Pellagra-Like Rash with Taxane Chemotherapy: A Case Series

Nadia Iftikhar[1], Moizza Tahir[2] and Iqra Ghaus[2]

[1]*Department of Dermatology, Combined Military Hospital, Rawalpindi, Pakistan*
[2]*Department of Dermatology, Pak Emirates Military Hospital, Rawalpindi, Pakistan*

ABSTRACT

As the incidence of solid organ and haematological malignancies are on the rise, more patients are encountered with the wide array of systemic and cutaneous adverse effects appearing secondary to the administration of various chemotherapeutic agents. Taxanes are chemotherapeutic agents employed in the management of various solid organ malignancies, mainly breast, lung, ovarian, and gastric carcinomas. The pellagra-like skin rash, which appears in the form of photosensitivity, erythema, scaling, and hyperpigmentation, involving the photo-exposed parts of the body, is a relatively less-seen cutaneous adverse effect of taxanes. The aetiology of taxane-induced pellagra-like dermatitis remains poorly understood; however, a mild nature of chemical porphyria due to drug-induced defective porphyrin metabolism, is postulated, which interferes with the metabolism of porphyrins along with drug-induced phototoxicity. The authors present a case series of eight patients who developed pellagra-like dermatitis following taxane chemotherapy.

Key Words: *Docetaxel, Paclitaxel, Pellagra-like rash, Taxanes*.

How to cite this article: Iftikhar N, Tahir M, Ghaus I. Pellagra-Like Rash with Taxane Chemotherapy: A Case Series. *JCPSP Case Rep* 2025; **3**:414-417.

INTRODUCTION

Taxanes, including paclitaxel and docetaxel, are antineoplastic drugs. They are prescribed for carcinomas of the breast, ovaries, lungs, and HIV-related Kaposi sarcoma. Their cutaneous adverse effects include palmoplantar erythrodysesthesia, flexural eruptions, alopecia, nail changes, maculopapular or pustular eruptions, neutrophilic eccrine hidradenitis, and drug-induced phototoxicity. Cases of pellagra-like dermatitis associated with taxane chemotherapy have been scarcely reported in the literature. Early recognition and management of dermatological adverse effects are important for improving patients' quality of life and for appropriate treatment and dose adjustment, if needed.[1,2]

The authors present the data of eight patients who presented with pellagra-like rash while receiving taxane chemotherapy in a tertiary care hospital.

Correspondence to: Dr. Iqra Ghaus, Department of Dermatology, Pak Emirates Military Hospital, Rawalpindi, Pakistan
E-mail: iqrahassan11@gmail.com
Received: March 22, 2025; Revised: June 24, 2025; Accepted: July 24, 2025
DOI: https://doi.org/10.29271/jcpspcr.2025.414

All of the patients were females with the underlying malignancy being breast carcinoma in seven cases and lung carcinoma in one patient

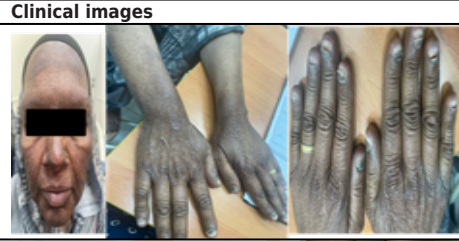
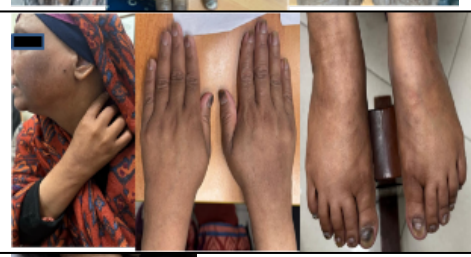
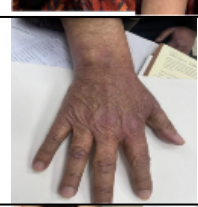
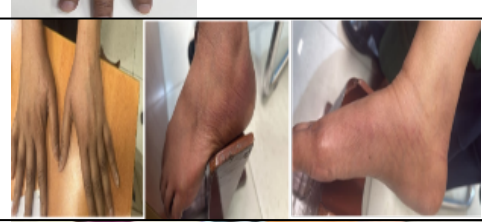
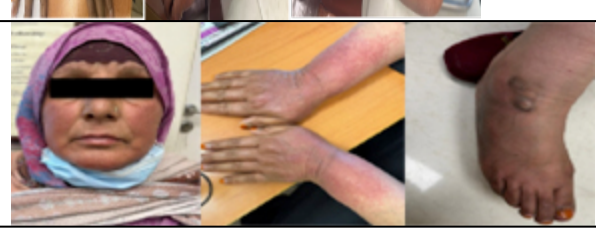
CASE 1:

A 56-year woman with invasive lobular carcinoma of the left breast (grade 2), diagnosed in October 2023, underwent a lumpectomy followed by weekly adjuvant chemotherapy with docetaxel (120 mg) and cyclophosphamide (1,000 mg). Her comorbidities included diabetes mellitus, chronic kidney disease, and hypothyroidism. After six weeks of chemotherapy, she developed cutaneous toxicity as erythematous to hyperpigmented pruritic rash involving face, dorsal hands, arms, elbows, and the dorsolateral aspect of the feet, extending upwards to involve the lower one-third of legs (Figure 1).

She was prescribed oral B complex vitamins along with moderate topical steroids for once-daily application. The rash resolved two months after the onset.

Figure 1: Erythema of face, dorsum of hands, and the dorsolateral feet, as well as onycholysis.

Table I: Taxane-induced rash.

Age (years)	Carcinoma	Taxane cycle (n)	Rash distribution	Clinical images
55	Breast stage IV	19	Face, dorsum of hands, feet, and onycholysis	
45	Breast stage II	16	Face, dorsum of hands, and feet	
55	Lung	4	Dorsum of hands and face	
45	Breast stage II	10	Face, dorsum of hands, and lateral margins of feet	
40	Breast stage II	8	Face, dorsum of hands, and feet	

CASE 2:

A 37-year woman was diagnosed with carcinoma of the left breast (stage T3) in October 2021. She underwent chemotherapy with paclitaxel and carboplatin. Later, she developed a recurrence of carcinoma on the right side of the breast in October 2023. She was managed with mastectomy and adjuvant chemotherapy with paclitaxel (110 mg) and carboplatin (190 mg) followed by pembrolizumab 200 mg every three weeks. Six weeks after chemotherapy, she presented to the dermatology OPD with pruritus and rash (Figure 2). Skin histology revealed hyperkeratosis of the epidermis, perivascular lymphocytic infiltrate, and papillary dermal oedema. She was managed with once-daily application of moderate topical steroids, along with oral B complex vitamins and sun protection.

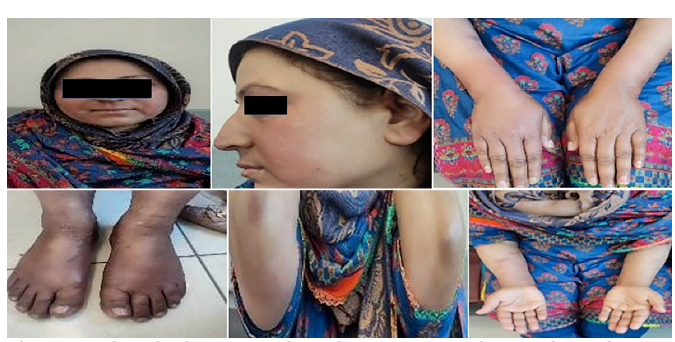


Figure 2: Sharply demarcated erythematous patches on face, dorsum of hands and forearms, and feet.

CASE 3:

A 62-year woman was diagnosed with metastatic adenocarcinoma in January 2024. Her medical history included hypertension, intestinal tuberculosis, for which she received anti-

tuberculosis treatment in 2000, and hepatitis B virus infection in the same year. She underwent surgery for recurrent inguinal hernia and had a history of nephrolithiasis. She was placed on paclitaxel 120 mg and carboplatin 160 mg for palliation. Four weeks after the initiation of chemotherapy, she developed a cutaneous rash (Figure 3), which was treated with topical steroids and niacinamide supplements.

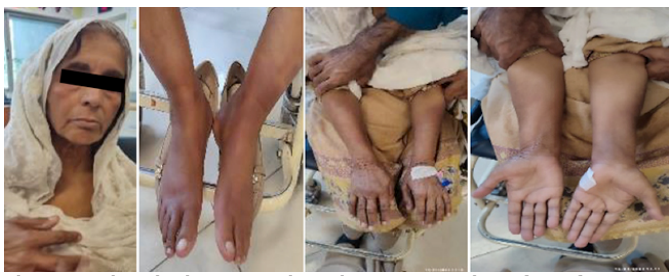


Figure 3: Sharply demarcated erythematous rash on face, forearms, and dorsum of feet.

DISCUSSION

Taxanes have been FDA-approved as anti-neoplastic agents since 1984 for ovarian carcinoma and other solid organ malignancies. They are antimitotic and anti-angiogenic, altering apoptosis, inflammatory response, and reactive oxygen species production. Furthermore, they cause microRNA dysregulation.[1] They are the most commonly prescribed agents in metastatic or locally advanced breast carcinoma, as well as for non-small cell lung, prostate, gastric, head and neck, and ovarian cancers. They are also used as adjuvant therapy for operable node-positive breast cancers.[2]

Paclitaxel is better than docetaxel in terms of adverse effects. The clinical presentation of adverse effects depends on the dose, chemotherapeutic combinations, use of premedications, and the type of underlying cancer. The cutaneous adverse effects include dorsal hand-foot syndrome, flexural and intertriginous rashes, maculopapular and pustular eruptions, pigmentary changes, drug-induced lupus erythematosus, scleroderma-like changes, radiation and UV recall reaction, hot flushes, and oedema. Hair changes include acute reversible alopecia, persistent alopecia, and onycholysis. Nail changes include onychomadesis, Beau lines, melanonychia or leuconychia, and paronychia. Mucositis and dysgeusia may also occur. The dose reduction may be beneficial in ameliorating the adverse effects.[3]

Adverse cutaneous effects of taxanes are attributed to the passage of the medicine through the acrosyringium and epidermis and generally appear about two weeks after the initiation of therapy. Delayed toxicity is observed with continuous, low-dose intravenous, infusion of chemotherapy for 2-10 months.[4] The treatment of cutaneous adverse effects is mainly supportive with the help of topical steroids, emollients, and cold compressions, although no standard treatment exists. Dose readjustment and spacing of therapy can also help in improving lesions if deemed appropriate, depending on the severity of the rash.[5]

The phototoxic reaction appears on photo-exposed regions as immediate, delayed (12–24 hours), or late-onset (24–120 hours) erythema, the latter often referred to as exaggerated sunburn.[6] These can also be minimised with dose reduction.[7] Drug-induced pellagra can occur due to many agents, including 5-fluorouracil, azathioprine, phenytoin, chloramphenicol, and 6-mercaptopurine. Among the antitubercular agents, isoniazid, pyrazinamide, and ethionamide are implicated. The diagnosis of classic pellagra is based on the typical clinical and histopathological presentation and rapid response to niacin supplementation.[8] Classic presentation of pellagra was ruled out in these cases due to the absence of clinical signs of cheilitis, diarrhoea, and neurocognitive impairment.[6] Cases of similar pellagroid dermatitis related to taxane chemotherapy have been reported by Sinha *et al*. and Yokomizo *et al*.[8,9] In the present case series, the photo-aggravated pellagra-like rash was predominantly observed in female patients. This disparity in gender representation can be partly attributed to the relatively high national prevalence as well as the incidence of breast carcinoma in Pakistan (90,000 cases annually), in comparison to the prevalence of other solid organ malignancies for which taxanes are being used as a chemotherapeutic agent. Additionally, the cosmetic disfigurement caused by the cutaneous eruption is generally a cause of more apprehension for female patients as compared to male patients, due to which they are more likely than males to seek medical advice for this concern.

In conclusion, this case series highlights the need for considering this cutaneous adverse effect in cancer patients receiving taxanes. An early diagnosis will help prevent morbidity and improve the outcomes for affected patients.

PATIENTS' CONSENT:
Informed consent was obtained from the patients to publish the data concerning their cases.

COMPETING INTEREST:
The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:
NI: Conception and design, data acquisition, analysis, interpretation, and critical revision.
MT: Data acquisition, analysis, interpretation, and critical revision.
IG: Data analysis, interpretation, and critical revision.
All authors approved the final version of the manuscript to be published.

REFERENCES

1. Mosca L, Ilari A, Fazi F, Assaraf YG, Colotti G. Taxanes in cancer treatment: Activity, chemoresistance and its overcoming. *Drug Resist Updates* 2021; **54**:100742. doi: 10.1016/j.drup.2020.100742.
2. Sousa-Pimenta M, Estevinho LM, Szopa A, Basit M, Khan K, Armaghan M, *et al*. Chemotherapeutic properties and side-effects associated with the clinical practice of terpene alkaloids: Paclitaxel, docetaxel, and cabazitaxel. *Front Phar-*

macol 2023; **14**:1157306. doi: 10.3389/fphar.2023.1157306.

3. Li HB, Wang WH, Wang ZY. A meta-analysis of the incidence and risk of skin toxicity with nab-paclitaxel and paclitaxel in cancer treatment. *Am J Transl Res* 2023; **15(6)**:4279-90.
4. Atrafi F, van Eerden RA, Koolen SL, de Bruijn P, Rijcken CJ, Hanssen R, *et al*. Docetaxel skin exposure and micronucleation contributes to skin toxicity caused by cpc634. *Cancers (Basel)* 2021; **13(15)**:3741. doi: 10.3390/cancers13153741.
5. Miller KK, Gorcey L, McLellan BN. Chemotherapy-induced hand-foot syndrome and nail changes: A review of clinical presentation, etiology, pathogenesis, and management. *J Am Acad Dermatol* 2014; **71(4)**:787-94. doi: 10.1016/j.jaad.2014.03.019.
6. Kaur J, Gaurav V, Tayagi M. Paclitaxel-induced periarticular thenar erythema with onycholysis syndrome. *Skin Appendage Disord* 2024; **10(1)**:74-7. doi: 10.1159/000534118.
7. Hofmann GA, Weber B. Drug-induced photosensitivity: Culprit drugs, potential mechanisms and clinical consequences. *J Dtsch Dermatol Ges* 2021; **19(1)**:19-29. doi: 10.1111/ddg.14314.
8. Sinha P, Sood A, Baveja S, Pathania V. Docetaxel induced pellagroid dermatitis. *Indian J Dermatol Venereol Leprol* 2018; **84(6)**:723-5. doi: 10.4103/ijdvl.IJDVL_326_17.
9. Yokomizo Y, Fujikawa A, Tajiri T, Ota J, Yumura Y, Moriyama M, *et al*. Two cases of pellagra, associated with chemotherapy of docetaxel, estramustine, dexamethasone. *Hinyokika Kiyo* 2010; **56(10)**:585-8.