IJD Letter to Editor

Onychoscopy as a diagnostic tool for trachyonychia in a 4-year-old child

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Trachyonychia is an inflammatory nail disorder characterized by a rough and brittle nail surface. It typically arises as a primary condition with no known cause. However, it can also occur secondary to dermatological disorders, including alopecia areata, psoriasis, lichen planus, ichthyosis vulgaris, vitiligo, and atopic dermatitis. Although the literature has primarily documented cases in adults, it frequently occurs in children as well. We present the case of a 4-year-old girl who refered to us with dystrophy of all her fingernails and toenails. In cases where a biopsy is impractical, such as in children, our goal is to review dermoscopic findings that can help identify the disorder's etiology.

Keywords: trachyonychia, twenty-nail dystrophy, onychoscopy, pediatrics, nails, malform.

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INTRODUCTION

Trachyonychia can present as either a congenital or acquired nail dystrophy and is classified into opaque and shiny. The opaque subtype results from severe inflammation and is characterized by sandpaper-like nails with pronounced longitudinal ridging, distal notching, onychoschizia, loss of nail luster, and thinning of nail plates. The less severe shiny subtype features numerous small superficial pits. Associated cutaneous findings can help in diagnosing the etiology of trachyonychia [1]. In the absence of obvious cutaneous signs, nail histopathology may be necessary. However, invasive procedures can be challenging for children, and parents may be reluctant to consent to them. In such cases, onychoscopy serves as a useful as a bedside tool for diagnosing possible etiology and guiding effective treatment.

CASE PRESENTATION

We present the case of a 4-year-old girl with yellowish discoloration and thick, rough nails affecting all 20 nails for two years (Figure1). Nail examination revealed pale, yellow, lusterless, and opaque nails with considerable longitudinal ridging and roughness. There was no history of trauma, seasonal variation, or other skin lesions. No similar conditions were reported among family members. Systemic examination was unremarkable. Potassium hydroxide smear and a fungal culture of nail scrapings were negative. The parents declined an invasive nail

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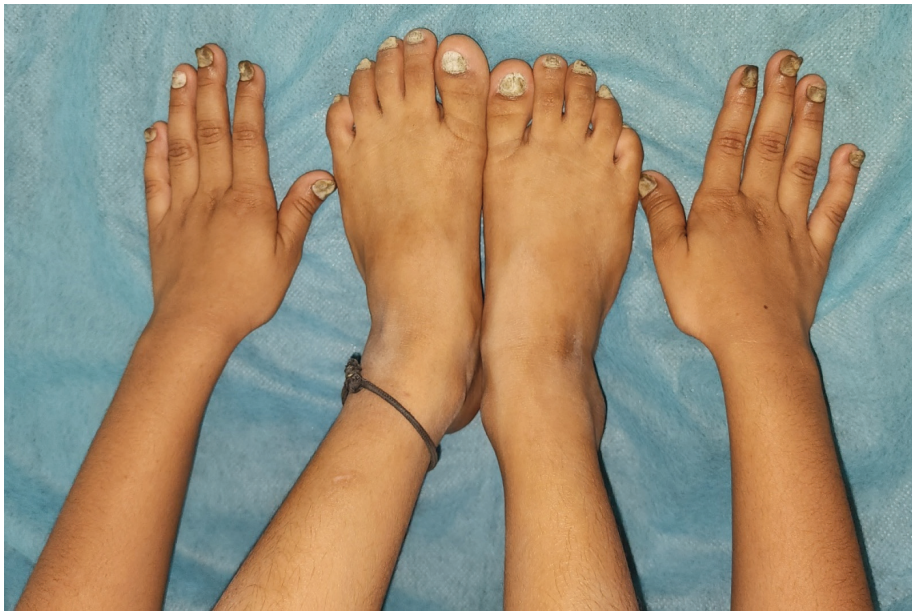


Figure 1. Clinical picture of trachyonychiain 4-year-old child with yellowish discoloration and thick, rough nails.

plate matrix biopsy.

Onychoscopy of all nails revealed a yellow to brown discoloration of the nail plate, with longitudinal and some irregular ridges, along with compact subungual hyperkeratosis, as noted in Figure 2, consistent with our case. Subungual hyperkeratosis is a hallmark onychoscopic sign commonly observed in onychomycosis and psoriasis. In psoriasis, subungual hyperkeratosis is compact, as seen in our case [2], whereas in patients with onychomycosis (not applicable to our case), it is generally friable and has a speculated or ruined appearance [3], as shown in Figure 3. Therefore, onychoscopy is a noninvasive modality that can aid in reaching a possible diagnosis in children. After four months of oral tofacitinib 5mg once daily combined withurea-based topical creams, the patient showed improvement within seven months, with decreased nail thickening (Figure 4 a,b). Unfortunately, the patient waslost to follow-up thereafter.

DISCUSSION

Trachyonychia is derived from the Greek word trakos, which means rough. The term was first described by Alkiewicz in 1950. The term twenty-nail dystrophy was introduced by Samman in 1965 and further emphasized by Hazelrigg in 1977.

The peak age of onset is between 3 and 12 years. Our patient is likely the youngest of the patients reported to date. Both males and females are equally affected. Trachyonychia can be primary or idiopathic; but it may also occur secondary to conditions such

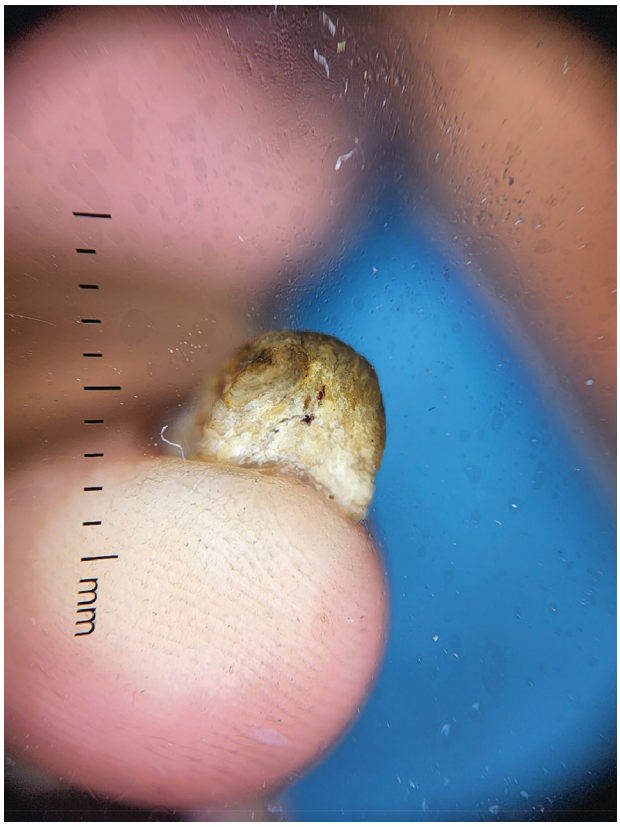


Figure 2. Compact subungual hyperkeratosis in the patient probably psoriasis (Dermlite DL4, Polarized contact with linkage fluid 10×).

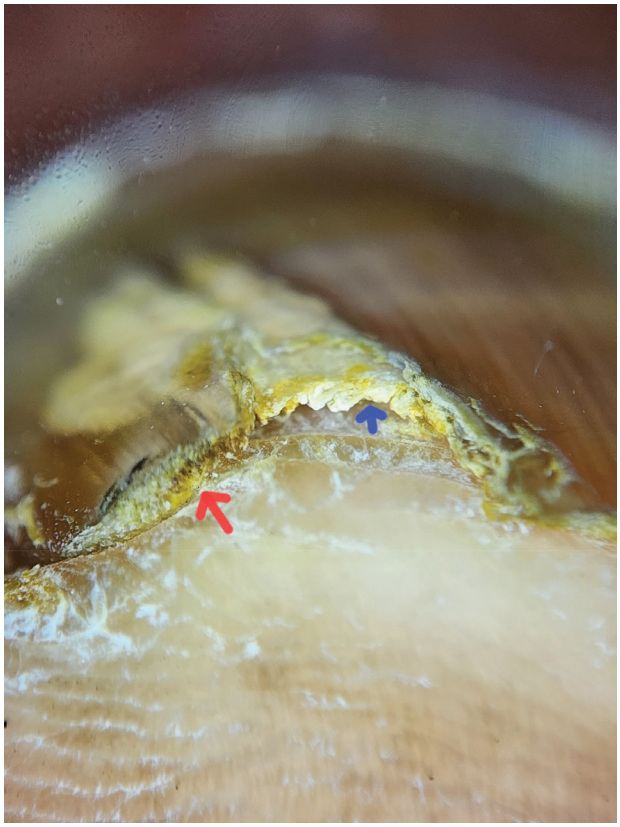


Figure 3. Friable, loosely adherent subungual hyperkeratosis is observed at the roof of the distal nail plate (blue arrow), along with speculated hyperkeratosis at the lateral margin (red arrow) in onychomycosis (not from our case, from a patient with onychomycosis for reference) (Dermlite DL4, Polarized contact with linkage fluid 10×).

as alopecia areata, psoriasis, vitiligo, lichen planus, ichthyosis, and atopic dermatitis.

In our case, we observed an opaque nail plate with a yellow to brown coloration, characterized by longitudinal and irregular ridges, along with compact subungual hyperkeratosis affecting all fingers and toenails. Subungual hyperkeratosis is a clinical and dermoscopic feature commonly seen in psoriasis, lichen planus, and onychomycosis [4]. In psoriasis, subungual hyperkeratosis is compact [2], whereas in onychomycosis it is friable and speculated [3]. Table 1 illustrates the dermoscopic characteristics of the post-prevenlent dermatosis, which results in an opaque form of trachyonychia with subungual hyperkeratosis.

Trachyonychia typically resolves spontaneously in children, which can reassure parents concerned about invasive biopsies and procedures. We recommend treatment for idiopathic trachyonychia, symptoms persisting for more than 6 years in childhood-onset cases, and for individuals experiencing difficulties in their daily activities. However, most patients seek treatment primarily for cosmetic concerns.

Conservative use of emollients can enhance smoothness and conceal shiny trachyonychia when combined with nail polish. Topical treatments include corticosteroids, tazarotene 0.1% gel, and 5-fluorouracil. Procedural interventions involve intralesional steroids injections (0.5-1 mg/kg) into the proximal nail fold, weekly treatment of the nail plate with lactic acid, silicon dioxide, aluminum acetylacetonate, and azelaic acid, topical PUVA therapy at doses of 0.7J-1.4J/cm^2, and fractional CO2 laser therapy. Systemic treatments for trachyonychia include corticosteroids (prednisolone 0.1 mg/kg or mini pulse therapy with 4 mg betamethasone twice weekly for two months), biotin, cyclosporine, acitretin, apremilast, HCQ 200 mg/day, and tofacitinib citrate.

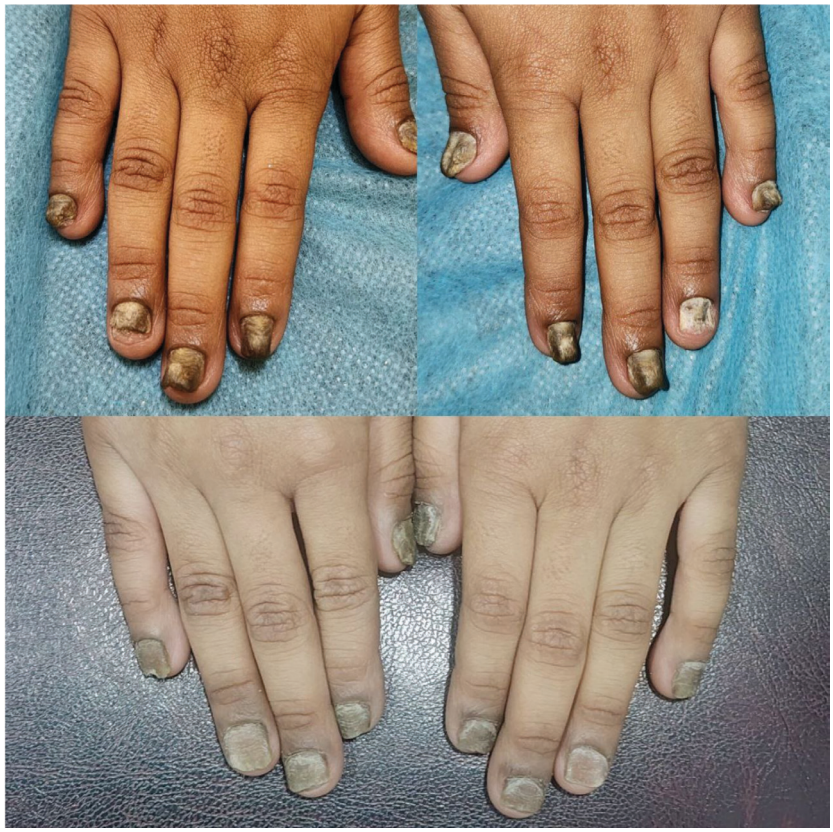
CONCLUSION

To summarize, onychoscopy is a valuable bedside tool for diagnosing diseases of the nail apparatus, especially when other signs of trachyonychia are absent. Recognizing key onychoscopy features of

Table 1. dermoscopic characteristics of the post-prevenlent dermatosis, resulting in an opaque form of trachyonychia with subungual hyperkeratosis.

Onychoscopic features in common dermatosis causing Trachyonychia with subungual hyperkeratosis	
Psoriasis	Nail matrix -Coarse Pitting, rough and brittle nails, deep transverse groove. Nail bed- Distal onycholysis with yellow orange proximal margin, splinter hemorrhages, oil drop/salmon patch, red/black haemorrhagic dots, hyponychial capillaries which are dilated and tortuous, elongated and irregular and Subungual hyperkeratosis
Lichen planus	Nail matrix- Pitting, nail plate splitting, converging longitudinal streaks, pterygium and red lunula Nail bed - Chromonychia, splinter hemorrhages, onycholysis and Subungual onychomycosis.
Onychomycosis	Whitish yellow patches Jagged proximal edges with spikes Leuconychia and melanonychia Aurora-borealis pattern Friable Subungual hyperkeatosis

A



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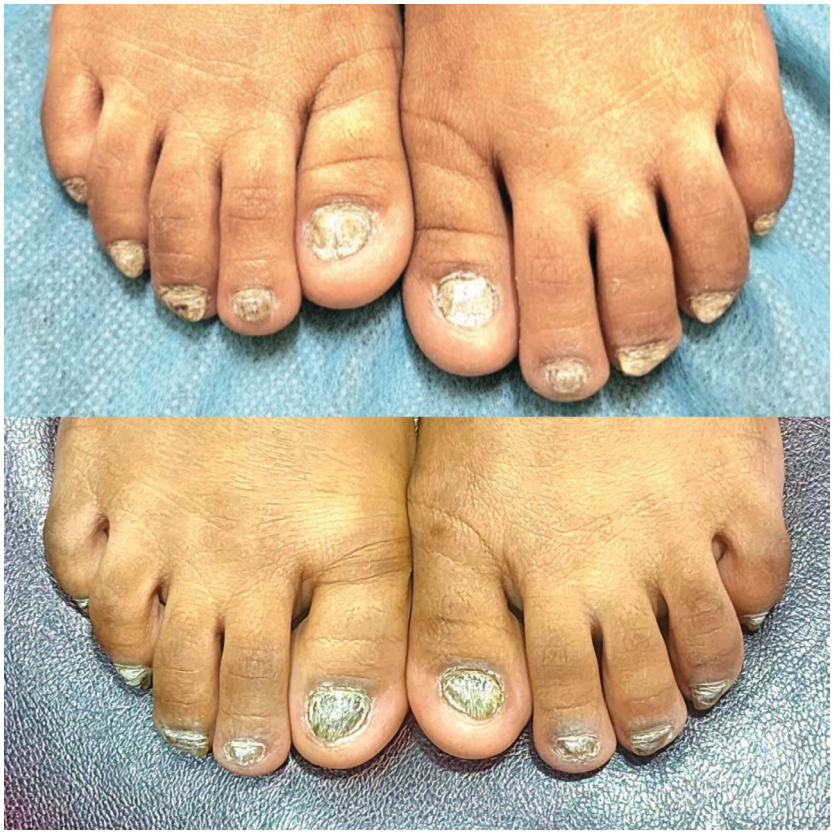

Figure 4. After four months of taking oral tofacitinib, the patient showed improvement within seven months, including a decrease in nail thickening.

nail disorders can enhance diagnostic accuracy, inform prognosis, reduce the need for unnecessary biopsies, and optimize treatment.

Inform Consent

Informed consent was obtained from parents.

Acknowledgement

None declared.

Authors contribustions

BK:Clinical evaluation and management of the patient. **PV**: Data collection, clinical evaluation and management of the patient, manuscript writing, and project supervision. **GN**: Data collection and project supervision. **SS**: Data collection and project supervision. All authors read and approved the final manuscript.

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