Coexistence of Apparent Transverse Leukonychia (Muehrcke's Lines Type) and Longitudinal Melanonychia after 5-Fluorouracil/Adriamycin/Cyclophosphamide Chemotherapy

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Chemotherapeutic agents can induce different forms of chromonychia [1-4]. To our knowledge, contemporary leukonychia and melanonychia due to drug exposure is a unique observation.

Case Report

A 45-year-old woman with breast carcinoma, stage II, underwent a radical mastectomy followed by 6 cycles of chemotherapy. The dosage schedule was: 5-fluorouracil 900 mg/day, adriamycin 90 mg/day, cyclophosphamide 900 mg/day i.v. (body surface 1.84 m²). At the end of the first cycle, the patient observed a 5- to 6-mm-wide longitudinal darkening in the middle of the nail plates of both thumbs (fig. 1). There was no unusual mucocutaneous pigmentation elsewhere on the body. After the second cycle of chemotherapy, multiple transverse white lines were noted on all fingernails (fig. 2). On each fingernail, 2-Λ horizontal bands with regular borders transverse and parallel to the lunula, 2-3 mm in width, similar to the white ground-glass appearance of the lunula, separated by 1- to 3-mm bands of normal pink nail, were present. The white bands did not migrate distally with the nail growth and were accentuated by Therry's maneuver, consisting of suffusion of the nail bed with blood. Foci of irregular partial leukonychia were also observed on the plates of some fingernails. Coexistence of mild longitudinal melanonychia and multiple transverse leukonychia was present on the thumbs.

Fig. 1. Coexistence of diffuse darkening of the nail plate presenting as mild longitudinal melanonychia and multiple transverse white lines of both thumbs.

Fig. 2. Apparent transverse leukonychia of the fingers, Muehrcke's lines type.

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The toenails were not affected, and the patient had normal renal function and normal albumin level in the blood. Nail bed biopsy was refused; nail clipping of the thumbs showed focal pigment deposition in the ventral portion of the nail plate, in the absence of keratinization disorders.

Capillary microscopy and laser Doppler plethysmography displayed normal vascular morphology and regular blood flow on the nail bed.

Discussion

Our patient showed two different types of chromonychia: longitudinal melanonychia of the thumbs followed by the onset of apparent transverse leukonychia of all fingernails, with foci of irregular partial true leukonychia of the plates of some fingernails. This seems to be a unique observation.

According to the literature, all three drugs may induce matrix melanocyte stimulation. More often melanonychia develops as horizontal dark bands after intermittent cancer therapy [1, 2, 5]. In our patient, longitudinal and diffuse pigmentations appeared at the end of the first cycle. No modification of this chromonychia of the thumbs during the following cycles was observed. Matrix melanocytes very often perpetuate their activation after the end of the direct stimulation [5].

The clinical appearance of the multiple horizontal white lines allows us to interpret them as Muehrcke's lines-like leukonychia [3, 6]. These bands can be classified as apparent leukonychia according to the classification of Baran et al. [7], since the whiteness is secondary to nail bed pathology. In the absence of either chronic hypoalbuminemia or severe systemic illnesses as hepatic cirrhosis and uremia or other toxic substances, both adriamycin and cyclophosphamide [8], but probably not 5-fluorouracil that is more frequently related to 'half and half-like nails' [1], can be responsible for these white bands. Using capillary microscopy and laser Doppler plethysmography of the nail unit, we were not able to point out any altered blood perfusion causing a massive edema of the nail bed. This vascular alteration could reduce the adherence between the distal nail plate and the

nail bed, which is supposed to be one of the possible pathogenetic mechanisms of the Muehrcke's lines [9].

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