

Acquired Transverse Stripes on the Fingernails: A Quiz

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A 58-year-old woman presented in December 2016 with asymptomatic nail changes. She had had white-yellow transverse stripes on all the nails of both hands for several years (Fig. 1). She had noticed these nail changes for the first time in 2003, 3 weeks after travelling in a tropical area, and the lesions had improved spontaneously some months later. The nail lesions reappeared in 2011, when she began sailing every summer, from May to October, in the Mediterranean. Since then, the nail changes had been permanent. She noticed that the bands moved with nail growth.

She was treated with levothyroxine for hypothyroidism and occasionally took paracetamol. She did not have any special manicures. Blood cell count, liver function tests and renal function tests were within normal limits.

Examination of the nails, including dermoscopy, revealed that all the fingernails were affected homogeneously, with non-palpable transverse white-yellow stripes 5 mm wide, and distal onycholysis of some of the nails. There was no evidence of matrix damage; the lunulae were normal. The lesions persisted after compression with the dermoscope.

High-resolution, 25 MHz, ultrasound revealed normal proximal nail fold, but loss of the normal “rail-image”, consisting of a double hyperechoic band of nail plate with thickening and multi-lamellar appearance of the plate on affected transverse bands (Fig. 1 d, e).

What is your diagnosis? See next page for answer.

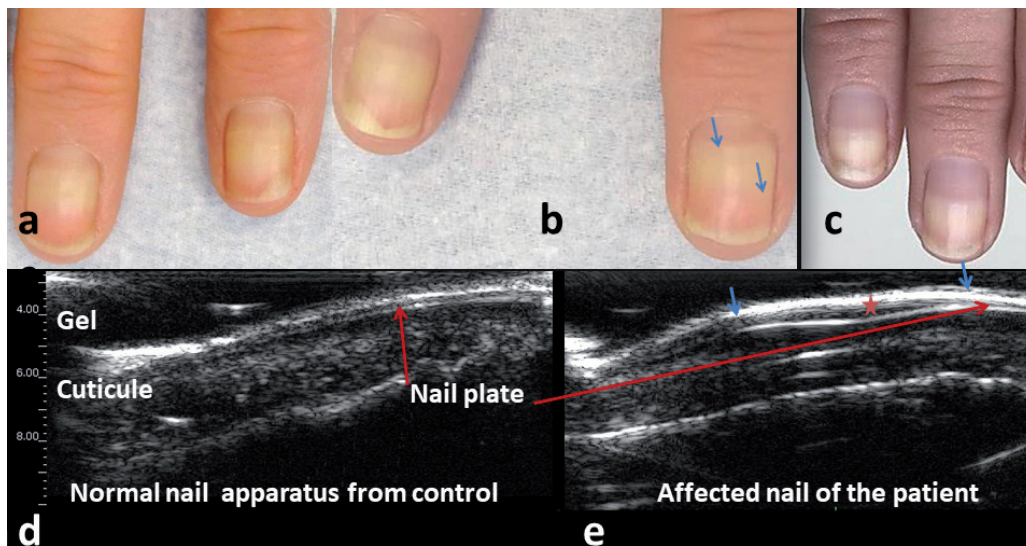


Fig. 1. (a) Right and (b) left hand showing nail bands and some distal onycholysis in December 2016. There was no inflammation of the nail matrix area. Blue arrows show the limits of nail stripe on one finger examined with ultrasound. (c) Left hand 3 months later. Note the distal progression of the bands. (d) Ultrasound appearance of normal nail in control. Note the “rail image” of the normal nail plate. (e) Ultrasound image from the patient. Note the disruption in normal curve of the nail plate (blue arrow), the disappearance of normal rail image, and the thickening and multi-lamellar character of the nail plate in the affected area (red asterisk).

ANSWERS TO QUIZ

Acquired Transverse Nail Stripes Affecting the Hands: A Commentary

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Diagnosis: Mees' lines related to erythropoietic protoporphyria (EPP)

Transverse nail abnormalities may be related to several mechanisms. Multiple non-palpable transverse white bands (true leukonychia) are usually caused by drug intake, mainly sequential chemotherapies, or repeated microtrauma affecting the nail plate, disturbing, but not stopping, nail growth. They are called Mees' lines. When the proximal nail bed is severely affected, nail growth may be interrupted, resulting in onychomadesis. In less severe cases nail growth may be impaired, creating palpable transverse white bands called Beau's lines. Apparent leukonychia, called Muehrcke's lines, disappear with digital compression and do not migrate with the growth of the nail, they are related to kidney and liver disease (1–3).

Because the nail changes recurred in the summer, we asked the patient about sun exposure, sun tolerance, and intermittent intakes of phototoxic drugs. She finally told us that she had been diagnosed with erythropoietic protoporphyria (EPP) at the age of 18 years. She had not made a causal relationship between nail changes and EPP because of the relatively recent onset of the nail disease and because she is currently tolerating sun exposure better than in her second and third decade. She had thought that her disease was cured. However, she usually wears long trousers, long sleeves and shoes when sailing. Laboratory testing confirmed the diagnosis of EPP: her plasma protoporphyrin level was 54.0 nmol/l (normal level <20 nmol/l) and erythrocytes protoporphyrin level 19.0 µmol/l (normal level <1.9). There was no other case in the family.

EPP is a rare inherited disorder of porphyrin metabolism (4), caused by mutations within the gene that encodes ferrochelatase, which catalyses the insertion of iron into protoporphyrin to form haem. EPP is clinically characterized by cutaneous photosensitivity that usually begins in early childhood, and includes burning, swelling, itching and painful erythema in sun-exposed areas (4).

Photo-induced nail toxicity has been reported with phototoxic drugs, mainly tetracyclines and quinolones, and more recently voriconazole and vandetanib (5–7), but also in porphyria (mainly in porphyria cutanea tarda), resulting in subungueal blisters (5). Other abnormalities of the fingernails have been reported in EPP, including absent lunula, transverse areas of leukonychia and distal onycholysis (5, 8, 9).

High-frequency ultrasound clearly demonstrated that transverse bands were related to changes in the nail-plates, which lost their normal “rail image” in the affected area (10). We postulate that nail matrix injury due to visible light may impair nail growth, resulting in dyschromia of all the nail plates on the sun-exposed hands. We advised the patient to use external photoprotection, by wearing gloves for the 6 months she spent sailing each year.

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