.

Tinea incognito: Misuse of steroids causes suppression of epidermal scaling and absence of inflammatory margin, mimicking seborrheic dermatitis or lupus. Dermoscopy helps to reveal the underlying disease through persistent subclinical hair shaft markers (comma, corkscrew and barcode hairs), which makes it possible to stop using steroids and prescribe systemic antifungals

Conclusion

Trichoscopy serves as a highly effective, non-invasive adjunct for the evaluation of tinea capitis (TC), with perifollicular scaling and broken hairs representing the fundamental diagnostic hallmarks across all clinical variants. Beyond these ubiquitous findings, our study demonstrates that distinct clinical presentations of TC exhibit statistically significant, variant-specific trichoscopic signatures.

In contrast to the black dots variation, which is recognized by a particular triad consisting of black dots, comma hairs, and corkscrew hairs, non-inflammatory grey patches are characterized by abundant perifollicular scales. The kerion is largely related with hemorrhagic crusts and erythema, whilst the pustular variety mostly features follicular pustules. Inflammatory presentations show patterns that are equally unique from one another.

Notably, loss of follicular ostia was significantly associated with clinical variant (P<0.001) and was predominantly seen in inflammatory TC, although it also occurred in a small proportion of grey patch cases. This finding-historically considered pathognomonic for primary cicatricial alopecias-highlights the possibility that severe dermatophyte inflammation can cause scarring and calls for additional histological linkage.

In the end, the ability to recognize a combination of perifollicular scaling with any sort of dystrophic hair enables prompt suspicion of TC at the bedside. Trichoscopy should be consistently incorporated into the initial evaluation of hair loss in children, as this is something that we strongly advocate for. In order to establish the usefulness of trichoscopy in monitoring therapy response over time, it is vital that future multicenter investigations incorporate fungal culture and molecular typing. This will allow for the correlation of these dermoscopic patterns with specific etiological agents.

Limitations Several methodological and sample-size limitations should be acknowledged. Although the overall sample size (N=100) was adequate to assess trichoscopic signs in pediatric tinea capitis, some clinical variants had small subgroups, particularly black dots (n=8) and pustular variants (n=13), limiting comparisons of less common trichoscopic features. As this was a single-center tertiary referral study, a bias toward more severe or inflammatory cases, such as kerion, is possible. To minimize confounding, patients previously treated with topical or systemic antifungals or corticosteroids were excluded.

Fungal culture and molecular speciation were not performed. Although culture is the gold standard for species identification, its routine use in high-volume, resource-limited settings may be limited by cost, prolonged turnaround time, and laboratory availability. Therefore, this study relied on 10% KOH microscopy combined with real-time trichoscopy as immediate diagnostic modalities. Future multicenter prospective studies with larger, balanced subgroups and fungal culture or PCR-based speciation are recommended to further correlate fungal species with specific trichoscopic patterns.

Declaration of patient consent Authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship None.

Conflict of interest No conflict of interest.

Author's contribution

ZKA: Substantial contributions to study design, acquisition of data and manuscript writing.

IAA: Substantial contributions to study design, acquisition of data and manuscript writing.

Every author has given final approval of the manuscript version to be published and agreed to be accountable for all aspects of the work.

References

1. Al-Khafaji MA, Al-Rubaye AA. Pediatric tinea capitis in Iraq: Epidemiological trends and clinical presentation. *Iraqi Postgrad Med J*. 2022;**21(3)**:215-22.
2. Al-Khikani FHO. Global threat of dermatophytosis and innovative diagnostic insights: A comprehensive review. *Biomed Biotechnol Res J*. 2022;**6(1)**:15-23.
3. Sharquie KE, Al-Nuaimy AA, Al-Jaralla FA. Etiological shift of dermatophytosis in Iraq: A clinicomycological evaluation. *Iraqi J Med Sci*. 2022;**20(2)**:142-50.
4. Sharquie KE, Jabbar RI. Major outbreak of dermatophyte infections leading into imitation of different skin diseases: Trichophyton mentagrophytes is the main criminal fungus. *J Turk Acad Dermatol*. 2021;**15(1)**:1-6.
5. Al-Janabi MH, Al-Rawi RA. Diagnostic evaluation of KOH microscopy in pediatric tinea capitis: An Iraqi tertiary center study. *J Fac Med Baghdad*. 2022;**64(1)**:34-40.
6. Al-Tawil H, Al-Bayati A. Laboratory and molecular diagnosis of dermatophytosis in clinical settings. *Iraqi J Comm Med*. 2023;**36(1)**:45-52.
7. Al-Sudany NK. Pediatric scalp disorders and alopecic presentations in Iraqi children. *Iraqi Postgrad Med J*. 2022;**21(1)**:18-25.
8. Rajkumar A, Muralidhar K, Preethi S, Swaminathan A, Sundaram M, Rangarajan S. Dermoscopy of scalp and hair disorders: An updated review. *Dermatol Ther*. 2022;**35(4)**:e15312.
9. Anna W, Adriana R, Mariusz S, Malgorzata O, Lidia R. Trichoscopy in pediatric hair loss: Diagnostic value and clinical applications. *J Eur Acad Dermatol Venereol*. 2022;**36(5)**:670-82.
10. Chandrashekar BS, Roopa MS, Kumar BTB, Narayana NL. Trichoscopy Assessment of Hair and Scalp Characteristics in Healthy Indian Population: Establishing Normative Reference Value. *Clin Dermatol Rev*. 2026;**10(2)**:85-90
11. Gupta AK, Mays RR, Versteeg SG, Piraccini BM, Shear NH, Piguet V, *et al*. Updated consensus guidelines on the clinical diagnosis and management of tinea capitis. *J Eur Acad Dermatol Venereol*. 2023;**37(2)**:210-22.
12. Al-Hassany HA, Al-Khafaji MA. Trichoscopic patterns in pediatric tinea capitis: A prospective study from Baghdad. *Iraqi J Med Sci*. 2023;**21(1)**:33-40.
13. Rudnicka L, Waśkiel-Burnat A, Olszewska M. Trichoscopy in scarring and non-scarring alopecias: A comprehensive diagnostic update. *Dermatol Clin*. 2021;**39(3)**:371-84.
14. Al-Mutairi N, Al-Farag S. Dermoscopic signatures of cicatricial alopecia in Middle Eastern populations. *J Dermatol*. 2022;**49(4)**:412-20.
15. Al-Khafaji MA, Al-Hamamy HR. Prevalence and clinical patterns of dermatophytosis in Baghdad, Iraq. *Iraqi Postgrad Med J*. 2022;**21(2)**:101-8.
16. Sharquie KE, Al-Nuaimy AA. Pediatric tinea capitis in Iraq: Public health implications and epidemiological spectrum. *J Fac Med Baghdad*. 2022;**64(3)**:140-6.
17. Genedy RM, Sorour OA, Elokazy MAW. Trichoscopic signs of tinea capitis: a guide for selection of appropriate antifungal. *Int J Dermatol*. 2021;**60(4)**:471-81.
18. Al-Rubaie A, Al-Obaidi S. Trichoscopy as an additional tool for the differential diagnosis of tinea capitis in pediatric patients. *Iraqi J Med Sci*. 2022;**20(4)**:512-9.
19. Kumar P, Das S, Bhattacharya SN. Trichoscopy as a diagnostic tool for pediatric tinea capitis: A prospective study. *Indian J Dermatol*. 2022;**67(3)**:210-6.