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## Case Study

# Hand And Foot Syndrome With Hyperpigmentation By Capecitabine

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### ABSTRACT

A 76-year-old man who had sigmoid colon cancer underwent a colectomy. As adjuvant therapy, the patient was prescribed capecitabine (2g tablets)for two weeks followed by a week off. After completing four complete treatment cycles, the patient developed lacrimation and irritation of the eyes in addition to hand and foot discoloration. It is important to identify such adverse drug reactions and report them.

### INTRODUCTION

Capecitabine is a prodrug of 5-fluorouracil administered orally and commonly used in solid tumours, such as colorectal, gastric and breast cancers .It is a prodrug of 5-fluorouracil (5- FU), and it is converted to 5-FU by thymidine phosphorylase, an enzyme commonly found in in tumour cells in high levels . Thymidine phosphorylase converts the substance into the active metabolite, which improves the medication's capacity to target cancer. [1] Palmoplantar dysesthesia, a well-defined

erythema with or without oedema, desquamation, fissures, and, in more advanced stages, blisters and ulceration, are the clinical features of HFS.[2]Uncertainty surrounds the pathophysiology of HFS, At the cellular level, the toxicity of capecitabine causes the condition's corneum layer to thin and keratinocytes to die.[3] Rather than erythema, the disorder may manifest as macular hyperpigmentation in those with darker skin phenotypes (Fitzpatrick V–VI).[4]

### CASE REPORT

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A 76-year-old man who had sigmoid colon cancer underwent a colectomy. As adjuvant therapy, the patient was prescribed capecitabine tablets. For two weeks, two grams of capecitabine were given once day, followed by a week off. After completing four complete treatment cycles, the patient developed lacrimation and irritation of the eyes in addition to hand and foot discoloration. However, he did not report any pain, swelling, ulceration, or dysesthesia over the areas that were discoloured. No prior history of such lesions or medication reactions existed. The patient reported no family members experiencing the same problems. Upon examination, the hands and feet were found to be hyperpigmented. However, the distribution of the changed pigmentation was unique, involving both hands' dorsum, particularly the areas over the interphalangeal and metacarpophalangeal articulations and all of the nails' cuticles were frayed and black discoloration of nails [Figure 1]. Hyperpigmentation of foot [Figure 2] The dorsum of the foot displayed an unusual pattern of hyperpigmentation and also noticeable involvement of the palm creases [Figure 3], Eye irritation, redness and lacrimation. [Figure 4]

The medication was continued at a lower dosage and topical emollients were provided; the patient's condition got better



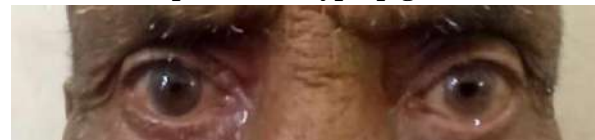
**Fig. no. 1 Hyperpigmentation on dorsum of hands.**



**Fig.No. 2 Hyperpigmentation Of Foot**



**Fig.no.3 Noticeable involvement of the palm creases . The dorsum of the foot displayed an unusual pattern of hyperpigmentation**



**Fig.no. 4 Redness and lacrimation**

## DISCUSSION

HFS is graded using the World Health Organization and National Cancer Institute guidelines.[5] Three grades are used to categorize palmoplantar erythrodysesthesia, or HFS: In Grade 1, erythema is accompanied by swelling, dysesthesia, or paraesthesia; in Grade 2, the patient's ability to carry out everyday activities is affected by pain and discomfort; and in Grade 3, blistering, moist desquamation, and ulceration are superimposed upon excruciating agony. However, the majority of patients' initial presentation is observed to be hyperpigmentation of the hands and feet rather than erythema, and this is regarded by many writers as Grade 1 HFS.[6] The following

are a few mechanisms that may explain the occurrence of HFS: Chemotherapy drugs damage the surrounding tissues as they seep into the hands and feet through capillaries. The palms' high rate of epidermal basal cell proliferation makes them more vulnerable to the local effects of cytotoxic medications. Medication concentration in the eccrine sweat glands of the palms and soles This syndrome is more likely to develop when palms, soles, and fingertips are repeatedly subjected to pressure and friction.[7] There is evidence that patients from different ethnic backgrounds may exhibit varied patterns of cutaneous symptoms, as demonstrated by the example of an African patient with atypical HFS with hyperpigmentation of the palms alone.[8] In this Case, HFS developed in the patient following after four cycle of capecitabine treatments for sigmoid colon cancer. Prior to therapy, there was no pigmentation before to treatment, and no other medications were taken before starting capecitabine. The patient's health improved once the drug was continued at a lesser dosage and topical emollients were given. This substantiates the possibility that capecitabine caused the HFS with hyperpigmentation.

### CONCLUSION

Patients may be advised to monitor for signs of hyperpigmentation in order to guard against Hand-Foot syndrome's potentially debilitating effects. Even in cases where patients do not feel any physical discomfort, hyperpigmentation on their faces and other cosmetic regions might cause them to suffer excessive tension, which may negatively impact their treatment plan. More research should be done to better understand the relationship between hyperpigmentation and the underlying process creating it in order to manage this and maybe prevent Hand-Foot syndrome.

### DECLARATION OF PATIENT CONSENT

The authors certify that they are in possession of all the required patient authorization documentation. The patient(s) has(have) given

written approval for the journal to publish his/her images and other clinical data. The patients are aware that anonymity cannot be guaranteed, despite every effort being made to conceal their identity and the fact that their names and initials will not be disclosed.

### REFERENCES

1. Caprez, J., Rahim, U., Ansari, A., Lodhi, M. U., & Rahim, M. (2018). Hyperpigmentation with Capecitabine: Part of Hand-Foot Syndrome or a Separate Entity? *Cureus*. <https://doi.org/10.7759/cureus.2397>
2. Kwakman, J. J., Elshot, Y. S., Punt, C. J., & Koopman, M. (2020). Management of cytotoxic chemotherapy-induced hand-foot syndrome. *Oncology Reviews*, 14(1). <https://doi.org/10.4081/oncol.2020.442>
3. Chen, M., Chen, J., Peng, X., Xu, Z., Shao, J., Zhu, Y., Li, G., Zhu, H., Yang, B., Luo, P., & He, Q. (2017). The contribution of keratinocytes in capecitabine-stimulated hand-foot-syndrome. *Environmental Toxicology and Pharmacology*, 49, 81–88. <https://doi.org/10.1016/j.etap.2016.12.001>
4. de Queiroz MVR, de Medeiros ACTR, Toledo SP, de Abreu Sarmenghi KD, de Vasconcellos VF. Hand-foot syndrome caused by capecitabine: incidence, risk factors and the role of dermatological evaluation. *Ecancermedicalsecience*. 2022 May 16;16:1390. doi: 10.3332/ecancer.2022.1390. PMID: 35919225; PMCID: PMC9300399.
5. Nagore E, Insa A, Sanmartín O. Antineoplastic therapy-induced palmar plantar erythrodysesthesia ('hand-foot') syndrome. Incidence, recognition and management. *Am J Clin Dermatol*. 2000;1:225–34.
6. Lee, S., Kim, H., Hwang, S., Kim, Y. J., Nam, S., & Kim, B. (2007). Hand-Foot Syndrome with Scleroderma-like Change Induced by the Oral Capecitabine: A Case Report. *Korean*



- Journal of Internal Medicine, 22(2), 109. <https://doi.org/10.3904/kjim.2007.22.2.109>
7. Kataria, P., Kendre, P., Patel, A., Tahiliani, N., Bhargav, V., & Parekh, H. (2018). Rare occurrence of hand-foot syndrome due to paclitaxel: A rare case report. *Indian Journal of Pharmacology*. [https://doi.org/10.4103/ijp.ijp\\_547\\_17](https://doi.org/10.4103/ijp.ijp_547_17)
8. Saif MW, Sandoval A. Hand-and-Foot syndrome in an African American Patient treated with Capecitabine with normal DPD activity: Is there an ethnic disparity? *Cutan Ocul Toxicol.* 2008;27:311–5. [PubMed] [Google Scholar] [Ref list]

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