ONLINE EXCLUSIVE

Targeted Therapy– and Chemotherapy-Associated Skin Toxicities: Systematic Review and Meta-Analysis

Jingyi Francess Ding, MD, Magdoleen H. Farah, MBBS, Tarek Nayfeh, MD, Konstantinos Malandris, MD, MSc, Apostolos Manolopoulos, MD, MSc, Pamela K. Ginex, EdD, MPH, RN, OCN®, Bashar Hasan, MD, Hayley Dunnack, BSN, CMS-RN, OCN®, Rami Abd-Rabu, MD, Moutie Rami Rajjoub, Larry James Prokop, MLS, Rebecca L. Morgan, PhD, MPH, and M. Hassan Murad, MD, MPH

PROBLEM IDENTIFICATION: Preventing and managing skin toxicities can minimize treatment disruptions and improve well-being. This systematic review aimed to evaluate the effectiveness of interventions for the prevention and management of cancer treatment–related skin toxicities.

LITERATURE SEARCH: The authors systematically searched for comparative studies published before April 1, 2019. Study selection and appraisal were conducted by pairs of independent reviewers.

DATA EVALUATION: The random-effects model was used to conduct meta-analysis when appropriate.

SYNTHESIS: 39 studies (6,006 patients) were included; 16 of those provided data for meta-analysis. Prophylactic minocycline reduced the development of all-grade and grade 1 acneform rash in patients who received erlotinib. Prophylaxis with pyridoxine 400 mg in capecitabine-treated patients lowered the risk of grade 2 or 3 hand-foot syndrome. Several treatments for hand-foot skin reaction suggested benefit in heterogeneous studies. Scalp cooling significantly reduced the risk for severe hair loss or total alopecia associated with chemotherapy.

IMPLICATIONS FOR RESEARCH: Certainty in the available evidence was limited for several interventions, suggesting the need for future research.

KEYWORDS chemotherapy; skin toxicity; systematic review; meta-analysis; cancer

***ONF*, *47*(5), E149–E160.**

DOI 10.1188/20.ONF.E149-E160

Skin toxicities due to systemic cancer treatment are a significant problem for many patients and can greatly affect their quality of life. Preventing and managing skin-related toxicities can minimize treatment disruptions and improve patient well-being. Treatments that cause skin toxicities are used across most cancer diagnoses (e.g., colorectal, breast, lung, pancreatic, head and neck) and affect a high percentage of patients. Adverse skin reactions can involve skin barrier function, hair, and nails. Preventing and managing skin toxicities is an important clinical priority for oncology healthcare providers.

Epidermal growth factor receptor inhibitors (EGFRIs) are an important class of anticancer agents. Although these agents have a more favorable toxicity profile than other anticancer therapies, they have unique adverse events (Lucchini et al., 2014). The primary toxicity associated with EGFRIs are cutaneous (acneform rash) reactions that can occur in more than 80% of patients receiving these agents (Lacouture et al., 2018; Ocvirk & Cencelj, 2010; Segaert & Van Cutsem, 2005). The rash associated with EGFRIs is mild in most cases, but it can lead to treatment cessation or dose modifications (Lacouture, 2009). Patients with moderate to severe cutaneous adverse events will frequently change or stop treatment (Lacouture & Lai, 2006). Patients who experience an EGFRI rash experience negative effects on physical, functional, emotional, and social well-being (Coleman et al., 2010).

Hand-foot syndrome, also known as palmar-plantar erythrodysesthesia, is a skin toxicity most often seen on the palms of the hands or the soles of the feet, but it can also be found on other pressure points, such as the waistline or bra line (Lipworth et