Twenty-nail Dystrophy in a 42-year-old Woman: A Case Report

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Abstract

Twenty-nail dystrophy is a nail disorder that commonly affects all 20 nails. We are report a case affecting a 42-year-old female with co-existing alopecia areata.

Introduction

Twenty-nail dystrophy (TND), also known as trachyonychia, is a nail disorder commonly affecting all 20 nails. It may present as an idiopathic finding, a familial condition, or occurring in association with other dermatologic conditions, most commonly alopecia areata, psoriasis, or lichen planus. Here we present a case of a 42-year-old female with TND and co-existing alopecia areata (AA). Although TND is often self-limiting, many patients seek treatment secondary to the cosmetic appearance. There is not a well-known and universally accepted treatment for TND. Our patient was successfully treated with the daily application of flurandrenolide tape and urea 45% topical gel to all of her nails, along with biotin 5,000 mcg daily.

Case Report

A 42-year-old female with an unremarkable past medical history originally presented with a chief complaint of hair loss to the scalp, onset four months prior. During this initial encounter, the patient also had a secondary complaint that all of her fingernails and toenails had been painful and thinning for the past year. She stated that she had tried treating the nail problem with terbinafine, as well as fluconazole ointment, neither of which had improved her symptoms.

On physical exam, she was found to have an annular area to the scalp that was devoid of hair, as well as thinning of the nail plates to all of her fingernails (**Figure 1**) and toenails. The exam was otherwise unremarkable.

After diagnosing the patient with alopecia areata (AA) of the scalp and discussing options with the patient, a 3 mm punch biopsy was performed to the third digit of the left hand to further investigate her nails. Dermatopathology results showed a diagnosis of onychauxis with intraungual serum deposition (**Figure 2**). The changes in the sections were subtle and consistent with nail lichen planus. A dermatopathology consultation was also obtained, and again, nail changes most consistent with lichen planus were found. These findings, along with the concurrent AA, confirmed a diagnosis of trachyonychia and nail lichen planus. Had we not done a nail-matrix biopsy, it would have been assumed that the nail changes were secondary to the alopecia areata.

Figure 1

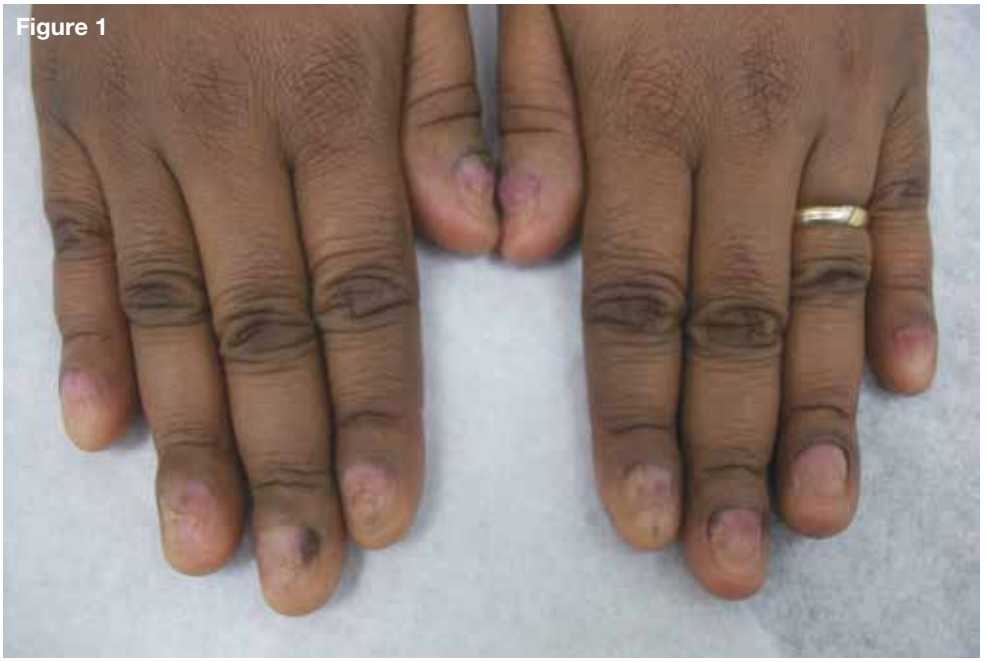
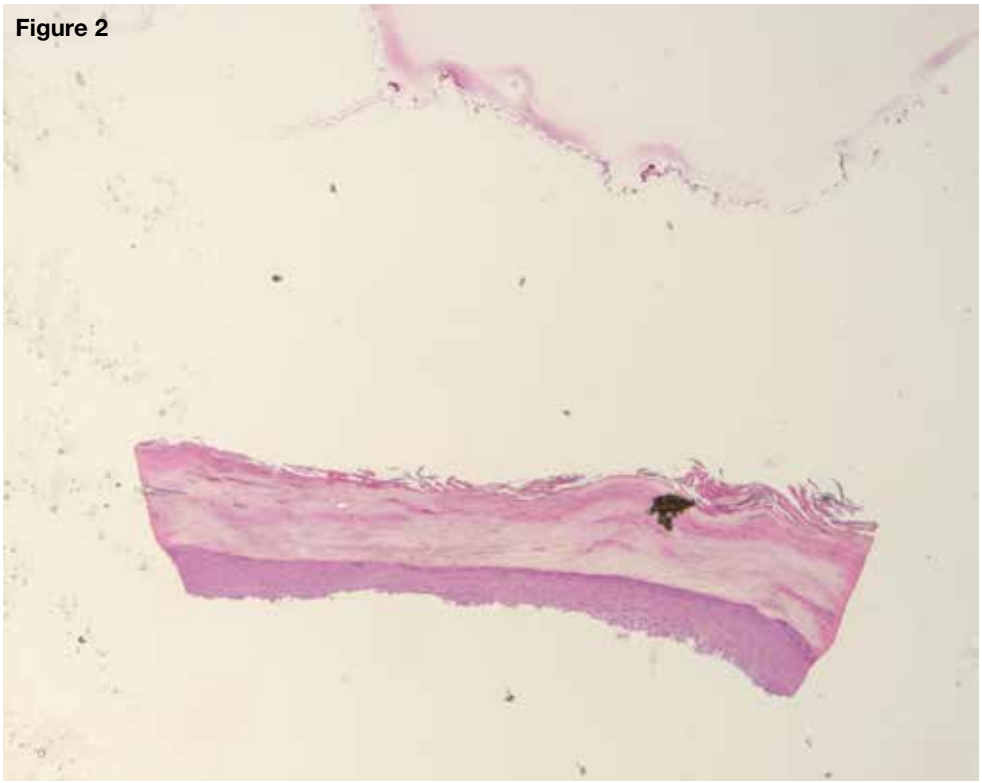


Figure 2



The patient was instructed to take biotin 5,000 mcg daily and apply flurandrenolide tape daily to all of her nails. She was also prescribed urea 45% topical gel to be applied to the nails daily. She opted to have triamcinolone acetonide injected to the annular area of the scalp. In her follow-up appointments, she reported that she had been compliant with our treatments and was found to have marked improvement of the pain and thinning of the nails, as well as re-growth of hair to her scalp lesion.

Discussion

Twenty-nail dystrophy, also known as trachyonychia, is a disorder that most commonly affects all 20 nails. It is a well-known disease and diagnosed based on clinical features and confirmed via biopsy.[1] The causes of twenty-nail dystrophy (TND) can either be congenital, as in familial TND, or acquired in association with various dermatologic conditions.[2] It was first described in 1950 by Alkiewicz.[3] Twenty-nail dystrophy is characterized by a rough, sandpaper-like, lackluster appearance of the nails. Other possible nail findings include elevation/pitting, splitting, thinness, brittleness and/or a musky-grayish color. A less common form of TND is characterized mostly by pitting and a "shiny" color.[3] TND is usually bilateral and symmetric.[1] If unilateral nail changes are found, one should investigate the possibility of reflex sympathetic dystrophy.[4]

TND is thought to have an autosomal-dominant mode of inheritance and often presents during childhood or at birth.[1,5] The condition tends to have a slow progression.[1] TND has been described occasionally in adults but most commonly affects children 3 to 12 years of age.[3,6] TND has an equal predilection for females and males.[1,7] TND is often idiopathic, but occasionally an associated etiology is found.[8] There is some question of a relationship with various other dermatologic conditions, such as vitiligo, psoriasis, eczema, lichen planus, alopecia areata/universalis, ichthyosis vulgaris, sarcoidosis, immunoglobulin (Ig)A deficiency, sarcoidosis, and graft-versus-host disease, among others.[1,3,8,9] The most common associations and causes of TND are alopecia areata, psoriasis, and lichen planus.[3] The strong association of TND with dermatologic conditions that have an autoimmune etiology has raised the suspicion that the nail changes could be immunologically mediated.[10] In a study by Tosti et al., 40 of the 1,095 patients with AA had been diagnosed with trachyonychia.[7,11] They found that trachyonychia occurs in approximately 3% of adults.[7,11] Tosti et al. also noted that while nail changes may precede or follow the onset of alopecia, the two conditions often arise simultaneously.[7,11] There was also found to be no association between the course of AA and the course of TND.[7] In a study by Grover et al., AA was found to be the most common abnormality associated with trachyonychia.[5]

To confirm the diagnosis of TND, a nail biopsy is often performed. The specimen should be a longitudinal biopsy or a nail-matrix punch biopsy.[1,3] The pathology often shows these subtypes: eczematous/dermatitis, lichen planus-like, and/or psoriasiform histopathology.[1] The microscopic examination of the eczematous form may show spongiotic inflammatory changes of the nail matrix (most common), lymphocytic infiltrates, or exocytosis of the lymphocytes in the nail epithelia.[1,9] The lichen planus-like morphology sections may show widespread hyperkeratosis, hypergranulosis, or a lymphohistiocytic infiltrate and degeneration of basal keratinocytes.[1] Lastly, the psoriasiform histology sections may show acanthosis and parakeratosis with grouping of polymorphonuclear leukocytes along the nail plate.[1]

There is no generally accepted first-line treatment for TND. Treatment modalities range from intralesional injections to intramuscular injections as well as systemic and topical preparations. Some of the treatment modalities that have been used are PUVA (psoralen plus ultraviolet A light), acitretin, tazarotene gel 0.1%, triamcinolone acetonide IM injection, triamcinolone intralesional injections, oral prednisolone, topical 5-fluorouracil 5% cream, intra-matrix steroids with or without griseofulvin (10mg/kg for six months), and oral biotin therapy.[1,3,8] Sakata et al. found in a follow-up study of 12 trachyonychia patients that regardless of treatment modality, 50% of the patients had resolution or significant improvement of their nail disease within six years.[12]

Conclusion

In summary, trachyonychia is a nail disorder commonly affecting all 20 nails. It may present as an idiopathic finding or along with other dermatologic conditions, most commonly AA, psoriasis, or lichen planus. Our patient did have an associated etiology of AA. The most common histopathological findings are spongiosis and lymphocytic exocytosis, although the disorder is usually diagnosed based on clinical appearance.[3,13] Many treatment modalities have been tried, as there is not a universally accepted treatment regimen. However, depending on the cause of the TND, treatment may not be necessary, as it is a self-limiting disease that usually improves spontaneously, especially in children.[5]

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