

GREEN NAIL SYNDROME: A CASE REPORT AND A NEW TREATMENT APPROACH

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Pseudomonas nail infection causes green, greenish-black or bluish color changes in the involved nail. Herein, we present a case of green nail syndrome related to *Pseudomonas aeruginosa* that was treated with a different approach. The patient was treated with amikacin injections as she had previously tried many antifungals and antibiotics. Using a G-29 fine needle, a total of 62.5 mg per day of amikacin was injected into the matrix area of the diseased nail for 10 consecutive days. The infected nail healed with a longitudinal depression at one third of the nail plate. Despite this, the patient was satisfied with the result.

Key Words: green nail syndrome, amikacin injections, *pseudomonas* nail infection.

YEŞİL TIRNAK SENDROMU: OLGU SUNUMU VE YENİ BİR TEDAVİ YAKLAŞIMI

Pseudomonas tırnak enfeksiyonu, tırnakta sarı, yeşil-siyah ya da mavimsi renk değişikliklerine neden olur. Bu yayında farklı bir yaklaşımla tedavi edilen, *Pseudomonas aeruginosa* enfeksiyonu sonucu yeşil tırnak sendromu gelişen bir olgu sunulmaktadır. Hasta daha önce çok sayıda antifungal ve antibiyotik kullandıktan amikasin enjeksiyonlarıyla tedavi edildi. Tırnak matriksine 62.5 mg/gün amikasin, G-29 ince iğneyle ardışık on gün enjekte edildi. Bu tedaviyle enfekte tırnak plağı 1/3'ünde longitudinal depresyon ile iyileşti. Buna rağmen hastamız sonuçtan memnundu.

Anahtar Kelimeler: amikasin enjeksiyonları, yeşil tırnak sendromu, *pseudomonas* tırnak enfeksiyonu.

INTRODUCTION

Pseudomonas infection of nails results from access of microorganisms to the subungual space following onycholysis, which may result from repeated contact with water, detergents and soaps, and from nail traumas (1). Normal healthy skin and its appendages are generally resistant to this microorganism but when epidermal integrity or continuity is interrupted *pseudomonas* skin infections may occur (2, 3). Studies showed that humidity is essential for the survival of this low virulent agent as it does not survive on dry skin. The humid media around and under the nail seen in even healthy individuals make these nails more liable to this infection. For these reasons, *pseudomonas* nail infection is more common in housewives, barbers, bakers and health care providers (1, 2). The treatment of this condition is difficult and treatment by intralesional amikacin injection is a new technique.

CASE REPORT

A 37-year-old female presented with a history of greenish discoloration of her left thumbnail (Fig. 1). She had tried many antifungals and antibiotics but the discoloration remained unchanged and the nail had become even more dystrophic. She described a history of trauma to the affected nail. Furthermore, as she was a housewife, daily exposure to water, soaps and detergents was unavoidable. She reported oozing and a bad odor coming from the nail, especially after prolonged exposure to water. On dermatological examination, a greenish yellow discoloration mainly on the proximal part of the thumbnail on her left hand with mild subungual hyperkeratosis and partial onycholysis was observed. The patient was otherwise healthy. A punch biopsy taken from the nail plate was cultured, and *Pseudomonas aeruginosa* growth sensitive to many antibiotics including amikacin was observed. It was decided to inject topically amikacin into the matrix of the affected nail.

Using a G-29 fine needle, a total of 62.5 mg per day of amikacin was injected into the matrix area of the diseased nail for 10 successive days. The method was as follows:

- (1) Painting the finger with povidone iodine solution.
- (2) Digital ring block anesthesia was achieved with 1% prilocain.

(3) The G-29 injection needle was introduced from a point lateral to the proximal nail fold and pushed in until it reached the other end of the proximal nail fold (Fig. 1). Then amikacin was injected, slowly pulling the needle backward until the whole proximal nail fold was infiltrated. Following the injections, the patient was followed up monthly for 10 months. The infected nail healed with a longitudinal depression at one third of the nail plate (Fig. 2). Despite this, the patient was satisfied with the result.



Figure 1: Infected nail and amikacin injection.



Figure 2: Ten months after the treatment.

DISCUSSION

Pseudomonas nail infection is clinically seen as green, greenish-black or bluish color changes (1-5). Paronychia may precede the color changes but this not a rule. The diagnosis of *pseudomonas* nail infection is made by taking swabs or pieces of nail and performing Gram staining or cultures. The differential diagnosis of green nail includes aspergillus, proteus and candidal infections, blistering diseases, subungual old hematoma, nevus, malignant melanoma, jaundice and contact with high concentrations of pyocyanin and pyoverdines dyes (1, 5). Various treatment approaches according to the severity of the disease include starting with avoidance of predisposing factors, using topical antibiotic creams and solutions (bacitracin-polimyxin-B 0.1%), and topical use of 0.25%-1% acetic acid solution two to four times per day for four months (6). In cases of onycholysis, the elevated part of the nail should be trimmed away and the nail bed should be cleaned in order to ensure a dry environment. In some cases, total avulsion of the affected nail is needed (6, 7).

Antibiotic therapy (amikacin) was used in our patient in such an aggressive way because the infected nail had not responded to previous oral and topical antibiotics and antifungals. The infected nail healed with a longitudinal depression at one third of the nail plate. We do not know the exact reason for this depression but it may be related to the *pseudomonas* infection or amikacin injections. No toxic or any other adverse effect of amikacin itself was the cause in our patient as the depression was restricted to one third of the nail. Despite this appearance, our patient was satisfied with the result and was happy to be free of the bad odor and oozing. More cases will help us to understand the reasons for this deformity better. To our knowledge, this is the first case report of the treatment of a *pseudomonas* nail infection with amikacin injections. We think that the main advantage of our method is the avoidance of the hepatotoxic side effects of systemic therapies used for prolonged periods.

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