

Blue nails: window to micronutrient deficiency

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DESCRIPTION

A 12-year-old boy presented with progressive darkening of nails of both hands and feet for the past 3 months. He noticed the blue-black pigmentation of all the fingernails and toenails (figure 1A,B). Pigmentation was more marked in fingernails, particularly over thumbnails (figure 1C,D). The pigmentation started proximally and progressed distally. It was associated with hyperpigmentation of distal phalanges and nail bed. There was no history of any exposure to dyes or work in factory, trauma or exposure to any other agents. There was no history of dermatitis or rash prior to this complaint. He was a non-vegetarian. Other systemic examination was unremarkable.

Lab investigations revealed macrocytic hypochromic anaemia (haemoglobin 10.9 g/dL, mean corpuscular volume 110 fL), decreased serum vitamin B₁₂ (80.61 pg/mL), normal serum folate levels (4.8 ng/mL), elevated serum homocysteine level (55.47 µmol/L) and mildly elevated urinary methyl malonic acid. His serum adrenocorticotropic hormone level was within normal limits. The severe vitamin B₁₂ deficiency was considered as the attributing factor for his nail hyperpigmentation. He was started on daily intramuscular vitamin B₁₂ therapy (1 mg/day) for 7 days followed by weekly injections for 4 weeks along with oral B₁₂ (1 mg/day) and other micronutrients. Serum homocysteine became normal after 1 month of therapy (6.4 µmol/L).

The clinical manifestations of vitamin B₁₂ deficiency are megaloblastic anaemia, glossitis and neurological symptoms like sensory abnormalities, tremors and psychiatric symptom.¹ Other less

Learning points

- ▶ Possibility of B₁₂ deficiency should be considered in case of unexplained pigmentation.
- ▶ Vitamin B₁₂ deficiency mimicking Addison pigmentation should be ruled out.
- ▶ Early diagnosis and prompt treatment can cause the reversal of symptoms.

common features are cutaneous hyperpigmentation, aphthous stomatitis, cheilitis, vitiligo, sparse lusterless hypopigmented hairs and blue-black pigmentation of nails.² Nail changes in vitamin B₁₂ deficiency present as hyperpigmentation of nails like bluish discoloration of nails, blue-black pigmentation with dark longitudinal streaks, and longitudinal and reticulate darkened streaks. The nail pigmentation associated with B₁₂ deficiency is more frequent in patients with dark skin. The mechanism of hyperpigmentation is proposed to be decreased glutathione levels resulting in disinhibition of tyrosinase, an enzyme of melanogenesis leading to increased melanin synthesis.³ The cutaneous manifestations can be reversed with B₁₂ therapy. Possibility of vitamin B₁₂ deficiency should be kept in a patient presenting with only cutaneous manifestation of hyperpigmentation. Complications of vitamin B₁₂ deficiency may be prevented if the condition is recognised early and treatment is initiated.

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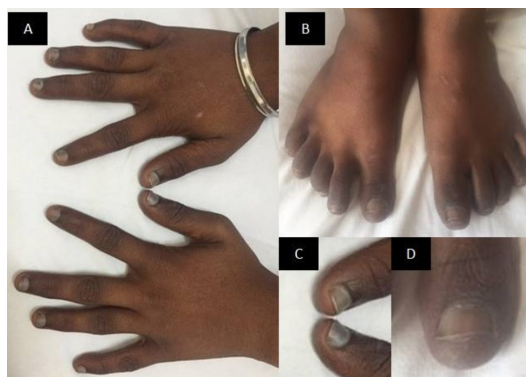


Figure 1 Hyperpigmentation of nails. Blue-black pigmentation of all the fingernails and toenails (A,B) with associated hyperpigmentation of nail bed, distal phalanges and knuckles. It is more marked on thumbs and great toes (C,D).



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