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## Vestibulotoxicity associated with platinum-based chemotherapy in survivors of cancer

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**Background:** Platinum-based chemotherapy is an effective antineoplastic treatment that is used for a variety of human malignancies, but the drug is highly toxic to the inner ear. Cochleotoxicity following the treatment is well documented. The potential of vestibulotoxicity is still unclear.

**Objective:** This scoping review examined the extent of current research literature, summarize research findings and identify research gaps regarding vestibular-related adverse effects associated with platinum-based chemotherapy in survivors of cancer.

**Methods:** Inclusion criteria followed the PICO principles: Participants, cancer patients; Intervention, platinum-based chemotherapy; Control, none or any; Outcomes, vestibular-related adverse effects. Using an established methodological framework, seventy-five eligible studies were identified from a systematic literature search, and relevant data were charted, collated, and summarized.

**Results:** Testing for vestibulotoxicity predominately featured functional evaluation of the horizontal semicircular canal using the caloric and rotational tests. The rate of abnormal vestibular function test results after chemotherapy administration varied from 0-50%. The results of objective testing did not always correspond to patient symptoms. Most patients did not have intense symptoms due to the potential bilateral symmetrical insidious nature of ototoxic medication. Vestibular function loss may not be recognized until the patient loses other cues from vision and somatosensory such as when walking in the dark or develops concomitant peripheral neuropathy. There is tentative support for patients with pre-existing loss of vestibular function to be more likely to experience vestibulotoxicity after dosing with cisplatin.

**Conclusions:** A number of studies reported significant evidence of vestibulotoxicity associated with platinum-based chemotherapy, especially cisplatin. This scoping review emphasizes that vestibulotoxicity warrants more attention. There is a need for comprehensive evaluation using a combination of objective clinical testing, clinician-administered test, and careful noting of patient-reported symptoms.

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