Cold therapy offers promising prevention against taxane-induced dermatologic events

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Due to their broad antitumor activity that inhibits the function of microtubules, taxanes are common chemotherapeutic agents utilized for the management of multiple cancer types from breast to prostate. Unfortunately, the frequency of their use is equally matched by the rates of expected and well known side effects.

In fact, chemotherapy-induced alopecia as well as nail and skin changes occur in up to 89 percent of patients receiving taxane-based chemotherapy. While common, preventative strategies and therapeutic interventions are not well established, including cold therapy, over the counter and prescription topical treatments, and even systemic corticosteroids.

Researchers at the George Washington University (GW) have found that cooling therapies such as cold caps, scalp cooling systems, frozen gloves, and frozen socks may offer the best protection against the adverse effects of taxane-based chemotherapy.

"Taxanes induce dermatologic changes through direct cytotoxic effect," said Adam Friedman, MD, director of the Supportive Oncodermatology Clinic at the GW Cancer Center, professor of dermatology at the GW School of Medicine and Health Sciences, and senior author on the study. "While they are an important tool in our chemotherapy armamentarium, cutaneous side effects can limit their use and therefore we want to establish the best approaches, both prophylactic and active, to limit their negative impact."

Friedman and his team at GW performed a comprehensive systematic review of 34 studies published between Jan. 1, 1980 and Aug. 13, 2018 to assess the efficacy and safety of interventions to prevent taxane-induced dermatologic adverse effects.

The team found cold therapy offers the most promising preventative intervention for taxane-induced dermatologic events, followed by urea-based creams specifically for hand/foot side effects, while off-label use of topical lovastatin and systemic corticosteroids did not provide adequate protection.

"Most of the studies we looked at support the use of cold caps or scalp cooling systems to reduce hair loss," Friedman explained. "These seem to be the most effective in preventing taxane-induced alopecia, and there is even evidence supporting their ability to prevent toxic events affecting both the skin of the hands/feet and the nails."

Additional research is need to establish routine protocols for cooling methods and to identify new approaches to mitigate these adverse events, said Friedman. Researchers must also determine more standardized outcome measures for successful hair, skin, and nail injury prevention, and the long-term efficacy and safety of these interventions.

The study, titled "Evaluation of Prevention Interventions for Taxane-Induced Dermatologic Adverse Events," is published in *JAMA Dermatology*.

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