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Temperature-controlled hand-foot cooling prevents chemotherapy-induced polyneuropathy (cipn): a real-world data collection in 500 patients

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View Abstract

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Introduction: Advancements in oncology have significantly improved overall survival rates for cancer patients, particularly those with breast cancer. Consequently, the long-term side effects of chemotherapy—still a cornerstone of cancer treatment—on patients' quality of life (QoL) are gaining increasing attention. Chemotherapy-induced peripheral neuropathy (CIPN) is a common adverse effect of taxanes (paclitaxel, nab-paclitaxel, docetaxel). CIPN can significantly reduce QoL and may lead to dose delays, reductions, or even treatment discontinuation. Reported incidence rates of grade 2-3 CIPN reach up to 50% with three-weekly and up to 30% with weekly taxane-based regimens, which are frequently used in breast cancer treatment. Temperature-controlled hand-foot cooling (Hilotherapy®) has shown potential in preventing CIPN. At our oncology department, Hilotherapy® is an established component of supportive care. We present here the results of our real-world data collection on 500 breast cancer patients who received prophylactic Hilotherapy® during chemotherapy. **Methods:** Temperature-controlled hand-foot cooling (Hilotherapy®) was used as a standard supportive care measure during each neurotoxic chemotherapy session. Hilotherapy® is a processor-controlled cooling system (Hilotherm ChemoCare CIPN) equipped with hand and foot cuffs that deliver continuous and precise cooling. The device uses distilled water and electricity to maintain the temperature. The standard procedure involved cooling the hands and feet for 30 minutes before, during, and 30 minutes after chemotherapy infusion. The device temperature was set to 15-17°C, resulting in a consistent skin surface temperature of 18-20°C. CIPN symptoms were assessed at each treatment cycle according to CTCAE v5.0 criteria. Patients were stratified by taxane dosing schedule (weekly vs. three-weekly). Follow-up data are currently being collected to evaluate long-term outcomes. **Results:** To date, 489 of the planned 500 patients have completed chemotherapy. Among them, 90.4% (n = 442) experienced only mild or no symptoms (CIPN grade 0-1), 9.4% (n = 46) developed CIPN grade 2, and only one patient (0.2%) experienced grade 3 CIPN. Key endpoints under evaluation include: Effectiveness of Hilotherapy® in preventing ≥ grade 2 CIPN; Time of first onset of CIPN; Dose reductions and/or treatment discontinuations due to CIPN; One-year follow-up data. **Conclusion:** Temperature-controlled hand-foot cooling (Hilotherapy®) effectively prevented ≥ grade 2 CIPN in over 90% of breast cancer patients. This method is a simple, well-tolerated, and easily implementable supportive care strategy. Patient satisfaction data will be presented in future analyses. Follow-up is ongoing to assess the long-term sustainability of the preventive effect.