

## **Case Report 1**

### **Hand Foot Syndrome Secondary to Low Dose Docetaxel**

**Mutahir A. Tunio, MBBS, FCPS (Radiation Oncology),<sup>(1)</sup> Mushabbab AlAsiri, MBBS, FRSCI, MD,<sup>(2)</sup> Sajid Khan Durrani<sup>(3)</sup>**

Radiation Oncology, Comprehensive Cancer Center, King Fahad Medical City, Riyadh-59046, Saudi Arabia,  
Tel: +96612889999, Email: [drmutahirtonio@hotmail.com](mailto:drmutahirtonio@hotmail.com)<sup>(1)</sup>

Radiation Oncology, Comprehensive Cancer Center, King Fahad Medical City, Riyadh-59046, Saudi Arabia,  
Tel: +96612889999, Email: [Asiri@hotmail.com](mailto:Asiri@hotmail.com)<sup>(2)</sup>

Medical Oncology, Comprehensive Cancer Center, King Fahad Medical City, Riyadh-59046, Saudi Arabia,  
Tel: +96612889999. Email: [sdurrani@kfmc.med.sa](mailto:sdurrani@kfmc.med.sa)<sup>(3)</sup>

#### **Abstract:**

Hand-foot syndrome (palmoplantar erythrodysesthesia or Burgdorf reaction), is a distinctive skin toxicity affecting the palms and soles after certain chemotherapeutic drugs. Docetaxel induced hand-foot syndrome is rare, dose-dependent adverse event. Here in we report a case of Docetaxel induced grade III hand-foot syndrome at low doses (75/m<sup>2</sup>).

**Key words:** Hand-foot syndrome, Docetaxel, low dose

#### **Corresponding Author:**

**Mutahir A. Tunio, MBBS, FCPS (Radiation Oncology)**

Radiation Oncology,  
Comprehensive Cancer Center,  
King Fahad Medical City,  
Riyadh-59046, Saudi Arabia  
Tel: +96612889999,  
Email: [drmutahirtonio@hotmail.com](mailto:drmutahirtonio@hotmail.com)

## Introduction

Hand-foot syndrome (HFS), also known as palmoplantar erythrodysesthesia, or Burgdorf reaction is a distinctive skin toxicity, which is characterized by painful erythema, and paresthesias affecting the palms and soles after certain chemotherapeutic drugs. The most common agents causing HFS are Doxorubicin, 5-Fluorouracil, Capecitabine, vinorelbine, methotrexate, gemcitabine and Cytarabine. <sup>(1)</sup> Docetaxel induced HFS is rare, and only few cases have been reported in dose- dependent manner; higher incidence of HFS at high doses of docetaxel (100 mg/m<sup>2</sup>) monotherapy, or after dose-dense regimen. <sup>(2)</sup> However, Docetaxel induced HFS at low doses (75 mg/m<sup>2</sup>) is rarely reported. <sup>(2)</sup> Here-in, we report a rare case of Docetaxel induced grade III HFS at low doses (75 mg/m<sup>2</sup>).

## Case report

A 62-year-old Saudi woman without any comorbidities with established diagnosis of right breast invasive ductal carcinoma stage pT3N2M0 was treated with post-mastectomy adjuvant chemotherapy; three cycles of FEC100 regimen (5-Fluorouracil, Epirubicin, and Cyclophosphamide), followed by Docetaxel 75 mg/m<sup>2</sup> three cycles. The premedications used prior to each docetaxel cycle were ranitidine 150 mg, dexamethasone 16 mg, and ondansetron 8 mg. Ten days after the completion of third Docetaxel cycle, patient presented with painful erythema, followed by desquamation of skin over her both hands, and feet **Fig. 1 A and B**. According to National Cancer Institute Common toxicity Criteria (NCI-CTC) grading system, clinical diagnosis of grade III HFS was established. Patient was treated conservatively with Lipobase emollient cream, Hydroxyzine 25 mg oral daily, and non-steroidal anti-inflammatory (NSAID). Five days after the completion of treatment, patient recovered completely and was referred to radiation oncology department for adjuvant chest wall and supra-clavicular radiation therapy.



**Figure 1. (A) hand and (B) feet** erythematous maculopapular rashes with hyperpigmentation confirming clinical diagnosis of hand-foot syndrome

## Discussion

Docetaxel is widely used in the management of locally advanced or metastatic breast carcinoma. It predominantly produces bone marrow suppression and skin toxicity in dose-dependent manner. However, there are only few cases of docetaxel-induced HFS at low doses (75 mg/m<sup>2</sup>) have been reported. <sup>(2, 3)</sup> Jain and Dubashi, reported Docetaxel-induced grade II HFS in 45 year-old female at doses of 75 mg/m<sup>2</sup>. <sup>(2)</sup> Also, Gurumurthi et al, reported Docetaxel-induced grade III HFS in 52 year-old female with metastatic breast carcinoma at doses of 60 mg/m<sup>2</sup>. <sup>(3)</sup> HFS has been graded according to NCI-CTC as; grade I: erythema or desquamation without pain; grade II: erythema or desquamation associated with pain, but not interfering with function, and grade III: painful erythema or desquamation interfering with function. <sup>(3)</sup>

The exact pathogenesis of Docetaxel-induced HFS is still not well known. However, rapidly dividing epidermal basal cells in the palms and soles are most sensitive to cytotoxic effects of Docetaxel; thus making these areas more vulnerable for HFS. <sup>(2)</sup> Further factors like temperature, pressure, grasping and friction movements of hands and feet can increase the predisposition to HFS. <sup>(3)</sup> In our patient, HFS at low dose can be explained by; (a) altered liver metabolism secondary to presence of extensive liver metastasis; (b) Docetaxel and concurrent 5-Fluorouracil drug interaction; (c) elderly patient, and (d) inhibition of cytochrome enzyme CYP3A4 by ranitidine (H<sub>2</sub> receptor blockers). The inhibition of CYP3A4 enzyme results in decreased metabolism of docetaxel which increases the risk of HFS. <sup>(3, 4)</sup> Diagnosis of Docetaxel-

induced HSF is typically clinical; however the skin biopsy may be helpful in certain cases to differentiate from cellulitis. <sup>(4)</sup>

Treatment of HFS is usually conservative, including the patient education and reassurance. Topical emollients, corticosteroids and pyridoxine have been found effective in HFS management, as seen in our patient. In severe HFS, Docetaxel can be interrupted or restarted at further lower doses after complete resolution of symptoms. <sup>(5)</sup>

In conclusion, Docetaxel-induced HFS at low doses (75 mg/m<sup>2</sup>) is rare that occur in dose-independent manner. Treating oncologists must be aware of this rare Docetaxel-induced toxicity for prompt treatment.

#### **Ethical considerations**

Written informed consent was taken from the patient for publication of the manuscript.

#### **References:**

1. Zimmerman GC, Keeling JH, Lowry M, Medina J, Von Hoff DD, Burris HA. Prevention of docetaxel-induced erythrodysesthesia with local hypothermia. *J Natl Cancer Inst* 1994;86:557-558
2. Jain A, Dubashi B. Docetaxel-induced hand foot syndrome: "No dose is a safe dose". *J Pharmacol Pharmacother* 2012;3:200-201
3. Gurumurthi R, Nimmagadda RB, Mohan S. Docetaxel-induced Hand and Foot Syndrome in a Patient with Metastatic Breast Carcinoma. *Indian J Dermatol* 2013;58:380-382
4. Sivaramamoorthy C, Thientosapol ES, Tattersall MH. Hand-foot syndrome after treatment with docetaxel. *Med J Aust* 2009;191:40
5. Farhat MH, El-Saghir NS, Shamseddine AI. Hand-foot syndrome with docetaxel: a five-case series. *Ann Saudi Med* 2008;28:374-377