

Telltale signs of skin trespassers: Clues to superficial mycosis

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Superficial fungal infections constitute the commonest reason for a dermatologic consultation across India. However, recently they have become a diagnostic challenge due to various reasons. This article highlights certain signs and appearances that may facilitate their diagnosis.

Clinical Signs

Besnier's sign/scratch sign/stroke of the nail/coup d'ongle sign

The fine branny scales of pityriasis versicolor may become visible after scratching the lesions with a sharp object. This sign is negative in treated cases and following a recent bath [Figure 1].¹

Double-edged Tinea/Ring-within-Ring Appearance

It is an important clinical marker of steroid modified tinea.² Due to relapsing inflammation, there is incomplete clearance of the fungal elements which clinically presents as parallelly arranged erythematous borders. This creates a double-edged appearance and the annular lesions develop multiple concentric rings spreading centrifugally, appearing like 'ring within ring' [Figure 2].³

Dumbbell-shaped Tinea

This appearance also indicates tinea incognito, characterised by the confluence of multiple annular lesions of various sizes across multiple anatomical locations. Additionally, there is loss of central clearing with eczematization, creating a 'dumbbell' appearance [Figure 3].^{2,3}

Ear Sign

Ear sign denotes the presence of erythematous scaly papules and plaques over helix, antihelix and retroauricular region, sparing the retroauricular fold, classical of tinea capitis. Notably, identical lesions involving the retroauricular folds indicate seborrheic dermatitis.⁴ Recently, 'ear sign' has also been attributed to the involvement of auricular pinna, suggestive of ipsilateral tinea faciei [Figure 4].³

Egg Crackling Sign

This clinical sign has been described in elderly patients with pityriasis versicolor. On stretching the lesion, the overlying scales break like the crackling of an eggshell.



Figure 1: Besnier's sign in pityriasis versicolor. (a) Before scratching. (b) After scratching with fingernail



Figure 2: Steroid modified tinea. (a) Double-edged tinea. (b) 'Ring within ring' appearance

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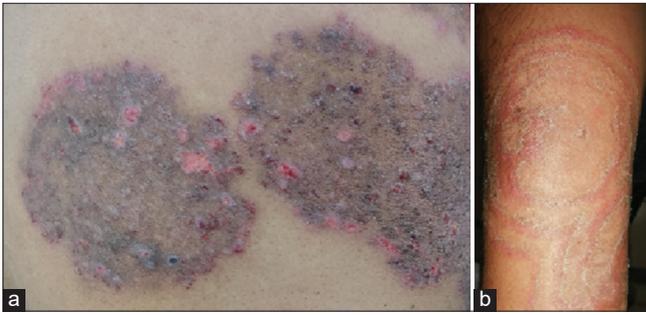


Figure 3: (a) Dumbbell-shaped tinea. (b) Both dumbbell and ring within ring appearance seen

Salt and Pepper Appearance

Tinea nigra is a superficial fungal infection characterised by asymptomatic brown to black macules and patches over palms and soles. A rare variant has been described which forms the speckled or ‘salt and pepper’ pattern over the palms.⁵

Zireli’s Sign/Evoked Scale Sign/Stretch Sign

On stretching the lesions of pityriasis versicolor with two fingers at 180° angle, the corneal layer parasitised by *Malassezia* gets exposed.⁶ This sign helps to differentiate pityriasis versicolor and other disorders involving dyspigmentation [Figure 5].⁷

Dermoscopic Signs

Aurora borealis pattern

On onychoscopy, onycholytic nail plate demonstrates multiple longitudinal lines of varied colours (yellow, brown, white, etc.) similar to the colours of aurora borealis. They represent fungal colonies, subungual debris and invasion, and is most commonly observed in distal and lateral subungual onychomycosis [Figure 6].⁸

Cigarette-ash Hair

This sign indicates post-treatment cases of tinea capitis. As the endothrix spores are eliminated by antifungals, the corkscrew hair become more fragile and easily breakable. New uninfected hair replaces them, which resemble cigarette ash on dermoscopy.⁹

Comma Hairs

It is a trichoscopic feature of tinea capitis. Multiple hyphae fill the hair follicle resulting in cracking and bending of the hair shaft with a marked distal angulation resembling ‘comma’ [Figure 7].¹⁰

Contrast Halo Sign

Dermoscopy of pityriasis versicolor reveals increased pigmentation around hypopigmented lesions and identical decreased pigmentation around primary lesions of hyperpigmented variant. This is called ‘Contrast halo sign’ [Figure 8].

Proposed mechanism – In hypopigmented variant, the compensatory melanogenesis occurs due to cytotoxic damage



Figure 4: Ear sign. Auricular pinna involved in a case of tinea faciei

and abnormal melanosomes in the primary lesion, while in hyperpigmented variant, the consumption of melanocytes occurs as a response to the stimulated melanogenesis in the primary lesion due to perivascular inflammation.¹¹

Corkscrew Hair

Corkscrew hair is considered to be a trichoscopic indicator of tinea capitis. Fungal invasion of a hair follicle along with its continuous growth results in bending and coiling of hair [Figure 7].⁹

Fish Net/Wire Fence Appearance

It is an easy and quick dermoscopic clue to pityriasis versicolor, useful when scratch sign is clinically negative. It is characterised by fine scales along the normal skin markings against a hypo/hyperpigmented background, simulating a ‘wire fence’/‘fish net’. [Figure 9].¹²

Morse Code/Bar Code Hair

It is a recent dermoscopic feature reported in tinea capitis and corporis, appearing as subtle interrupted horizontal white bands due to localised fungal invasion.¹³ These bands are multiple and represent ‘locus minoris resistentiae’ that make the hair easily deformable, translucent and fragile [Figure 10].¹⁴

Motheaten Scales

It is a specific dermoscopic feature of tinea corporis. Motheaten scales represent multiple annular lesions with peripheral scaling, coalescing to form larger multicyclic lesion in outward peeling direction [Figure 11].¹⁵

Reverse Triangular Pattern

This pattern is described in onychoscopy of onychomycosis. The black reverse triangle forms as wider nail pigmentation occurs at the distal end indicating fungal invasion from that end. The triangular sign is also observed in unguis melanoma and nail matrix nevus in children [Figure 12].¹⁶

Ruin Appearance

Ruin appearance is the special dermoscopic term depicting subungual keratosis in onychomycosis. It denotes the indentations of the ventral nail plate which occur due to accumulation of dermal debris in response to fungal invasion. It is classical for total dystrophic onychomycosis [Figure 13].¹⁷

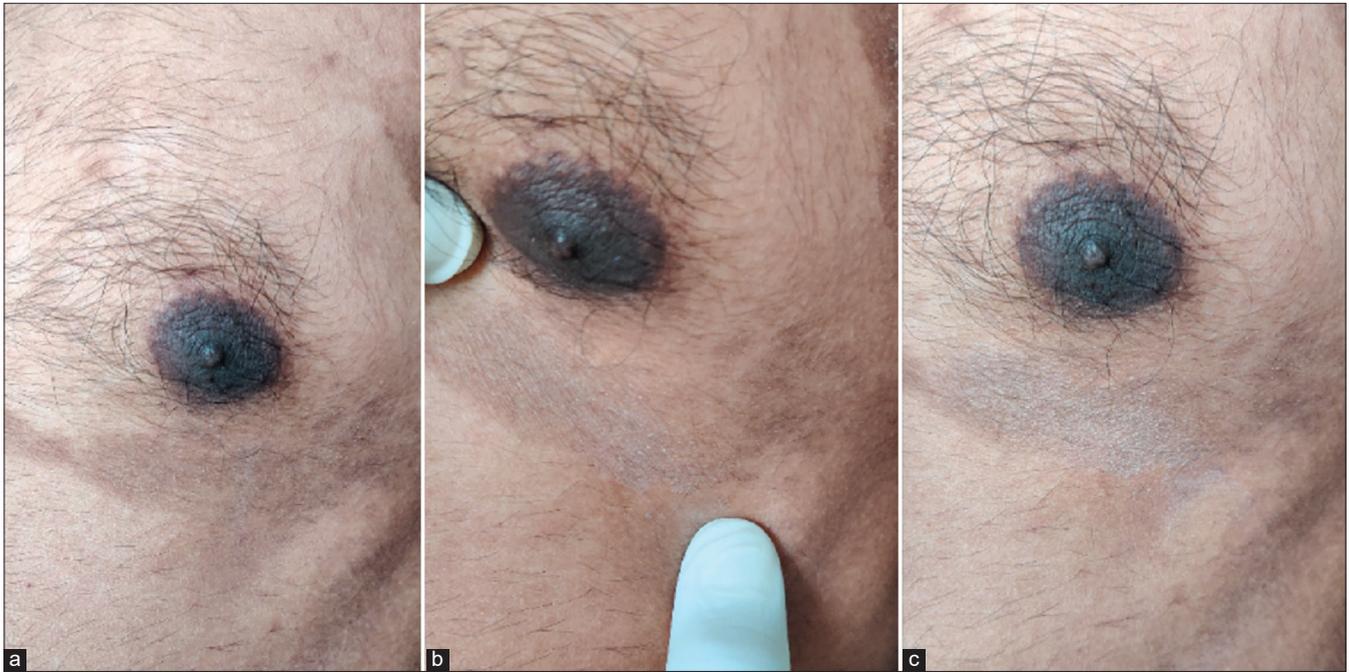


Figure 5: Zireli's sign in pityriasis versicolor. (a) Before, (b) during and (c) after stretching showing evident scales

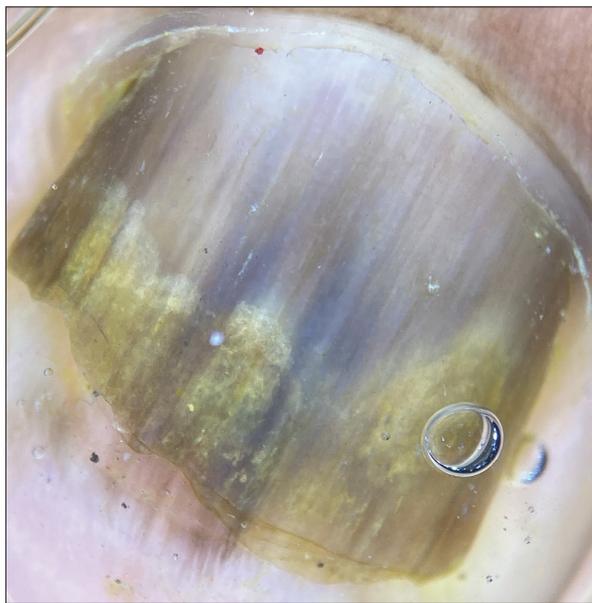


Figure 6: Aurora borealis sign of onychomycosis showing multicoloured pigmentation on onychoscopy (×10, DL4, polarised view)

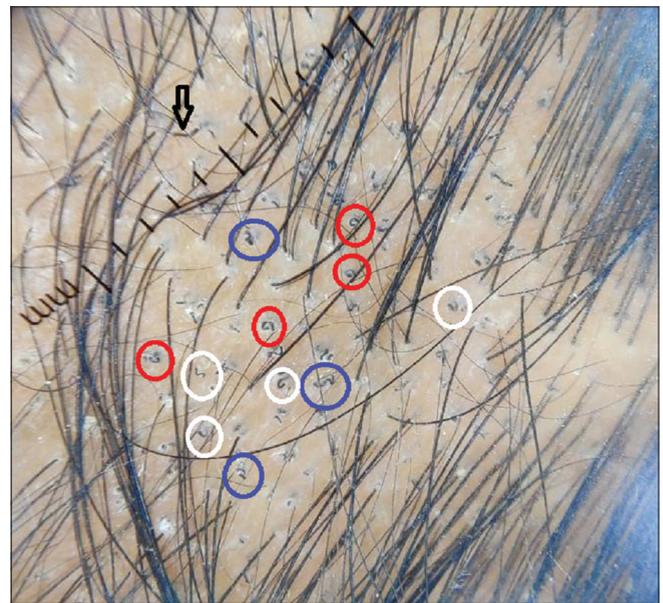


Figure 7: Trichoscopy of tinea capitis showing comma hair (white circles), corkscrew hair (blue circles), telephone handle hair (red circles) and zigzag hair (arrow) (×10)

Telephone Handle Hair

It is a novel trichoscopic finding in tinea capitis. Due to fungal invasion, the hair shafts become easily deformable, horizontally bent with slightly bulbous appearance on either side resembling a ‘telephone handle’ [Figure 7].¹⁸

Zigzag Hair

It is another common trichoscopic feature in tinea capitis. The conidia on hair surface following fungal invasion of hair cuticle bends the paler part of infected hair resulting in its structural weakness and zigzag hair [Figure 7].¹⁰

Laboratory Signs

Butter cream frosting appearance

It describes the colony appearance of *Trichosporon* spp., the causative organism of white piedra. On Sabouraud’s dextrose agar, rapid growth of moist cream-coloured yeast-like colonies resemble ‘butter cream frosting.’¹⁹

Mosaic Fungus

It is the most common artefact encountered during direct microscopic examination of skin scrapings for fungal

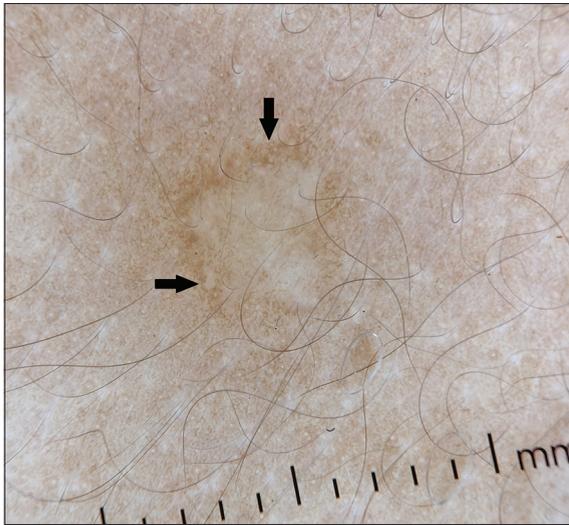


Figure 8: Contrast halo sign. A rim of hyperpigmentation (black arrows) around a hypopigmented lesion of pityriasis versicolor ($\times 10$, DL4, polarised view)



Figure 9: Fishnet/wire fence appearance, folliculocentricity of scales seen on dermoscopy of pityriasis versicolor ($\times 10$, DL4, non-polarised view)

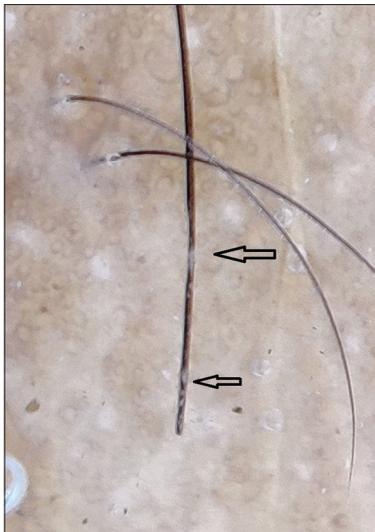


Figure 10: Morse code hair seen on dermoscopy of tinea corporis as horizontal light bands resulting in bending of hair (arrows) ($\times 10$, DL4, polarised view)



Figure 11: Dermoscopy of tinea corporis showing peripheral interrupted motheaten scales with background erythema ($\times 10$, DL4, non-polarised view)

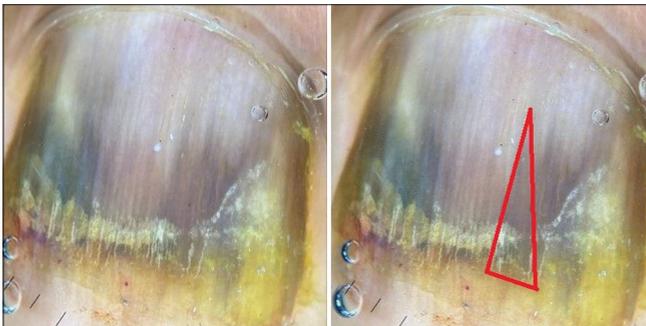


Figure 12: Onychoscopy of onychomycosis showing reverse triangular sign (red triangle) ($\times 10$, DL4, polarised view)



Figure 13: Onychoscopy of onychomycosis showing ruin appearance ($\times 10$, DL4, non-polarised view)

elements. KOH dissolves normal epidermal cells forming irregular branching network resembling fungal structures [Figure 14].²⁰

Sandwich Sign

Histopathological examination of dermatophytosis demonstrates fungal elements ‘sandwiched’ between the two

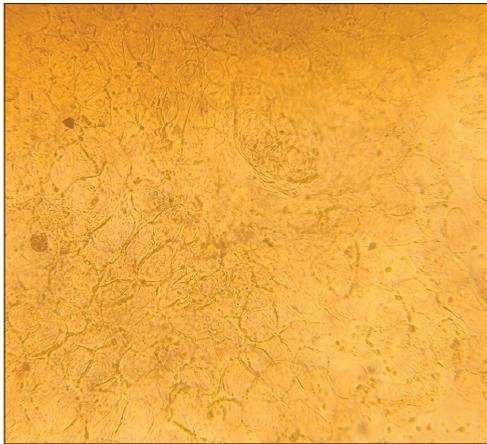


Figure 14: KOH image showing mosaic fungus (x40)

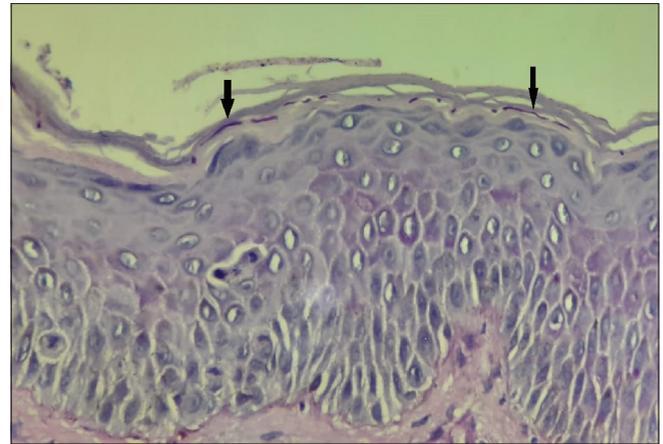


Figure 15: Sandwich sign. Histopathology with PAS staining of tinea corporis showing fungal hyphae in the stratum corneum (black arrows) (x40)

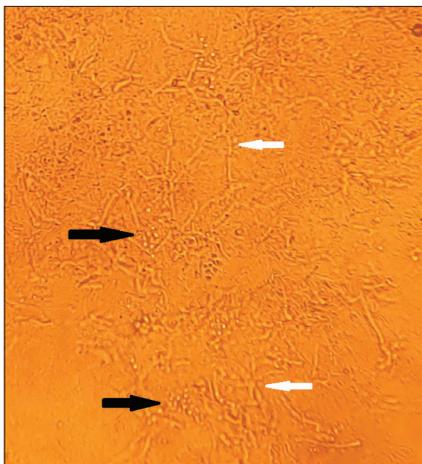


Figure 16: KOH image of pityriasis versicolor showing hyphae as spaghetti (white arrows) and spores as meatballs (black arrows) (x40)

zones of stratum corneum, upper orthokeratotic and lower parakeratotic layer [Figure 15].¹

Spaghetti and Meatballs/Banana and Grapes Appearance

On KOH mount examination of scales of pityriasis versicolor, thick-walled spherical yeasts of *Malassezia furfur* are present in clusters with scattered short septate filaments (2–5 μ wide, 25 μ long) resembling ‘banana and grapes’ or ‘spaghetti and meatballs’. [Figure 16].²⁰

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest.

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