SHORT COMMUNICATION

A Rare Case of Polymyxin B Induced Transverse Melanonychia Affecting All 20 Nails

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Melanonychia is a nail condition characterized by grey-brown-black pigmented bands traversing the nail plate longitudinally or transversally. It generally results from melanocytic activation, where melanin production increases without a rise in melanocyte numbers. Melanonychia may be associated with malignant tumours, drugs, infections, inflammatory diseases, nutritional deficiencies (such as vitamin D or B12 deficiency), and endocrine disorders (including Addison's disease, Cushing's syndrome, hyperthyroidism and acromegaly) (1). While longitudinal melanonychia is more common, transverse melanonychia is very rare and typically associated with iatrogenic causes such as chemotherapeutic agents (hydroxyurea, doxorubicin, bleomycin etc.), zidovudine, infliximab, PUVA and electron beam therapy and some antimalarials (2).

Polymyxin B, an antibiotic for multidrug-resistant Gram-negative infections, is known to cause skin hyperpigmentation, though nail involvement is rare (3–5). Here, we describe a unique case of transverse melanonychia involving all nails in a patient treated with polymyxin B.

CASE REPORT

A 56-year-old male with a medical history of hypertension and rheumatoid arthritis underwent subdural haematoma evacuation due to parietal arteriovenous malformation haemorrhage. Postoperatively, levetiracetam was initiated for seizure prophylaxis, and the patient was monitored in the intensive care unit (ICU) with mechanical ventilation support.

During intensive care follow-up, the patient developed fever, leukocytosis, and elevated acute phase reactants (APRs). Blood, urine, and deep tracheal aspirate (DTA) cultures were obtained, and empirical piperacillin-tazobactam therapy was initiated. Cultures from deep tracheal aspirates grew *Acinetobacter baumannii* and *Klebsiella pneumoniae*, necessitating the use of polymyxin B (loading dose of 25,000 IU/kg, maintenance dose of 15,000 IU/kg daily for 21 days).

Before polymyxin B, no nail or skin discoloration was noted. Approximately 10 days after starting polymyxin B, brown discoloration appeared on the nails, progressively worsening over 3 weeks of treatment. The discoloration persisted after discontinuing polymyxin B in the short term.

After completing his ICU stay, the patient was transferred to a palliative care unit and persistent nail discoloration prompted a dermatology consultation. Dermatological examination revealed transverse melanonychia on all fingernails (**Fig. 1**A) and toenails (**Fig. 1**B). No pigmentation changes were observed on the face, trunk, or extremities except for the fingers. Onychoscopic examination showed transverse bands formed by the fusion of multiple longitudinal brown bands, with normal coloration of the distal nail plate (**Fig. 2**A). Direct microscopic examination for fungi was negative and no evidence of inflammatory disease was found. Furthermore, vitamin D and B12 levels, serum adrenocorticotropic hormone, cortisol, thyroid function tests, insulin like growth factor-1, and growth hormone levels were within normal ranges, such that we excluded Addison's disease, Cushing's syndrome, hyperthyroidism, and acromegaly. When the patient was re-evaluated after 2 months, it was observed that the melanonychia had progressed toward the central portion of the nail as the nail grew, and clear nail was emerging from the proximal end (**Fig. 2**B).

DISCUSSION

In our case, polymyxin B appears to be the most likely cause of transverse melanonychia. Of the other drugs used in this patient's treatment, levetiracetam or piperacillin-tazobactam are not associated with nail pigmentation. According to the Naranjo criteria, this patient scored 5 points for polymyxin B, categorizing the reaction as a possible adverse drug reaction.

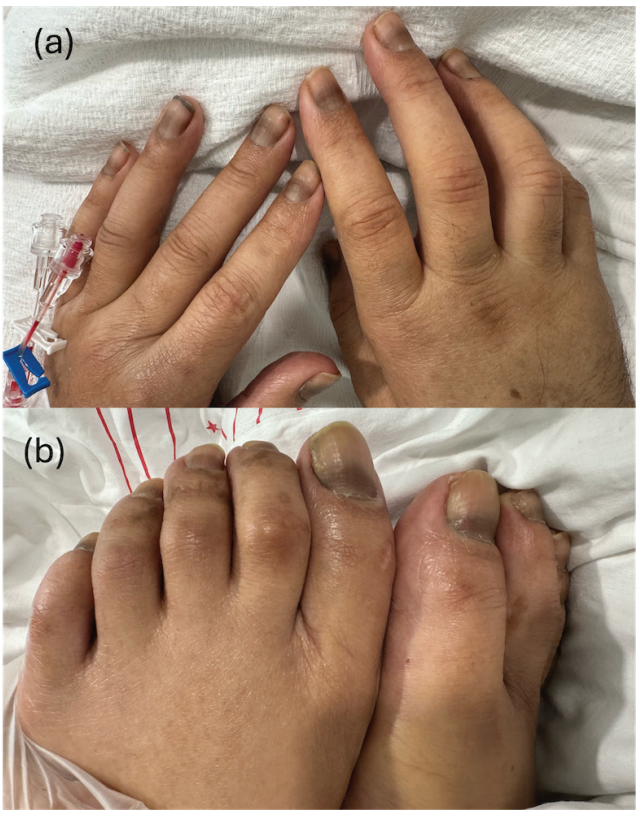

Fig. 1. Transverse brown discoloration of (A) fingernails and (B) toenails.

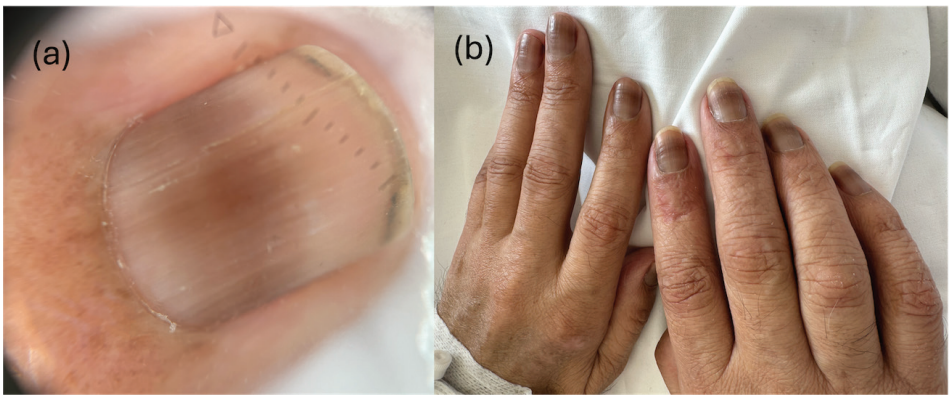

Fig. 2. (A) Onychoscopy: Transverse bands formed by the fusion of multiple longitudinal brown bands, with normal coloration of the distal nail plate, (B) 2 months later after dermatology consultation, melanonychia had progressed centrally with nail growth, while clear nail emerged proximally.

Polymyxin B-associated skin hyperpigmentation has been described as occurring a few days after initiation, predominantly involving the head and neck, and less commonly the trunk and extremities (4, 5). However, only 1 previous case described diffuse melanonychia involving all nails alongside skin pigmentation (4).

Polymyxin B-induced hyperpigmentation can manifest as pigmentation changes in the skin or, in the present case, as transverse melanonychia localized to the nails. There were no clinical signs in this patient indicative of infectious, tumoral or inflammatory nail conditions, endocrinological diseases, or nutritional deficiencies. The development of transverse melanonychia following the initiation of polymyxin B, the gradual resolution of melanonychia after its discontinuation, and the exclusion of other potential causes of melanonychia suggest a potential association with this medication. However, the lack of pathological sampling from the nail unit represents a limitation in this case.

Melanonychia can develop in patients monitored in intensive care or palliative care units following drug use, and the appearance of this condition may cause concern for both patients and their families, who are already dealing with challenging care situations. In patients with melanonychia, it is important to investigate the potential role of medications but also to evaluate other endocrinological and nutritional factors in the aetiology, as this may help identify an underlying cause. We deemed it appropriate to present this case to highlight the importance of recognizing the rare occurrence of transverse melanonychia, performing its differential diagnosis, and investigating its underlying causes.

The authors have no conflicts of interest to declare.

REFERENCES

1. Singal A, Bisherwal K. Melanonychia: etiology, diagnosis, and treatment. Indian Dermatol Online J 2020; 11: 1. https://doi.org/10.4103/idoj.IDOJ_167_19
2. Jefferson J, Rich P. Melanonychia. Dermatol Res Pract 2012; 2012: 952186. https://doi.org/10.1155/2012/952186
3. Mattos KPH, Cintra ML, Gouvêa IR, Ferreira LÁ, Velho PENF, Moriel P. Skin hyperpigmentation following intravenous polymyxin B treatment associated with melanocyte activation and inflammatory process. J Clin Pharm Ther 2017; 42: 573–578. https://doi.org/10.1111/jcpt.12543
4. Kura MM, Sonawane PD. Polymyxin B-induced skin and nail hyperpigmentation in an adult. Pigment International 2023; 10: 183–185. https://doi.org/10.4103/pigmentinternational.pigmentinternational_82_21
5. Zheng G, Cao L, Che Z, Mao E, Chen E, He J. Polymyxin B-induced skin hyperpigmentation: a rare case report and literature review. BMC Pharmacol Toxicol 2018; 19: 41. https://doi.org/10.1186/s40360-018-0226-1