

Chemotherapy-Induced Fingernail Changes

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Figure 1. Patient's fingernails

When presenting for his fourth overall round of chemotherapy, a 71-year old African-American man asked his oncology team about an unusual pattern he had noticed on his fingernails. He had only recently noticed the discoloration, but wondered whether it could be chemotherapy-related. Figure 1 depicts this finding.

Fingernails grow continuously at an average rate of 3.5 mm/month throughout life. New nail is constantly being created at the base, which pushes older sections distally. Due to their slow growth rate, the nails may provide information on pathologic conditions that have occurred up to several months before the time of observation.¹

When forming a differential, a provider should assess the distribution of changes within a specific nail as well as across the digits. Nail abnormalities associated with systemic diseases usually involve most or all nails. In contrast, local trauma would be expected to be limited only to affected regions. Ongoing processes disturbing the nailbed would be expected to manifest as a vertical change.² The loss of pigment appears in this case in discrete, horizontally-oriented lines that traverse the entire width of each nail moving outward from the lunula of the nail, with all nails showing a similar pattern. Between the lighter bands, there appears to be a return to normal pigmentation. Taken together, these findings suggest that the growth of all nails was transiently affected at the same time.

White discoloration of nails is known as leukonychia. When the loss of pigment of the nail plate runs parallel to the nail base it is called leukonychia striata or Aldrich-Mees' lines. The color change is the result of defective keratinization of the of the nail plate owing to a transient injury to the nail matrix. This nail change is usually acquired, and can be caused by underlying infections, drugs, poisoning, or systemic disease processes.³ The discolored section of the nail moves distally, forming a band.

Like rings on a tree, the hypopigmented sections of his nails highlight individual rounds of chemotherapy he received. Individually distinguishable due to the recovery period between rounds, our patient underwent chemotherapy five months, three months, and two months prior to this photograph. During the first round he received both daunorubicin and cytarabine, followed by high dose cytarabine in subsequent cycles.

Prior to initiating chemotherapy, our patient was counseled on potential side effects. It is imperative that patients hear about common expected side effects like myelosuppression, nausea, vomiting, and diarrhea⁴ as well as significant adverse potential outcomes like cardiac toxicity or fatal cardiomyopathy,⁵ cerebellar toxicity,⁷ and local tissue injury due to extravasation. Additionally, infectious complications are common and sometimes fatal. Dermatologic side effect counseling of cytarabine likely was limited to rash, alopecia,⁷ and acral erythema. In an effort to avoid overwhelming our patients with too much information we focus our education on the common and the serious. Nail changes infrequently affect our patients' daily functioning and are therefore edited out of such discussions.

Chemotherapy, including cytarabine, has been associated with various types of nail changes such as nail dystrophies; different patterns of nail discoloration (known as chromonychia), leukonychia (including Mee's and Muehrcke's lines), Beau's lines, paronychia and onycholysis.⁸ Leukonychia has additionally been described in patients suffering from arsenic and thallium intoxication.⁸ Our patient reports no other toxic exposures. We believe the

bands were caused by the chemotherapy he received, most likely the cytarabine. These nail changes are expected to resolve with the completion of therapy as new growth pushes the affected nail outward.⁹

For chart completion purposes, this finding could be added using the ICD-9 diagnosis code 985.1 — Other specified diseases of the nail, or the more updated ICD-10 code L60.8 — Other nail disorder.

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