Sahel Journal of Life Sciences FUDMA (SAJOLS)
September 2026 Vol. 4(3): 607-612
ISSN: 3027-0456 (Print)
ISSN: 1595-5915 (Online)
DOI: *https://doi.org/10.33003/sajols-2026-0403-64*

Research Article

Twenty-Nail Onychomycosis Associated with Tinea Capitis in a 12-Year-Old Boy: A Rare Paediatric Presentation

***Aishatu Yahya Muhammad[1], Suleman Muhammed[2], and Abdurrahman Bin Usman[3]**

[1]Department of Paediatrics, North-West University Kano, Nigeria
[2]Department of Medicine, Murtala Muhammad Specialist Hospital, Kano, Nigeria
[3]Department of Medicine, Goldfish Sea Hospital, Kano, Nigeria
****Corresponding Author's email*: aishayahya35@yahoo.com**

ABSTRACT
Onychomycosis is uncommon in children and typically affects the toenails, while simultaneous involvement of all 20 nails in association with tinea capitis presenting as kerion is an unusual manifestation of dermatophytosis. Here is a report of a 12-year-old boy who presented with dystrophic changes involving all his fingernails and toenails with a scalp lesion clinically consistent with kerion. The aim of this report is to highlight the importance of careful examination of nails in children presenting with tinea capitis and the need for early recognision of nail disease, mycological confirmation and appropriate systemic antifungal therapy to prevent progression and complications, particularly scarring alopecia associated with kerion.

Keywords: Child; Dermatophytosis; Kano; Nigeria; Tinea capiti; Twenty-nail onychomycosis

Citation: Muhammad, A.Y., Muhammed, S., & Usman, A.B. (2026). Twenty-Nail Onychomycosis Associated with Tinea Capitis in a 12-Year-Old Boy: A Rare Paediatric Presentation. *Sahel Journal of Life Sciences FUDMA*, 4(3): 607-612. DOI: *https://doi.org/10.33003/sajols-2026-0403-64*

INTRODUCTION

Onychomycosis is a fungal infection of the nail caused predominantly by dermatophytes, although yeasts and non-dermatophytes moulds may also be implicated. It is one of the most common nail disorders in adults, but is relatively uncommon in children. Paediatric onychomycosis has an estimated worldwide prevalence of less than 0.5%, with toenails affected considerably more frequently than fingernails. The condition is usually caused by dermatophytes, particularly *Trichophyton rubrum* and *Trichphyton interdigitale*. Risk factors in children include a family history of fungal infection, tinea pedis, occlusive footwear and close contact with infected individuals (Gupta *et al*., 2016; Vestergaard-Jensen *et al*., 2022).

The clinical presentation of onychomycosis varies according to the pattern of nail invasion and may include nail discolouration, thickening, subungual debris, onycholysis, brittleness and eventual destruction of the nail plate. Although one or several nails may be affected, involvement of both fingernails and toenails is less common; however, simultaneous involvement of all 20 nails is rare. The British Association of Dermatologists notes that tinea ungium may involve a single nail, multiple nails, both fingernails and toenails, but in exceptional circumstances, all the nails may be infected. Since several non-fungal disorders can produce similar nail dystrophy, mycological examination is recommended to establish the diagnosis (Ameen *et al*., 2014).

Tinea capitis is the most common superficial fungal infection of the scalp in children but predominantly affects prepubertal children (Yahya 2020; Yahya 2022). It is caused by dermatophytes and may present with scaling, alopecia, broken hairs and inflammatory lesions. Kerion Celsi represents an intense inflammatory response to dermatophyte infection of the scalp, producing a bogie, tender swelling that may contain pustules or purulent material. Although

kerion is an inflammatory form of tinea capitis, delayed recognition and treatment may result in permanent scarring alopecia (Chiriac *et al*., 2024)

An association between tinea capitis and onychomycosis has been described. Dermatophytes can spread between different anatomical sites, and children with onychomycosis should be carefully examined for concomitant tinea capitis and /or tinea pedis. Conversely, the presence of extensive nail disease in a child with tinea capitis should raise suspicion for more widespread dermatophyte infection (Ameen *et al*., 2014).

Diagnosis of onychomycosis is ideally confirmed by mycological examination because nail dystrophy may result from numerous infectious and non-infectious conditions. Potassium hydroxide (KOH) microscopy can demonstrate fungal hyphae, while fungal culture permits identification of the causative organism. For tinea capitis, microscopy and culture are recommended where available, particularly in inflammatory presentations such as kerion (Ameen *et al*., 2014)

Although paediatric onychomycosis has been increasingly recognized, extensive involvement of all the 20 nails in association with tinea capitis presenting as kerion remains an unusual clinical presentation. A case of twenty-nail onychomycosis associated with tinea capitis and kerion in a 12-year-old boy is hereby reported, highlighting the importance of considering extensive dermatophytosis in children presenting with widespread nail dystrophy and inflammatory scalp disease.

C**ASE REPORT**

A 12-year-old boy presented to paediatric dermatology clinic Murtala Muhammad Specialist Hospital with abnormal black discolouration and brittle nails involving all his 20 fingernails which started 6 months prior to presentation. It started on the fingers then appeared on the toe nails. There was also a history of scaly, itchy rashes on the scalp with a bogie swelling that appeared 3 weeks prior to presentation and associated hair loss. There was no history of trauma to the nails; however, there was history of close contact with his brother who also had a similar scalp lesion. No history of immunosuppression. The patient also not on any medication. He was not a known sickle cell or diabetic patient, and had no family history of such illnesses. He was a primary six pupil. Examination revealed a young boy, body weight 30kg, not pale anicteric, there were multiple matted cervical lymphadenopathies, had no any form of distress. Skin examination showed scaling and dandruff-like lesion on the scalp with bogie pustular lesion that was discharging serous fluid. There was associated hair loss. All his 20 nails were black in colour with loss of texture, dystrophic changes and onycholysis on some of the nails (Figure 1). The discolouration and disfigurement of the nails was not limited to the tip of the nails but has gone down to the cuticle. Examination of other systems showed no abnormal findings. Samples consisted of multiple scrapings taken from different parts of the nails from all the fingers and toes after cleaning with 70% alcohol. The samples were examined using 40% potassium hydroxide (KOH) for direct microscopy which demonstrated branched septate fungal hyphae, supporting the diagnosis of onychomycosis. This was repeated 6 times and it yielded the same result. Microscopic examination of scalp specimens also demonstrated fungal elements. Fungal culture was not done for characterization of the fungal isolate. Diagnosis of onychomycosis involving the 20 nails with tinea capitis (kerion type) was made. Full blood count showed (total white blood cell count of 6.8 $x10^9$ /L {neutrophils 55%, lymphocytes 30%, monocytes 10%, eosinophils 3%, basophils 2%} haemoglobin of 12.5g/dl, and platelets count of $200x10^9$/L) which were normal. Fasting blood sugar was 4.5 mmol/l (normal). Retroviral screening was non-reactive using determined method. Liver function test showed (Aspartate amino transferase AST= 20 U/L, Alanine aminotransferase ALT= 18 U/L, ALP= 234U/L, Total bilirubin 10 µmol//L, Direct bilirubin=2 µmol/L, Total protein 66 g/L and globulin 25g/l) which were normal. There was no history of smoking, drug addiction or alcohol consumption. He was placed on oral Terbinafine (4mg/kg/day) 125mg daily for 12 weeks. He was also placed on ketoconazole shampoo twice weekly. After 6 weeks the scalp lesions cleared while the nails showed some improvement. The discolouration of the nails improved and healthy nail started growing from the proximal nail fold. However, repeated microscopy of the nail scrapings showed no fungal hyphae. The nail took about 12 months before it regained its normal texture and colour.

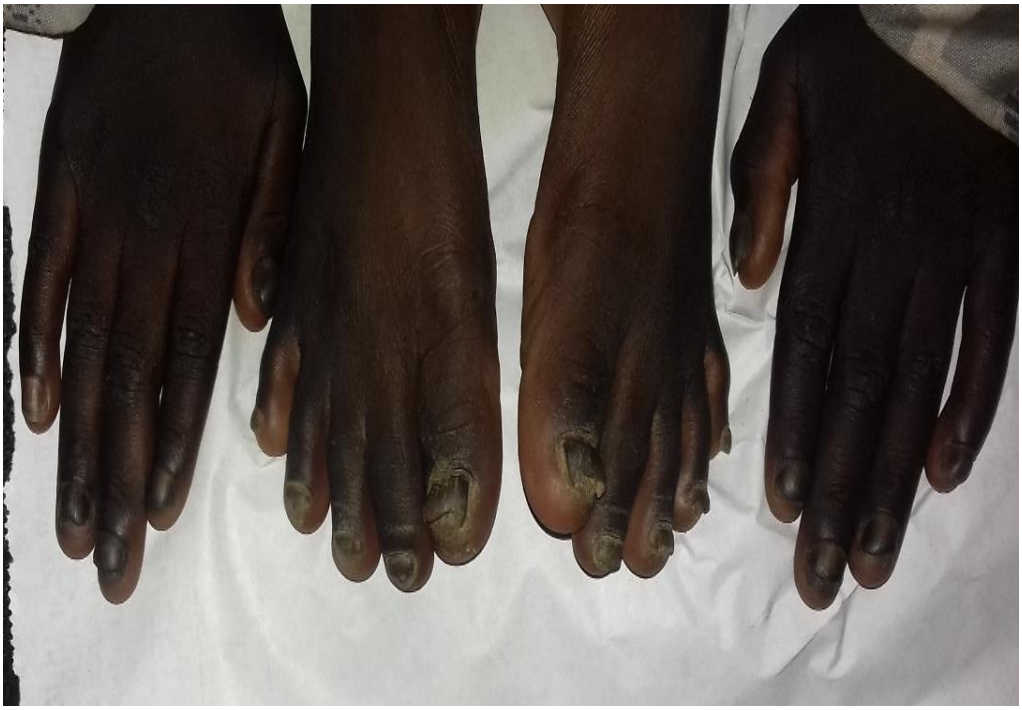

Figure 1: picture showing the twenty-nails affected by the onychomycosis at presentationi

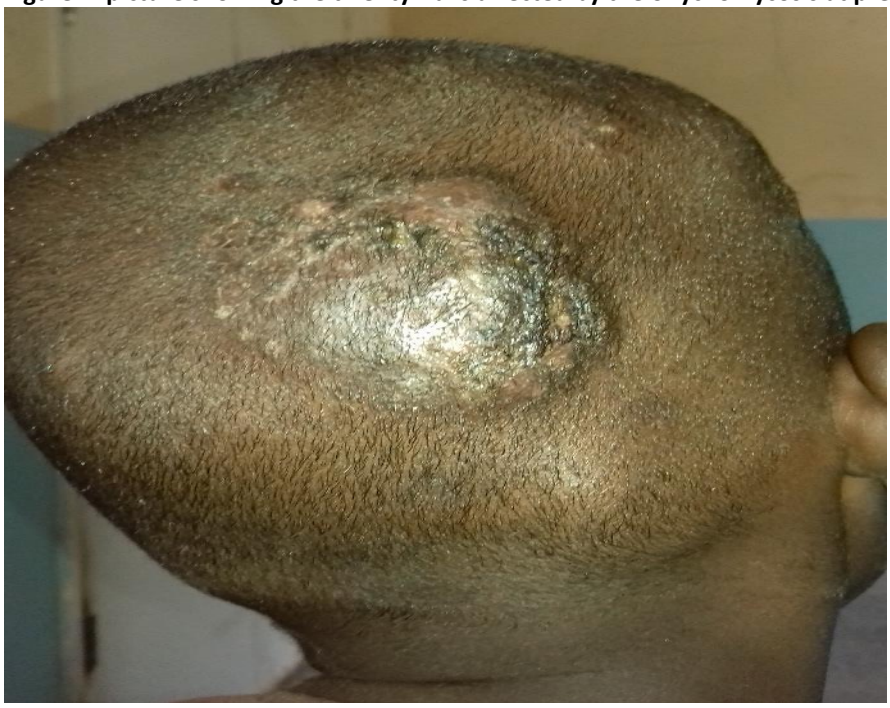

Figure 2: Picture of the scalp showing the tinea capitis (Kerion) at presentation

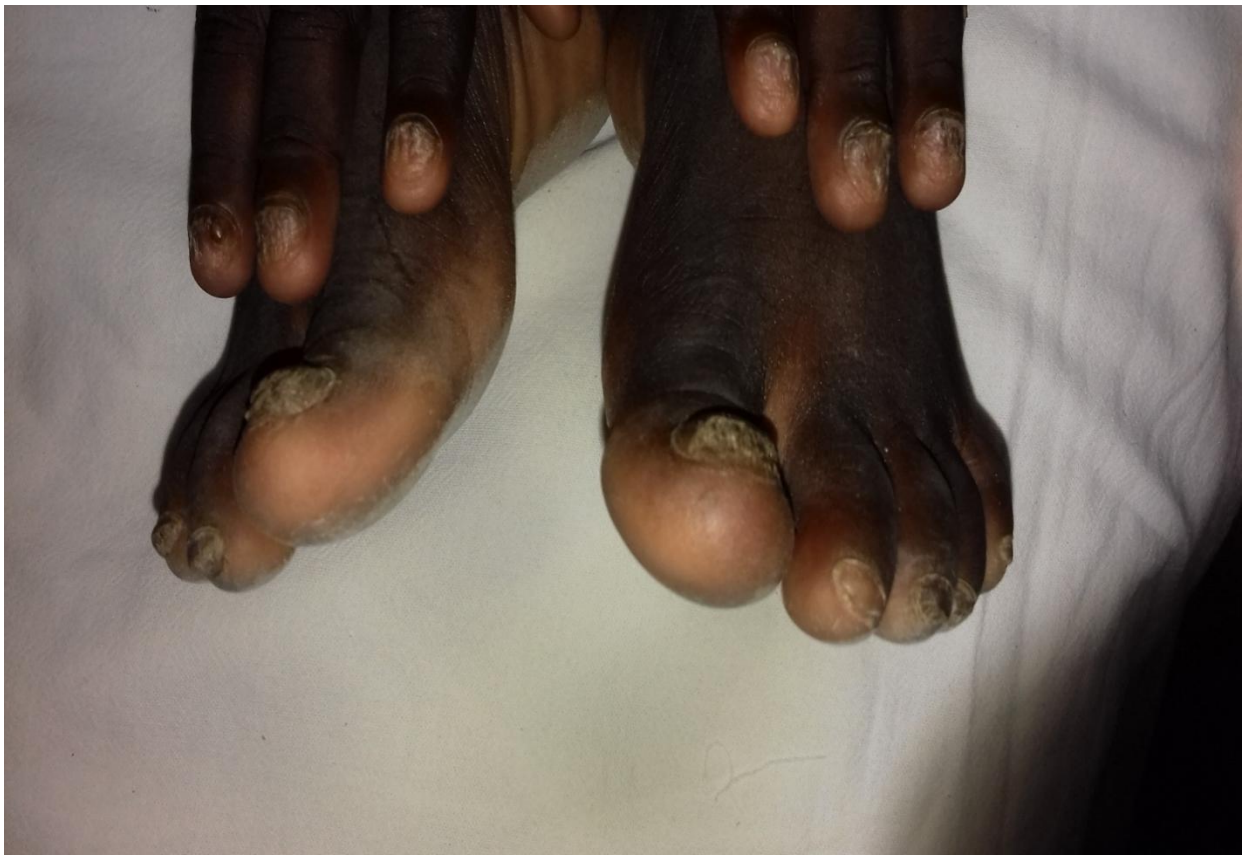

Figure 3: Picture showing the twenty-nail affected after 6 weeks of treatment
The discolouration of the nails has improved and healthy nail started growing from the proximal nail fold.

DISCUSSION

Onychomycosis is a fungal infection of the nail plate and is considerably less common in children than in adults. It is particularly unusual for a child to present with extensive involvement of all 20 nails. Recent literature confirms that paediatric onychomycosis remains relatively uncommon. Although its recognition appears to be increasing. A systematic review reported a worldwide prevalence of approximately 0.33% for culture-confirmed paediatric toenail onychomycosis, while an earlier multicenter study of 2,500 children found a prevalence of only 0.44% (Gupta *et al*., 2025). The present case is therefore remarkable because of the extensive involvement of all the finger nails and toenails in a 12-year-old immunocompetent boy occurring together with inflammatory tinea capitis of kerion type.

The clinical presentation was characterized by black discolouration, brittleness, loss of nail texture, dystrophic changes and onycholysis all the nails with the abnormality extending proximally to the cuticle. Although pigmentation and dystrophy of all 20 nails can occur in other conditions, including twenty-nail dystrophy of childhood, the letter is generally characterized by uniform nail dystrophy, excessive longitudinal ridging and loss of nail lustre, without evidence of fungal infection or associated inflammatory scalp disease (Hazelrigg *et al*., 1977). In this patient, the repeated demonstration of branched, septate fungal hyphae on direct microscopy of nail scrapings provided strong mycological support for onychomycosis and made idiopathic twenty-nail dystrophy considerably less likely. Current recommendations emphasize confirmation of suspected onychomycosis by potassium hydroxide (KOH) microscopy, culture, periodic acid-Schiff staining or molecular testing before systemic treatment (Avrom *et al*., 2025).

An important feature of this case is that multiple specimens were collected from different portions of the nails of all fingers and toes. Repeatedly same findings strengthen the diagnostic evidence. In paediatric onychomycosis, *Trichophyton rubrum* is frequently reported, although other dermatophytes, yeasts and non-dermatophyte molds can also cause nail infection. In this case fungal culture was not

done, hence the species was not identified (Gupta *et al*., 2025).

Additional evidence was identification of fungal element from direct microscopy of the scalp specimen. Another epidemiologic informtion was close contact with a person who had tinea capitis. Similar previous paediatric studies of onychomycosis have demonstrated a substantial frequency of affected household members. In one multicenter study, 65% of affected children had a sibling, parent or grandparent with onychomycosis or tinea pedis, while a more recent review found that approximately 11% of children with onychomycosis had affected family members (Gupta *et al*., 1997). Thus, the brother of this patient might have represented a potential source of dermatophyte transmission. Examination and appropriate management of symptomatic household contacts are therefore important in preventing reinfection.

Paediatric onychomycosis is more likely to be encountered in children with certain predisposing conditions like immunosuppression and Down syndrome (Gupta *et al*., 2025). The absence of such risk factors in this patient makes its extensive clinical presentation particularly unusual.

The patient's baseline investigations of full blood count and liver function tests were normal, providing no evidence of systemic infection, anaemia or thrombocytopenia. Essential baseline hepatic function was particularly appropriate because oral terbinafine undergoes hepatic metabolism and systemic antifungal therapy warrants attention to hepatic safety.

Oral terbinafine was used in this patient for treatment. This decision is appropriate because topical treatment alone will not be adequate because of the extensive nail involvement and simultaneous scalp disease. Oral terbinafine is widely used for dermatophyte onychomycosis due to its fungicidal activity and good penetration into the nail, while systemic treatment is also required for tinea capitis because topical agents do not adequately penetrate the hair follicle (John *et al.,* 2014 Evidence addressing paediatric onychomycosis remains limited, but a systemic review of 26 studies found complete cure in approximately 70.8% of children treated with systemic antifungals, with terbinafine and itraconazole being the most frequently studied agents. Oral terbinafine was selected because of its established activity against dermatophytes, favorable efficacy profile in dermatophyte onychomycosis, relative low potential for drug interactions, and it ability to provide simultaneous systemic treatment for associated tinea capitis. Itraconazole is also an effective alternative for paediatric onychomycosis, particularly when the causative organism is not a dermatophyte or when there is inadequate response to terbinafine. This child received 125mg daily of terbinafine for a duration of 12 weeks. A 12-week course is consistent with treatment durations reported in paediatric onychomycosis studies. Ginter-Hanselmayer *et al*. (2008) treated 17 children with terbinafine for 12 weeks according to body weight and reported clinical cure in all but two patients, without serious adverse events. Similarly, the systematic review by Gupta and Paquet (2013) found systemic antifungal treatment to be generally effective and tolerated in children.

The use of ketoconazole shampoo twice weekly after initiation of systemic treatment was also appropriate as adjunctive management of the scalp infection. Although shampoo alone cannot adequately treat tinea capitis, sporicidal shampoo can reduce fungal shedding and potentially decrease transmission to household contacts when used alongside systemic therapy. The scalp lesions had cleared after five weeks, demonstrating a rapid clinical response to therapy. Important therapeutic response was also observed in the nails. The persistence of abnormal distal nail plate after fungal clearance should not necessarily be interpreted as treatment failure because damaged nail has to grow out gradually. In children treated for onychomycosis, clinical cure may become apparent several monuths after completion of antifungal treatment. Ginter-Hanselmayer *et al.* (2008) reported clinical cure within approximately one to five months after discontinuation of therapy. The fact that repeated nail microscopy after five weeks showed no fungal hyphae further supports a mycological response to treatment.

Paediatric onychomycosis has historically been considered uncommon, but recent literature emphasizes that it may be underdiagnosed and should be considered in children with unexplained nail abnormalities (Gupta *et al.,*2025).

The limitation of this case is the absence of fungal culture, which prevented identification of the causative species and susceptibility testing.

CONCLUSION

Overall, this case demonstrates an unusual presentation of 20-nail onychomycosis with kerion-type tinea capitis in an otherwise immunocompetent 12-year-old boy successfully treated with terbinafine with complete resolution over 12months.

REFERENCES

Ameen, M., Lear, J. T., Maden, V., Mohd Mustapa, M. F., & Richardson, M. (2014). British Association of Dermatologists 'guidelines for the management onychomycosis 2014. *British Journal of Dermatology*, 171(5), 937-958.

Avrom, S., Caplan, M., Dallas, J., Smith, Pharm, D., MAS, John, W., & Ely, M, D., MSPH. (2025). Diagnosis and Management of Tinea Infections. *American Family Physician*, 112(4), 382-392.

Chiriac A., Diaconeasa A, Voicu, C., Ivaniciuc, M., Miulescu R., Chiriac, A, E., Nenoff, P.,&Wollina, U. (2024). Kerion Celsi in infants and children- A narrative review 2010-2023. *Mycoses*, 67(1), e13675.

Inter-Hanselmayer, G., Weger, W., &Smolle, J. (2008). Onychomycosis: A new emerging infectious disease in childhood population and adolescents. Report on treatment experience with terbinafine and Itraconazole in 36 patients. *Journal of the European Academy of Dermatology and Venereology,* 22(4), 470-475.

Gupta, A. K., Mays, R. R., Versteeg, S. G., Piraccini, B. M.,&Takwale, A. (2016). Onychomycosis in children: A review. *International Journal of Dermatology*, 56(2), 123-130.

Gupta A. K., & Taylor, D. (2025). Pediatric dermatophyte onychomycosis: a review. *International Journal of Dermatology*, 64(3), 465-472.

Gupta, A. K., & Paquet, M. (2013). Systemic antifungals to treat onychomycosis in children: A systematic review. *Pediatric Dermatology,* 30(3), 294-302.

Gupta, A. K., Sibbald, R. G., Lynde, C. W., Hull, P. R., Prussick, R., Shear, N. H., De Doncker, P., Daniel, C. R., &Elewsk, B. E. (1997). *Journal American Academy of Dermatology*,36(3 Pt 1), 395-402.

Hazelrigg, D. E., Duncan, W. C., & Jarratt, M. (1977). Twenty-nail dystrophy of childhood. *Archives of Dermatology,* 113(1), 73-5.

Vestergaard-Jensen, S., Mansouri, A., Jensen, L.H., Jemec, G.B.E., &Saunte, D. M. L. (2022). Systemic review of the prevalence of onychomycosis in children. *Pediatric Dermatology*, 39(6), 855-865.

Yahya, A. (2022). Prevalence and Pattern of paediatric dermatoses among children in Aminu Kano Teaching Hospital, Kano, Nigeria. *Acta Biomedica*, 93 (2).

Yahya, A. (2020). Pattern of pediatric skin disorders in Murtala Muhammad Specialist Hospital Kano, Nigeria. *Acta Biomedica*,10;91(4): e2020184.