

## Transient Remoulding of Nails as A Sequitur to Docetaxel

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### Abstract

Taxanes are antimicrotubular anticancer drugs used for the treatment of various types of carcinomas including sarcomas. Docetaxel and Paclitaxel are drugs belonging to this category and are known to cause many hematological as well as cutaneous side effects. The nail changes caused by docetaxel are relatively benign in nature and proportional to the number of therapy cycles.

We report a 30 year old patient diagnosed with retroperitoneal sarcoma who developed severe nail changes on administration of chemotherapeutic agent docetaxel and these changes reversed to normal on withdrawal of the drug.

**Keywords:** Docetaxel; nail changes

### INTRODUCTION

Chemotherapeutic agents are known to cause various cutaneous adverse effects, including hair and nail changes. Amongst these agents the taxane group of drugs are associated with adverse effects commonly involving nails.

### CASE REPORT

A 30 year old male patient presented in the outpatient oncology department with the complaint of back pain and palpable abdominal lump and was subsequently diagnosed as a case of retroperitoneal sarcoma in 2013 after due investigations. In the following one year period he underwent surgical resection of the tumor and was initiated on adjuvant radiation therapy.

On follow up visits in 2016 it was found that the tumor had relapsed along with evidence of systemic metastases. The patient was started on 6 cycles of first line chemotherapy drugs namely, ifosfamide and doxorubicin.

Despite this treatment the patient showed evidence of hepatic and retroperitoneal metastases on PET

scan and thus was subsequently put on second line of chemotherapeutic drugs. Three cycles of injection gemcitabine (1730mg/cm<sup>2</sup>/cycle), docetaxel (130mg/cm<sup>2</sup>/cycle) and pegfilgrastin were administered intravenously. While still on this treatment he started experiencing multiple systemic side effects such as fever, weakness, altered blood cell counts (neutropenia) as well as associated superadded fungal infection (tinea cruris and corporis), hair fall and nail changes involving all the finger nails. There was swelling of fingers with associated pain and discharge from nail folds (Fig1). This resulted in restricted day to day activities subsequent to excessive pain and impaired grip of fingers. On local examination there was transverse leukonychia, serous discharge from lateral nail folds along with paronychia was present but nail bed purpura, subungual hematoma or hemorrhagic discharge was absent. The discharge on microscopic examination for KOH and gram stain was negative.

The patient came to dermatology OPD for these nail changes and tinea infection. He was given antifungal treatment (tablet terbinafine 250 mg once a day, tab



**Figure 1.** Paronychia with serous discharge, transverse leukonychia

cetirizine 10 mg once a day and sertaconazole cream twice a day for 3 weeks). After eliciting detailed history and relevant examination the patient was reassured for these nail changes and no treatment was prescribed.

On completion of the last therapy cycle the discharge stopped on its own in two weeks period and resulted in onycholysis. i.e. separation of the nail plate from nail bed progressing from distal to proximal end (Fig 2) over next 6 weeks.



**Figure 2.** Onycholysis (after 2 months) post cessation of docetaxel

### DISCUSSION

Taxanes<sup>1</sup> (Docetaxel, Paclitaxel, Cabazitaxel ) are class of anti-cancer drugs, originally derived from natural sources and belongs to the class of mitotic inhibitor drugs. These drugs act by interfering with microtubules at the time of cell division process.

Docetaxel is a semi-synthetically derived drug which is widely used in management of variety of cancers of breast, ovary, lung, stomach, prostate, sarcomas, head and neck.<sup>2</sup>

Cutaneous side effects such as erythematous pruritic maculopapular rash, palmoplantar erythro-dysesthesia, xerosis and exfoliation are noted in 50-70% of patients who are on taxanes.<sup>3</sup> The incidence of nail changes

in patients on taxanes ranges from 0% to 44% as compared to other chemo-therapeutic agents.<sup>4</sup>

Nail abnormalities occurring during treatment with taxane are in most cases not serious in nature. The spectrum of nail involvement varies from nail pigmentation, transverse leukonychia, nail bed purpura, splinter hemorrhage, subungual hematoma, Beau's lines, acute paronychia, hemorrhagic onycholysis and subungual suppuration<sup>4,5</sup>, out of these the latter two are responsible for significant morbidity. The nail changes may be present in several or all nails, commonly involving finger nails than toe nails.

Possible accepted hypothesis for these nail changes are direct nail bed toxicity, thrombocytopenia and vascular abnormalities (due to inhibition of nail bed

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angiogenesis). These all are known taxans induced mediated adverse effects.<sup>4</sup> Wasner G et al has also proposed a neurogenic mechanism for docetaxel induced painful nail changes.<sup>6</sup>

In our patient transverse leuconychia, subungual discharge, painful periungual swelling and onycholysis were seen only on initiation of second line chemotherapy. The nail changes reversed to normal after two months of stopping the second line of chemotherapeutic agents. These nail changes were not experienced by the patient while he was on first line of chemotherapy thus confirming their association with second line of chemotherapeutic agents. On searching the literature for the culprit agent amongst the two, namely docetaxel and gemcitabine, the latter was not found to be associated with these nail changes.

Docetaxel is frequently associated with these nail changes and its severity increases with number of chemotherapy cycles. Despite this, these changes are not critical in nature so as to necessitate stoppage of therapy.<sup>7</sup> Treatment may be indicated if there is evidence of secondary bacterial or fungal infection due to onycholysis.

The split hand study conducted by Florian Scotté et al has recommended use of frozen gloves prior to, during and post docetaxel infusion to reduce the incidence and severity of skin and nail toxicity.<sup>8</sup>

Minisini AM et al<sup>3</sup> have reported spectrum of docetaxel induced nail changes in seven patients. In a case reported by Lehoczky et al,<sup>9</sup> transverse leuconychiya was reported with the use of another taxane i.e paclitaxel in patients with ovarian cancer.

### CONCLUSION

In our case nail changes appeared while the patient was on docetaxel chemotherapy and these changes resolved gradually over a period of few weeks after cessation of treatment. Though there are no preventive measures for avoiding the occurrence of these nail changes, the transient and benign nature of these seldom requires discontinuation of anticancer therapy.

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