The Total Neuropathy Score: A Tool for Measuring Chemotherapy-Induced Peripheral Neuropathy

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Key Points . . .

➤ Comprehensive assessment of chemotherapy-induced peripheral neuropathy should be part of everyday nursing practice.
➤ Current approaches to assessment are inadequate and have contributed to the dearth of knowledge regarding true prevalence and long-term negative sequelae.
➤ Future research efforts aimed toward improvement of current measurement approaches are critically important.

Chemo therapies-induced peripheral neuropathy (CIPN) is a common and distressing side effect of neurotoxic chemotherapy. It is estimated to occur in 20%–100% of patients with cancer and is a direct result of sensory, motor, and autonomic nerve injury (Armstrong, Almadrones, & Gilbert, 2005; Sweeney, 2002; Visovsky, 2003). Common characteristics of CIPN include uncomfortable and often painful sensations described as burning, numbness, stabbing, prickling, tingling, sharpness, shooting, or electric-shock-like. In most cases, neuropathy signs and symptoms first become apparent in the toes (Hausheer, Schilsky, Bain, Berghorn, & Lieberman, 2006). In this regard, it is a length-dependent phenomenon, meaning that the longest peripheral nerves are affected first (Hausheer et al.). With high cumulative chemotherapy doses, nerve fibers die back from the tips. Therefore, symptoms progress proximally from the toes to the feet, ankles, and then calves. Extension to the fingers, hands, wrists, and then arms indicates severe neuropathy and usually occurs after CIPN has been well-established in the lower extremities (Stillman & Cata, 2006). Less commonly, the autonomic nervous system may be affected, resulting in orthostatic hypotension, constipation, and difficulty with urination (Stillman & Cata). Extreme proximal extension may lead to functional disability. For example, simple daily activities such as walking, driving, or dressing can become extremely difficult and sometimes painful. Such distressing complications can continue to worsen for many months beyond treatment completion, a phenomenon referred to as coasting (Markman, 2006; Stillman & Cata). As a result, numerous patients receiving neurotoxic chemotherapeutic agents suffer with prolonged adverse effects on functional status and quality of life (QOL) (“Effects of Vinorelbine,” 1999; Ostchega, Donohue, & Fox, 1988; Wampler et al., 2006). Moreover, severe symptoms can necessitate chemotherapy dose reductions, negatively affecting cancer treatment efficacy (Hausheer et al.).

Several chemotherapeutic agents are classified as neurotoxins, the following of which are known to cause peripheral neuropathy: cisplatin, carboplatin, paclitaxel, docetaxel, etoposide, vinblastine, vincristine, oxaliplatin, thalidomide, procarbazine, cytarabine, and bortezomib (Armstrong et al., 2005; Hausheer et al., 2006; Hilkens & van den Bent, 1997; Quasthoff & Hartung, 2002; Stillman & Cata, 2006; Verstappen, Heimans, Hoekman, & Postma, 2003). In addition to administration of a neurotoxin, several other risk factors are known to increase risk of neuropathy (see Figure 1).

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