



Chemotherapy-Induced Nail Changes: An Unsightly Nuisance

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P.S. is a 53-year-old female patient with stage IIB breast cancer. In November 2000, she received Adriamycin® (Pfizer Inc., New York, NY) and Cytosan® (Bristol-Myers Squibb, New York, NY), along with Herceptin® (Genentech, Inc., South San Francisco, CA), as part of a clinical trial.

In July 2002, the patient was found to have a left supraclavicular axillary recurrence. Because of this recurrence, P.S. received docetaxel (Taxotere®, Aventis Pharmaceuticals, Bridgewater, NJ) by IV on day 1 and 4,000 mg capecitabine (Xeloda®, Roche Laboratories Inc., Nutley, NJ) by mouth on days 2–15 for the first two cycles. Docetaxel was given by IV every three weeks (210 mg total dose). Beginning with cycle three, P.S.'s capecitabine dose was reduced because of the onset of plantar palmar erythrodysesthesia (PPE) and swelling in the hands.

When PPE was noted, the patient had inflamed, edematous hands, particularly on the tips of the fingers. In addition, small blisters developed on the tips of most of her fingers. The capecitabine dose was held until the next cycle (her fourth); as a result, her symptoms cleared within one week. During her fourth cycle, the capecitabine dose was decreased by 25%, and the PPE did not return.

After the final cycle of docetaxel and capecitabine (cycle 6), the patient reported to the oncology office with extreme nail changes (see Figure 1). All of the nails of her fingers were bulging, whitish-green in color, and very foul smelling. This was interfering with the patient's activities of daily living and caused embarrassment because of the odor. The physician was consulted, and the patient was instructed to soak her fingers in water with an antibacterial soap. The patient made a self-referral to a podiatrist.



FIGURE 1. CHEMOTHERAPY-INDUCED NAIL CHANGES

After receiving six cycles of Taxotere and Xeloda, the patient went on to receive radiation therapy to the nodal sites on the left chest. Radiation therapy was completed in March 2003. Today, P.S. is disease-free and enjoying a good quality of life.

What do oncology nurses need to know about chemotherapy-induced nail changes? Most importantly, they probably occur more often than they are reported. Patients may experience these changes but, because the symptoms do not inhibit daily activities, may never report them.

Patients typically present with a dark discoloration of the nails, followed by nail raising and paronychia. Paronychia, an inflammation of the nail fold surrounding the nail plate, frequently is caused by bacteria or

fungi, most often staphylococci and streptococci (Dirckx, 1997). These nail changes can be unsightly and distressing.

In addition to their cosmetic value, nails provide protection for the fingers and toes, contribute to tactile sensation, and assist in the manipulation of objects by the fingers (Noronha & Zubkov, 1997; Scher, Fleckman, Tulumbas, McCollam, & Enfant, 2003). Nail changes may provide clues to illness or disease. However, before understanding nail changes and their causes, nurses must be familiar with nail anatomy and physiology.

The nail unit is comprised of four epithelial parts: the nail bed, matrix, folds, and plate (Noronha & Zubkov, 1997; Piraccini & Tosti, 1999; Scher et al., 2003). The nail bed adheres closely to the nail plate with protein fibers. The nail matrix produces the nail plate starting in embryo at 15 weeks. The nail folds surround the nail plate at the proximal and lateral portions of the finger. The dorsal layer of the nail fold is a continuation of the skin, and the ventral layer continues with the nail matrix. The outgrowth of the proximal nail fold is the cuticle. The digital arteries supply the blood

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