

New research suggests a simple, inexpensive option for reducing a major chemotherapy side effect

November 7 2023



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New research in *JNCCN—Journal of the National Comprehensive Cancer Network* suggests that patients who have insufficient levels of vitamin D

before starting paclitaxel treatment are more likely to experience peripheral neuropathy.

According to an analysis of 1,191 patients with early-stage [breast cancer](#)—using data collected in the SWOG S0221 study—20.7% of patients with vitamin D deficiency experienced at least a grade 3 level of chemotherapy-induced peripheral [neuropathy](#) (CIPN), compared to 14.2% of those with sufficient vitamin D levels. The researchers also found that inducing vitamin D deficiency in an accompanying mice model study caused neurotoxicity-like symptoms.

"These results suggest that vitamin D supplementation in patients with lower levels of vitamin D may reduce peripheral neuropathy, and particularly high grade peripheral neuropathy, which would improve these patients' long-term quality of life," explained senior researcher Daniel L. Hertz, PharmD, Ph.D., University of Michigan College of Pharmacy. "There are barely any [negative consequences](#) that come from taking steps to increase vitamin D levels. Patients can easily take safe, inexpensive, and widely available over-the-counter supplements."

Dr. Hertz explained that CIPN is a common side effect of paclitaxel and several other commonly used anticancer drugs. It typically appears as numbness, tingling, and sometimes burning pain in the fingers and toes. CIPN can eventually lead to the loss of sensation in hands and feet. These symptoms are largely untreatable and can sometimes be permanent, so it is critical that patients and oncology health care providers monitor for CIPN during treatment to address the development of treatment-related peripheral neuropathy before symptoms become intolerable.

The researchers also noted that it is well-established that vitamin D deficiency is more common in self-reported Black patients. This population group is also at higher risk of CIPN. There are additional

studies underway to learn more about the role vitamin D supplements may be able to play in improving outcomes for these patients.

"This prospective-retrospective analysis of the SWOG S0221 study has revealed a significant association between vitamin D insufficiency and an increased incidence of chemotherapy induced [peripheral neuropathy](#)," commented Mei Wei, MD, Huntsman Cancer Institute at the University of Utah, who was not involved in this research. "This study finding uncovers a new potential strategy to combat CIPN, thereby improving the quality of life for [cancer](#) patients undergoing treatment. It is an exciting step forward in our continuous mission of patient-centered cancer care."

Dr. Wei, who is a Member of the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines) Panel for Breast Cancer, added, "We eagerly await the results of the ongoing study 'Genetic and Inflammatory Biomarkers in Neuropathic Pain Secondary to Chemotherapy (Genie-B),' led by Dr. Daniel Rotroff at Cleveland Clinic. This research holds the promise of shedding future light on the mechanisms underlying CIPN and the potential identification of biomarkers that could predict CIPN incidence."

More information: Vitamin D Insufficiency as a Risk Factor for Paclitaxel-Induced Peripheral Neuropathy in SWOG S0221, *Journal of the National Comprehensive Cancer Network* (2023). [DOI: 10.6004/jnccn.2023.7062](#)

Provided by National Comprehensive Cancer Network

Citation: New research suggests a simple, inexpensive option for reducing a major chemotherapy side effect (2023, November 7) retrieved 29 April 2024 from

<https://medicalxpress.com/news/2023-11-simple-inexpensive-option-major-chemotherapy.html>

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