Study finds cold therapy may be effective at controlling cancer treatment side effects

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A new study published in the *Journal of the National Cancer Institute* finds that cryotherapy, specifically having chemotherapy patients wear frozen gloves and socks for 90-minute periods, is useful for preventing symptoms of neuropathy.

Chemotherapy-induced peripheral neuropathy is a frequent and disabling side effect of cancer treatment. The pain, numbness, and tingling that patients experience reduces their quality of life and often results in them delaying treatment, reducing their doses, or discontinuing treatment altogether. Duloxetine is recommended treatment for the neuropathy; however, it has limited efficacy for the amelioration of chemotherapyinduced pain, and none for numbness or functional disability. Furthermore, no established strategy exists for neuropathy prevention in patients being treated with chemotherapy.

Researchers prospectively evaluated the efficacy of cryotherapy for neuropathy prevention. Breast cancer patients treated weekly with paclitaxel (80 mg/m2 for one hour) wore frozen gloves and socks on one side of their bodies for 90 minutes, including the entire duration of drug infusion. Researchers compared symptoms on the treated sides with those on the untreated sides. The primary end point was neuropathy incidence assessed by changes in tactile sensitivity from a pretreatment baseline. Researchers also assessed subjective symptoms (as reported in a patient questionnaire) and patients' manual dexterity.

Among the 40 patients, four did not reach the cumulative dose (due to

the occurrence of pneumonia, severe fatigue, liver dysfunction, and macular edema), leaving 36 patients for analysis. None dropped out due to cold intolerance. The incidence of objective and subjective neuropathy signs was clinically and statistically significantly lower on the intervention side than on the control side for all measurements.

Researchers report that their study supports the efficacy of cryotherapy for chemotherapy-induced peripheral neuropathy prevention, as evidenced by a clinically and statistically significant reduction in patient-reported subjective symptoms, diminished objective signs (tactile and thermosensory), and prevention of reduced manual dexterity. The development of subjective neuropathy symptoms was clinically and statistically significantly delayed during the course of the paclitaxel treatment, the occurrence of subjective neuropathy at a cumulative dose of 960 mg/m2 was almost completely prevented, and the neuropathy incidence tended to be lower on the intervention side.

The results of the study suggest that that cyrotherapy could be an effective strategy for the prevention of neuropathy in patients with cancer undergoing paclitaxel treatment. Cyrotherapy could support the delivery of optimal chemotherapy by preventing a dose delay or reduction, as well as inhibiting the deterioration of quality of life in cancer patients during and after treatment.

"If the results are confirmed, cryotherapy has the advantage of a limited side effect profile, is low-cost, and it appears to prevent components of neuropathy other than [just] neuropathic pain," wrote Dawn Hershman, MD, leader of the breast cancer program of the Herbert Irving Comprehensive Cancer Center at Columbia University, in an editorial the accompanied the study. "Ultimately a better understanding of the biologic mechanisms causing chemotherapy-induced peripheral neuropathy will improve our ability to effectively prevent and treat all components of this toxicity."

More information: "Effects of Cryotherapy on Objective and Subjective Symptoms of Paclitaxel-Induced Neuropathy: 5 Prospective Self-Controlled Trial" *Journal Of The National Cancer Institute* (2017). DOI: 10.1093/jnci/djx178