

Subungual neuroma masquerading as green nail syndrome



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INTRODUCTION

Traumatic neuromas are rare benign tumors that frequently arise after trauma or surgery, most commonly on the face, neck, and extremities.¹ They are thought to be due to disorganized neural proliferation following injury to the peripheral nerves and are often painful.^{1,2} To date, 2 cases of subungual neuroma have been reported; 1 case presented as a painful subungual nodule, and the other presented as onychodystrophy.^{3,4} Because the nail plate inherently provides protection to the subungual location, subungual neuromas are rarely suspected by clinicians, especially in cases lacking an obvious history of trauma. Here we describe a case of a subungual neuroma that presented as persistent onycholysis complicated by green nail syndrome.

CASE REPORT

A 53-year-old woman presented with a 1-year history of a green-colored right thumbnail. Examination was notable for a right thumbnail with onycholysis and dark green chloronychia of the distal nail (Fig 1). There was no history of preceding trauma or manipulation. The patient worked in the food service industry. Previous treatment included oral fluconazole, oral terbinafine, oral ciprofloxacin for 1 week, vinegar soaks, topical gentamicin ointment, and topical efinaconazole solution without improvement. Bacterial culture of the fingernail revealed heavy growth of *Pseudomonas aeruginosa*. Fungal culture at this time was negative. The patient was started on oral ciprofloxacin with a plan for 5 weeks of treatment; however, she discontinued the medication prematurely due to concern for

tendonitis after a wrist surgery. The patient was subsequently treated with dilute bleach soaks of the fingernail biweekly and oral doxycycline 100 mg twice daily for 2 months, with partial improvement. Fungal culture at this time showed moderate growth of *Candida* species, and fungal polymerase chain reaction detected *Candida parapsilosis*. Over the next 2 years, the patient was treated with several cycles of pulse itraconazole 200 mg twice daily for 1 week per month over 3 months, but had minimal improvement. Given the incomplete resolution of the green discoloration of the nail and persistent onycholysis, a punch biopsy of the distal nail bed was performed, including the most proximal lytic area of the nail bed. The distal half of the nail plate was avulsed for the biopsy. After avulsion, there was no evidence of a visibly recognizable lesion. Histopathologic evaluation demonstrated prominent mature neural tissue and mucinous change within a fibrotic onychodermis, consistent with a neuroma (Fig 2). Two months after the biopsy, the patient's green discoloration had completely resolved, with minor residual onycholysis at the distal-most portion. Observation was recommended.

DISCUSSION

Traumatic neuromas are benign tumors of the peripheral sensory nerve tissue that develop secondary to injuries at sites such as the palmar aspect of the hand, upper and lower extremities, and the tongue.⁵ Their etiology may be explained by a disorganized repair of disunited nerve endings.² Traumatic neuromas may also arise from chronic stimulation and friction.⁶ To date, only 2 cases of

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Fig 1. Initial presentation of the right thumb nail. Distal onycholysis and green discoloration of right thumb nail consistent with green nail syndrome.

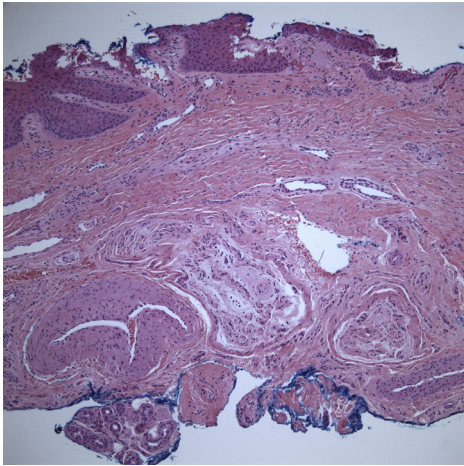


Fig 2. Histopathology of subungual neuroma. There is a rim of fibrotic dermis and a prominent mature neuroid structure with mucin.

traumatic subungual neuromas have been reported.^{3,4} In both cases, subungual growth was suspected due to an obvious painful subungual nodule or band-like onychodystrophy.^{3,4} In our patient, the mass effect of the subungual neuroma led to chronic distal onycholysis, allowing for the development of persistent green nail syndrome and candidal onychomycosis.

Green nail syndrome, most commonly caused by *P aeruginosa*, is a nail disease of infectious etiology that causes green chromonychia, onycholysis, and

chronic paronychia.⁷ It is challenging to treat, and recommended therapeutic regimens vary. First-line treatment options consist of topical therapies, such as Dakin solution (0.5%-2% sodium hypochlorite) soaks, followed by 2 weeks of a fluoroquinolone antibiotic, if these fail.^{8,9} Fungal and bacterial coinfections are common, and may further complicate treatment. In a study by Ohn et al⁷ in 2020, 65% of patients with green nail syndrome had fungal coinfection. In such cases, an extended course of antibiotics and antifungals has been used.¹⁰

In cases of persistent green nail syndrome, a full spectrum of potential underlying causes of onycholysis should be considered. Examination of subungual lesions can be challenging, especially when there is overlying discoloration of the nail plate. Thus, nail unit biopsy may be considered in refractory cases. Potential treatment options for traumatic neuromas include surgical excision, corticosteroid injection, neurolysis, or expectant management.^{3,4} In this case, observation was recommended, as the green nail syndrome resolved following the nail biopsy. If the onycholysis does not fully resolve in the future, however, the patient would be at risk of recrudescence of green nail syndrome.

Conflicts of interest

None disclosed.

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