A Case of Taxane-induced Onycholysis and Subungual Abscesses

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A 35-year-old woman with advanced lung cancer, treated with intravenous docetaxel and paclitaxel, developed subungual abscesses and secondary onycholysis involving all the finger nails. Bacterial culture demonstrated the growth of *Pseudomonas aeruginosa*.

We report a case of onycholysis and subungual abscesses in a patient treated with docetaxel and paclitaxel. (Ann Dermatol (Seoul) 19(1) 28~30, 2007)

Key Words: Docetaxel, Onycholysis, Paclitaxel, Subungual abscess

INTRODUCTION

The taxanes are new antineoplastic agents used in the treatment of advanced breast, ovarian, lung and head and neck cancers. Nail changes from taxanes include nail pigmentation, splinter hemorrhage, Beau's line, onycholysis, subungual suppuration, acute paronychia and subungual abscesses.

We report a patient with onycholysis and subungual abscesses involving all finger nails, which developed after 4 months of taxane administration to treat advanced lung cancer.

CASE REPORT

A 35-year-old woman with advanced lung cancer was referred to our department for the evaluation of nail changes. Her clinical history included advanced lung adenocarcinoma with metastasis to the lungs and pleura. She received seven cycles of combination chemotherapy, containing docetaxel (40 mg/m^2) and cisplatin (40 mg/m^2), at two-week intervals, for 12 weeks. The cumulative doses of both drugs were 280 mg/m^2. Three weeks after the discontinuation of docetaxel, paclitaxel was administered at a dose of 330 mg (175 mg/m^2) without steroid pretreatment.

Nail changes developed after 4 months and 1 month of docetaxel and paclitaxel administration, respectively. Clinical examination revealed red-brown discoloration of the finger nails associated with subungual hemorrhage, onycholysis, and abscesses (Fig. 1. A, B, C).

Bacterial culture of the pus isolated *Pseudomonas aeruginosa*. Fungal culture was negative. Docetaxel and paclitaxel were discontinued, and cefixime and vancomycin were started. In 4 weeks, the symptoms and signs were improved without sequelae and there was no further recurrence of the symptoms and signs for 6 months.

DISCUSSION

Docetaxel and paclitaxel comprise of the two main taxanes in clinical use. Docetaxel is a semisynthetic taxoid derived from the needles of *Taxus baccata* (the European yew). The taxanes are structurally similar and the mode of action of both drugs involves binding to the β-subunit of tubulin in mitotic spindles, to form unstable microtubule aggregates, which lead to blockade of the cell cycle[1]. The two drugs differ in the specific cell cycle phase affected. Docetaxel arrests cells in the S phase, whereas

Received December 16, 2005
Accepted for publication June 15, 2006

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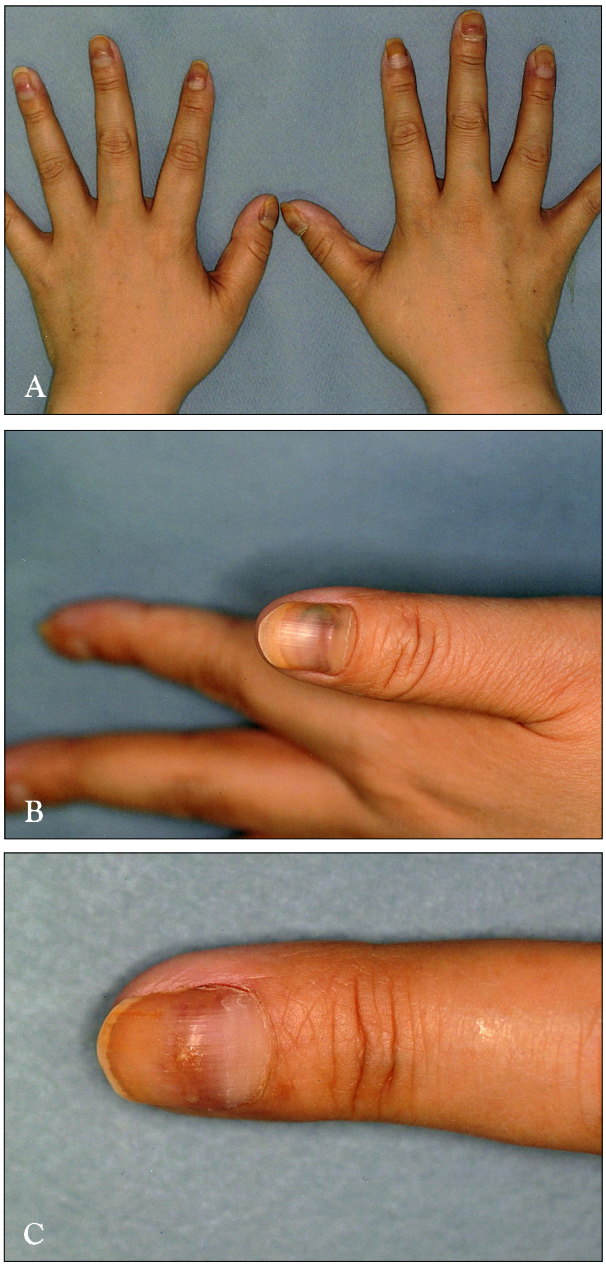

Fig. 1. (A, B, C) Taxane-induced onycholysis and subungual hemorrhage of fingernails.

paclitaxel inhibits cells in the G2-M phase junction[2].

Common dose-limiting side-effects of both drugs include neutropenia and oral mucositis, and peripheral neuropathy occurs in one third of patients[3].

Cutaneous reactions to taxanes include maculopapular exanthems, urticaria, erythematous plaques, acral erythrodysesthesia and desquamation[4]. Alopecia occurs in nearly all the patients.

Nail changes are a common and well-known side effect of many antineoplastic drugs, especially methotrexate, 5-fluorouracil, mitoxantrone, etoposide, doxorubicin, ixabepilone, and capecitabine.

Taxanes might be included in the chemotherapeutic drugs that frequently produce nail changes such as onycholysis, onychomadesis and hemorrhage. Nail changes related to docetaxel have been reported in 30-40% of patients, compared with 2% due to the use of paclitaxel? Nail bed purpura often precedes onycholysis. 'Hemorrhagic onycholysis' refers to the combination of onycholysis and subungual discharge of hemopurulent exudate.

Taxane-induced onycholysis is a consequence of toxic, direct damage to the nail bed epithelium leading to epidermolysis, loss of nail-bed nail-plate adhesion, and formation of a hemorrhagic bulla. The possible explanations for subungual hematoma and hemorrhagic onycholysis are the taxane-induced thrombocytopenia and vascular abnormalities.

The mean onset of nail changes evoked by chemotherapeuticals is 12 weeks from the initiation of therapy[1]? The development of onycholysis seems to be unrelated to the drug dose or frequency of administration. Chemotherapy-related immunosuppression presumably increases the potential for secondary bacterial infection, including abscess formation.

Nail abnormalities occurring during taxane treatments are, in most cases, not serious and do not usually warrant the discontinuation of treatment. But, hemorrhagic onycholysis and subungual abscesses are quite exclusive of taxane therapy. These side effects can cause severe complications enhancing the risk of sepsis, since patients may become neutropenic during chemotherapy.

Premedications with steroid minimize the development of fluid-retention syndrome and acute hypersensitivity related to chemotherapy, but do not seem to protect against cutaneous adverse effects[1]. Recently, Scotte, et al.[11] reported that a frozen glove significantly reduces the nail and skin toxicity associated with docetaxel. They extended the concept that cold temperature applied to the scalp during chemotherapy reduces the incidence of chemotherapy-induced alopecia[12]. Onycholysis and skin toxicity were significantly lower in the frozen glove-protected hand compared with the control hand. Antibiotics or antifungal treatments may be required to treat nail bed infections.

We report a case in which severe nail toxicity related to taxanes led to discontinuation of chemotherapy. We suggest that clinicians should be aware of the spectrum of taxane-induced nail toxicity.

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