

Answer to Dermacase *continued from page 1103***1. *Pseudomonas aeruginosa* infection**

Green nail syndrome is a paronychia infection caused by the bacterium *Pseudomonas aeruginosa*. This condition clinically presents as a greenish-black, bluish-grey, greenish-brown, or greenish-yellow discoloration of the nail that is not affected by washing or scraping. It is commonly associated with proximal chronic paronychia and distolateral onycholysis. Greenish transverse bands might result from repeated infection.¹ The disease is usually confined to one or two nails.²

Pseudomonas aeruginosa has a characteristic sweet, fruity odour due to its production of trimethylamine. This organism also produces the greenish-blue pigment pyocyanin, which diffuses into the undersurface of the nail plate, accounting for the green discoloration characteristic of this condition. *Pseudomonas aeruginosa* grows in moist environments and does not thrive in dry conditions—simulating a moist environment by placing an occlusive covering made with plastic wrap around the nail has been shown to induce colonization of Gram-negative species, including *P aeruginosa*, which otherwise do not survive on healthy dermis.³

Pseudomonas aeruginosa is not part of the normal flora of dry skin and *Pseudomonas* infections of the intact nail are rare. In those healthy individuals who are affected, of which there are few, *P aeruginosa* colonizes moist regions of the skin, including the axillae, anogenital regions, and external ears. Those with prolonged exposure to water, soaps, and detergents or trauma to the nail fold are at higher risk of infection. Therefore, *P aeruginosa* infection involving the nails is more common in homemakers, barbers, dishwashers, bakers, and medical personnel.⁴ Trauma to the nail fold in particular (eg, microtrauma, onychotillomania, and associated nail disorders) predisposes individuals to paronychia.⁵

Diagnosis

The differential diagnosis includes other conditions that can discolour the nail plate, including subungual hematoma; nevus; malignant melanoma; and *Aspergillus*, *Candida*, and *Proteus* infections. Exposure to aqueous solutions with high concentrations of pyocyanin or pyoverdine can also cause a green discoloration of the nail.⁶

Diagnosis of suspected *Pseudomonas aeruginosa* infection is confirmed by Gram stain and culture of the exudate and unguis fragments.⁷ Standard practice,



however, is to culture scrapings from under the infected nail for fungus. If results of the fungal culture are negative, treat the patient empirically for *P aeruginosa*.⁵

Treatment

Treatment involves removing the onycholytic portion of the nail and cleaning and debriding the skin. Patients are encouraged to avoid wetness and other predisposing factors that can cause trauma to the nail. Topical antibiotics, such as polymyxin B or bacitracin, applied 2 to 4 times daily will effectively treat most patients within 1 to 4 months.⁴ Other therapies include soaking the nail in a dilute 0.25% to 1% acetic acid solution or brushing the affected area twice daily with 2% sodium hypochlorite.⁸ Topical silver sulfadiazine, ciprofloxacin, or gentamicin can also clear the nail of *P aeruginosa*. When topical therapies fail, oral ciprofloxacin for 2 to 3 weeks has been successful in many cases. Occasionally, removal of the entire nail might be required.⁴

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Competing interests

None declared

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