

Research Article**TRICHOSCOPIC FEATURES OF CLINICALLY SUSPECTED TINEA CAPITIS IN CHILDREN: A PROSPECTIVE STUDY****Dr Lalith S¹, Dr Bharath Bangera N J², Dr Samhitha S R^{3*}**¹Assistant Professor, Department of Dermatology, Subbaiah Institute of Medical Sciences, Shivamogga, Karnataka, India.²Assistant Professor, Department of Dermatology, Subbaiah Institute of Medical Sciences, Shivamogga, Karnataka, India.^{3*}Assistant Professor, Department of General Medicine, Subbaiah Institute of Medical Sciences, Shivamogga, Karnataka, India.

Corresponding Author: Dr Samhitha S R

Assistant Professor, Department of General Medicine, Subbaiah Institute of Medical Sciences, Shivamogga, Karnataka, India.

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Abstract

Background: Tinea capitis (TC) is a common dermatophyte infection of the scalp predominantly affecting children. Clinical manifestations range from non-inflammatory scaling and alopecia to inflammatory presentations such as kerion. Although direct microscopy with potassium hydroxide (KOH) preparation is useful for diagnosis, trichoscopy has emerged as a rapid, non-invasive technique for demonstrating characteristic hair and scalp abnormalities.

Objective: To study the trichoscopic features observed in children with tinea capitis.

Methods: A prospective study was conducted among 50 patients aged 0–18 years with clinical symptoms and signs suggestive of tinea capitis. Demographic details, clinical features and trichoscopic findings were recorded using a predesigned structured format. Percentages were calculated using simple arithmetic methods.

Results: The mean age of the patients was 10 ± 2 years and the male-to-female ratio was 2.5:1. Of the 50 patients, 32% had inflammatory tinea capitis and 68% had non-inflammatory disease. Broken hairs were observed in 48 patients (96%), corkscrew hairs and interfollicular scaling in 46 patients (92%) each, comma hairs in 42 patients (84%), perifollicular scaling in 30 patients (60%), and black dots in 28 patients (56%).

Conclusion: Trichoscopy demonstrated frequent characteristic hair and scalp abnormalities in children with clinically suspected tinea capitis. It may serve as a rapid, non-invasive and inexpensive diagnostic adjunct in this setting.

Keywords: Tinea capitis; Trichoscopy; Dermoscopy; Children; Comma hairs; Corkscrew hairs; Broken hairs; Black dots

INTRODUCTION

Tinea capitis is a dermatophyte infection involving the scalp and hair and is predominantly encountered in children. The clinical presentation may vary from relatively non-inflammatory scaling and alopecia to inflammatory lesions such as kerion. [4,5]

Conventional diagnosis can be supported by direct microscopic examination of infected hair and scalp scales using potassium hydroxide (KOH) preparation, with fungal culture used for mycological confirmation where available. Trichoscopy, or dermoscopy of the hair and scalp, provides magnified visualization of hair-shaft and scalp abnormalities and has increasingly been used as a diagnostic adjunct in hair and scalp disorders. [4,5,9]

Characteristic trichoscopic findings described in tinea capitis include comma hairs, corkscrew hairs, broken hairs, black dots, Morse code-like hairs, zigzag hairs and scalp scaling. Recognition of characteristic hair-shaft abnormalities may facilitate rapid bedside assessment, particularly in children. [1–3,6–10]

The present study was undertaken to evaluate the trichoscopic features observed in children with clinically suspected tinea capitis.

MATERIALS AND METHODS

Study design and participants

This was a prospective observational study involving 50 patients aged 0–18 years with clinical symptoms and signs suggestive of tinea capitis. Demographic details, clinical features and trichoscopic findings were recorded using a predesigned structured format.

Clinical assessment

Patients were clinically assessed and classified into inflammatory and non-inflammatory forms according to their clinical presentation.

Trichoscopic assessment

Trichoscopic examination of the scalp and hair was performed and characteristic findings were recorded. The findings reported in the study included broken hairs, corkscrew hairs, interfollicular scaling, comma hairs, perifollicular scaling and black dots.

Statistical analysis

The study data were summarized using frequencies and percentages. No inferential statistical analysis was performed.

RESULTS

Demographic and clinical characteristics

A total of 50 children were included. The mean age was 10 ± 2 years and the reported male-to-female ratio was 2.5:1. Inflammatory tinea capitis constituted 32% of cases, while 68% had the non-inflammatory form.

Variable	Number	Percentage
Total participants	50	100%
Mean age	10 ± 2 years	—
Male:female ratio	2.5:1	—
Inflammatory tinea capitis	16	32%
Non-inflammatory tinea capitis	34	68%

Table 1. Demographic and clinical characteristics of the study population.

Trichoscopic findings

Broken hairs were the most frequent trichoscopic finding, observed in 48 of 50 patients (96%). Corkscrew hairs and interfollicular scaling were each present in 46 patients (92%). Comma hairs were present in 42 patients (84%), while perifollicular scaling and black dots were observed in 60% and 56% of patients, respectively.

Trichoscopic finding	Number of patients (n=50)	Percentage
Broken hairs	48	96%
Corkscrew hairs	46	92%
Interfollicular scaling	46	92%

Trichoscopic finding	Number of patients (n=50)	Percentage
Comma hairs	42	84%
Perifollicular scaling	30	60%
Black dots	28	56%

Table 2. Frequency of trichoscopic findings.

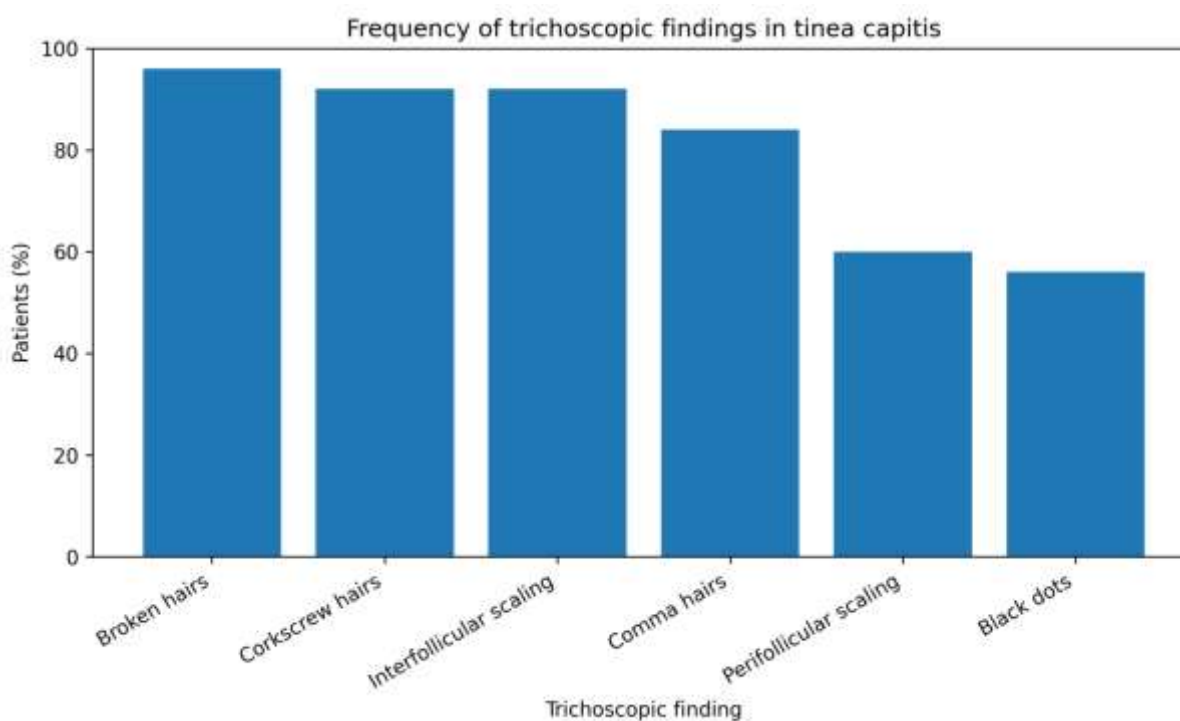


Figure 1. Frequency of trichoscopic findings among children with tinea capitis (n=50).

Clinical and trichoscopic images

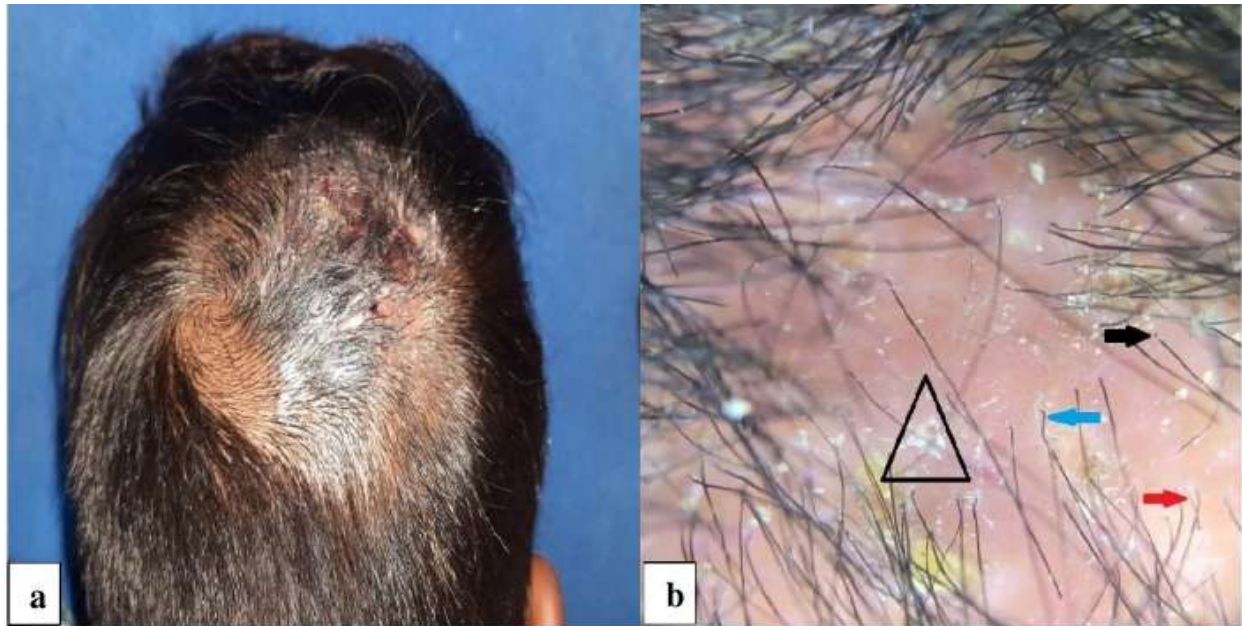


Figure 2. (a) Boggy swelling with patchy hair loss over the parietal scalp; (b) trichoscopy showing black dots (black arrow), broken hairs (red arrow), corkscrew hair (blue arrow) and interfollicular scaling (black triangle).

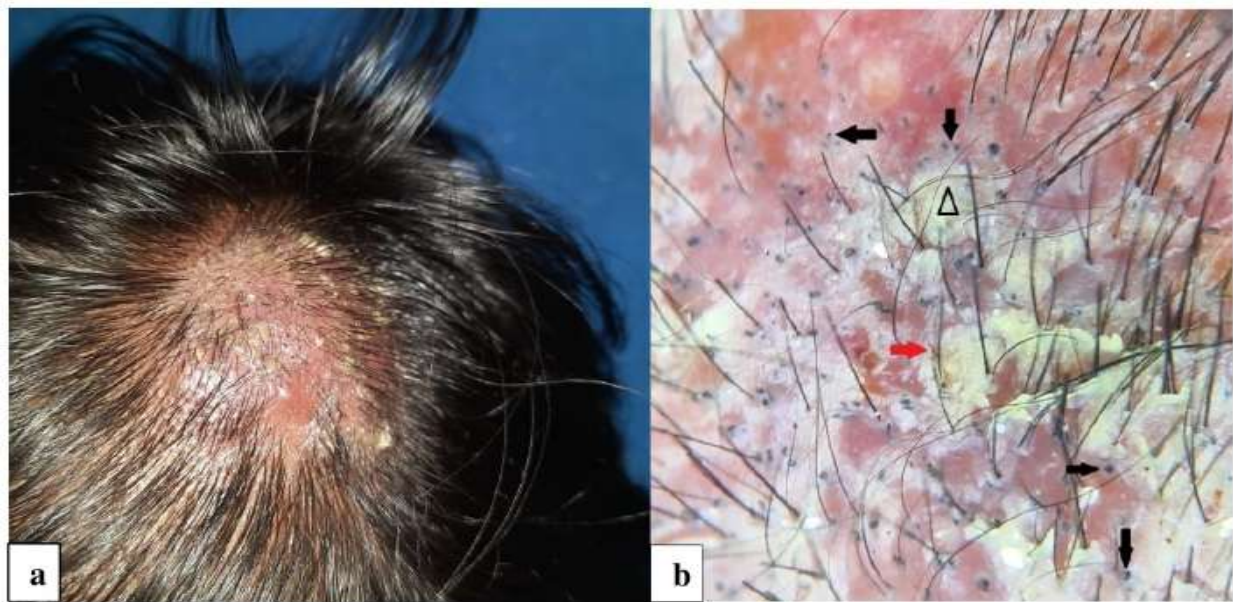


Figure 3. (a) Boggy swelling with patchy hair loss over the parietal scalp; (b) corresponding trichoscopic findings showing black dots, broken hairs and scalp scaling.

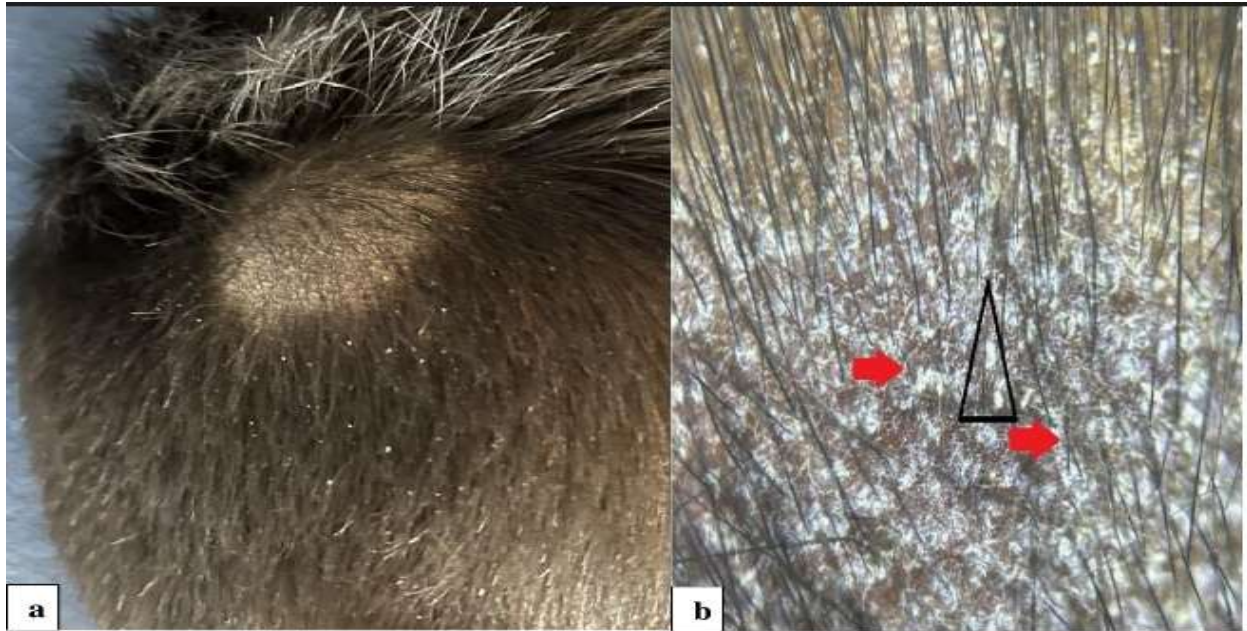


Figure 4. (a) Patchy hair loss over the parietal scalp with thick scaling; (b) trichoscopy showing broken hairs (red arrows) and interfollicular scaling (black triangle) (Illuco IDS-1100 $\times 10$).

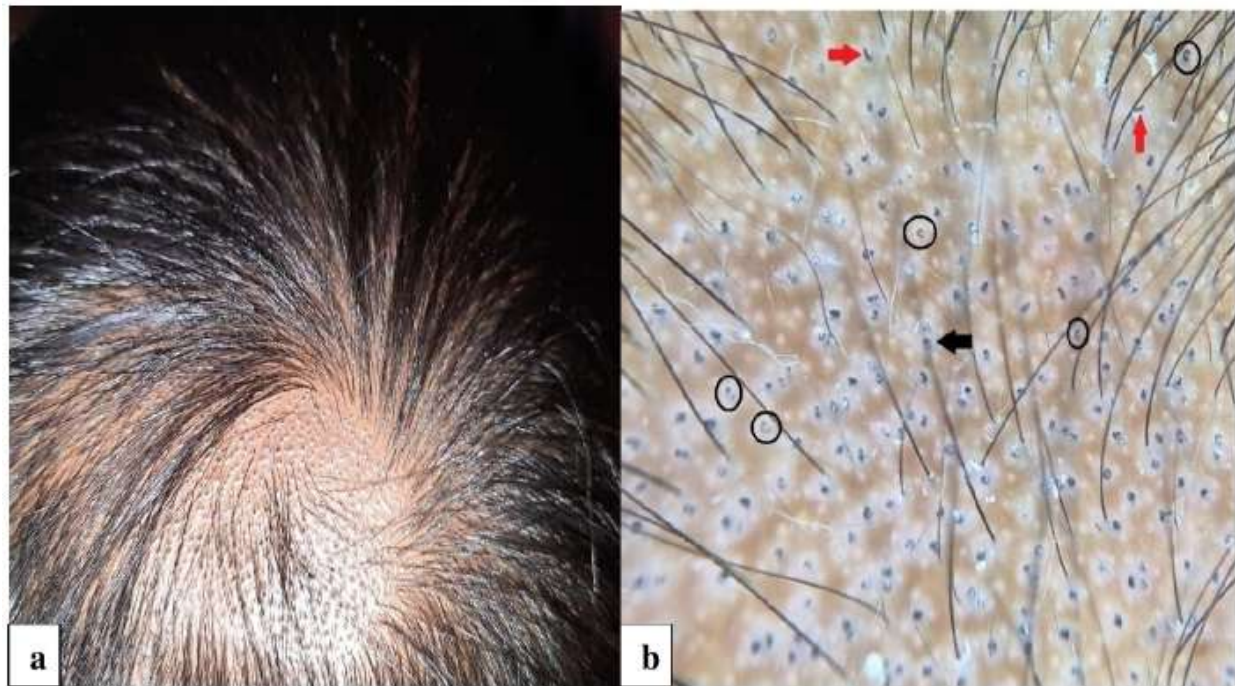


Figure 5. (a) Patchy hair loss over the parietal scalp; (b) trichoscopy showing black dots (black arrow), broken hairs (red arrows) and comma hairs (inside circles) (Illuco IDS-1100 $\times 10$).

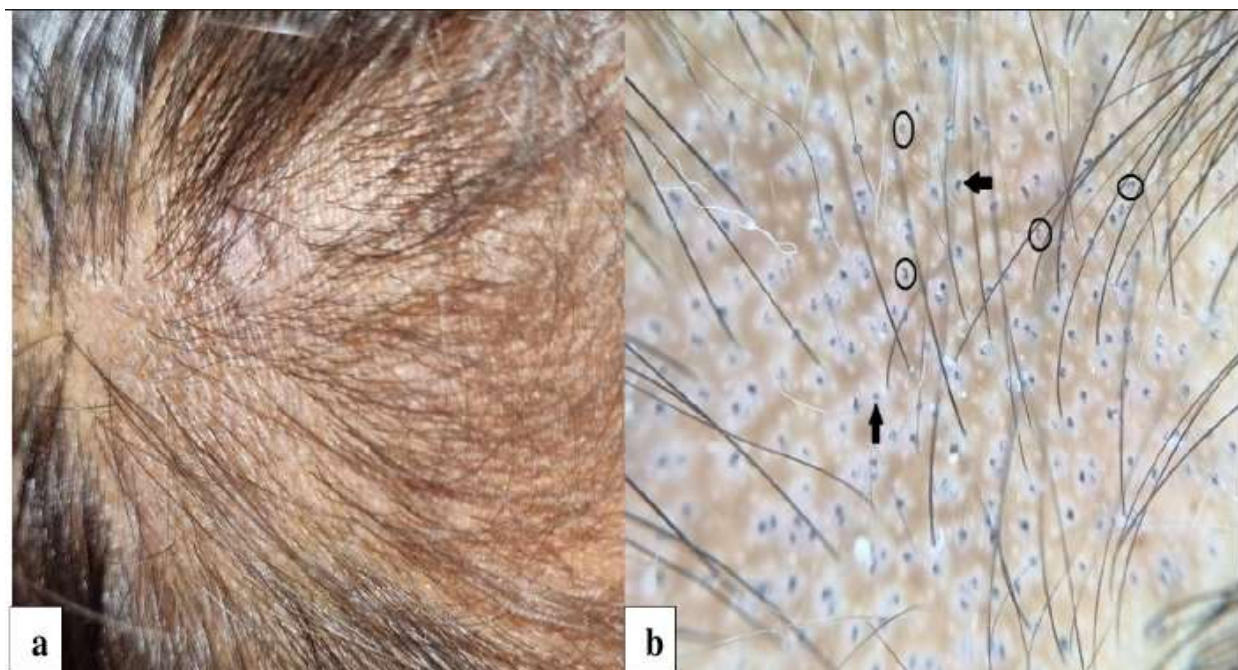


Figure 6. (a) Patchy hair loss over the parietal scalp; (b) trichoscopy showing black dots (black arrows) and comma hairs (inside circles) (Illuco IDS-1100 $\times 10$).

DISCUSSION

The present study evaluated the trichoscopic findings in 50 children with clinically suspected tinea capitis. The study population had a mean age of 10 ± 2 years and showed a male predominance. Non-inflammatory tinea capitis was more frequent than the inflammatory form.

Broken hairs were the most frequent trichoscopic feature in the present study, being observed in 96% of patients. Broken hairs are common in tinea capitis but are not disease-specific and should be interpreted together with more characteristic trichoscopic signs. [1,8]

Corkscrew hairs were observed in 92% of patients. Corkscrew hairs are among the characteristic trichoscopic findings of tinea capitis and have been described across different dermatophyte species and hair types. [1,3,10]

Interfollicular scaling was also frequent, occurring in 92%, while perifollicular scaling was seen in 60%. Scaling is an important scalp finding but is less specific when considered in isolation. The systematic review by Waśkiel-Burnat et al. reported diffuse scaling as common, while perifollicular scaling was also frequently observed. [1]

Comma hairs were observed in 84% of patients. They are among the best-recognized trichoscopic markers of tinea capitis and were originally described as a useful feature for differentiating tinea capitis from alopecia areata. [2,7] Black dots were present in 56% of patients

and may represent broken hairs at the scalp surface; however, black dots are not specific and can also occur in other pediatric alopecias. [1,7,8]

The frequencies of comma hairs and corkscrew hairs in the present study were higher than the mean frequencies reported in the systematic review by Waśkiel-Burnat et al. (51% and 32%, respectively). [1] Differences may reflect the sample size, patient selection, clinical phenotype, geographic or population characteristics and study methodology. A prospective multicentre study also demonstrated that characteristic trichoscopic signs can have useful diagnostic accuracy when compared with mycological culture. [9]

The present study supports the practical role of trichoscopy as a rapid, non-invasive and inexpensive diagnostic adjunct in children with suspected tinea capitis. However, the findings should be interpreted in conjunction with clinical assessment and, where required, mycological investigations. [4,9]

LIMITATIONS

The study was conducted in a relatively small sample of 50 children, which may limit the generalizability of the findings to larger and more diverse pediatric populations.

The study was observational and descriptive in nature; therefore, causal relationships between individual trichoscopic findings and clinical characteristics could not be established.

The study did not include a control group of children with other causes of pediatric alopecia, limiting assessment of the specificity of individual trichoscopic findings for tinea capitis. Previous pediatric studies have shown that some findings, particularly black dots and broken hairs, may overlap with alopecia areata and other causes of hair loss. [7,8]

The frequencies of individual trichoscopic findings were reported, but their diagnostic sensitivity, specificity, positive predictive value and negative predictive value were not evaluated.

The study did not evaluate the relationship between individual trichoscopic findings and specific dermatophyte species; therefore, species-specific trichoscopic patterns could not be assessed.

Mycological confirmation by KOH examination and/or fungal culture was not reported as an inclusion criterion for all participants in the present manuscript. Therefore, the findings should be interpreted as findings in clinically suspected tinea capitis rather than as definitively culture-confirmed disease. [4,9]

CONCLUSION

Trichoscopy demonstrated frequent characteristic hair and scalp abnormalities in children with clinically suspected tinea capitis. Broken hairs, corkscrew hairs, interfollicular scaling and comma hairs were the most frequently observed findings. Trichoscopy may be a useful rapid,

non-invasive and inexpensive diagnostic adjunct, but mycological investigations remain important when diagnostic confirmation is required.

DECLARATIONS

Ethics approval: Ethical approval was obtained from the Institutional Ethics Committee before commencement of the study.

Consent for participation: Written informed consent for participation in the study was obtained from the participants' parents/legally authorized representatives.

Consent for publication: Written informed consent for publication of the study findings was obtained from the participants' parents/legally authorized representatives.

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Conflict of interest: The authors declare no conflict of interest.

Authors' contributions: Dr Lalith S contributed to the study conception, data collection and manuscript preparation; Dr Bharath Bangera N J contributed to the study supervision and critical revision; Dr Samhitha S R contributed to study supervision, manuscript review and is the corresponding author. The final author contributions should be confirmed by all authors before submission.

Data availability: The data generated during the study are available from the corresponding author on reasonable request, subject to institutional and ethical requirements.

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