

# Management of Patients With Primary Central Nervous System Lymphoma Treated With High-Dose Methotrexate

**Elizabeth Warnick, RN, MSN, CRNP, and Danielle Auger, MPA, PA-C**

Primary central nervous system lymphoma (PCNSL) is a rare, extranodal form of non-Hodgkin lymphoma that most commonly presents with neurologic changes. Comprehensive workup to diagnose PCNSL and rule out nodal non-Hodgkin lymphoma is critical to the development of an appropriate plan for therapy. Past PCNSL treatments have included whole-brain radiation or steroids, but high-dose methotrexate (MTX) has emerged as initial therapy. Although high-dose MTX is well tolerated, special considerations must be taken to administer the drug safely. Specific interventions include aggressive IV hydration with sodium bicarbonate fluids, monitoring blood chemistries, and the administration of leucovorin rescue. Nurses should evaluate and monitor patients closely during treatment to ensure safety and decrease drug toxicity.

**P** rimary central nervous system lymphoma (PCNSL) is a rare, extranodal form of non-Hodgkin lymphoma that affects immunocompetent as well as immunocompromised patients. PCNSL tumors usually are fast growing, and symptoms develop within a few weeks (Raval, Yahalom, & DeAngelis, 2004). The tumors were treated with steroids and whole brain radiation in the past, but survival was poor. Current treatments include high-dose methotrexate (MTX), which has increased survival time and sometimes even cured PCNSL. As a result, this article will focus on immunocompetent patients who are receiving high-dose MTX as well as nursing implications for treatment.

In immunocompetent patients with PCNSL, age of presentation generally is 60 years, with a higher incidence in men (Raval et al., 2004). PCNSL usually presents as a solitary lesion and can affect any part of the central nervous system, including the eyes, brain, spine, or cerebral spinal fluid. Patients usually present with changes in neurologic status that are consistent with the tumor location. The tumors often are found in the frontal lobes, corpus callosum, basal ganglia, cerebellum (Raval et al.), and ventricles (Plotkin, 2005). PCNSL also can develop in the vitreous, retina, choroids, and optic nerve. The disease usually is unilateral but can spread to the contralateral eye (Shenkier & Connors, 2007). Complaints of floaters and blurred vision are consistent with ocular involvement. Reported neuropsychiatric symptoms include personality changes, depression, or altered thought processes with cognitive deficits. If the spinal cord is affected, presentation may be similar to compression and include muscle weakness, loss of mobility, or incontinence. Patients infrequently develop symptoms of increased intracranial pressure, presenting with headaches or seizures. PCNSL tumors are not associated with

## At a Glance

- ◆ Primary central nervous system lymphoma (PCNSL) is a rare, fast-growing form of non-Hodgkin lymphoma that presents with acute neurologic status changes.
- ◆ High-dose methotrexate has emerged as the primary therapy for immunocompetent patients with PCNSL.
- ◆ Understanding the principles of methotrexate metabolism and specific treatment considerations will ensure patient safety.

edema like other brain tumors because they are fast growing. In addition, the tumors typically are located deep in the white matter of the brain (Eichler & Batchelor, 2006; Raval et al.).

Evaluation of patients suspected to have PCNSL includes magnetic resonance imaging of the brain, followed by biopsy. On imaging, the tumors tend to have no surrounding edema with less distinct borders than other types of brain lesions (Shenkier & Connors, 2007). Steroids should not be given before biopsy has

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Elizabeth Warnick, RN, MSN, CRNP, is a nurse practitioner in the Medical Center Clinic at the West Penn Allegheny Oncology Network in Kittanning, PA; and Danielle Auger, MPA, PA-C, is a physician assistant at the Dana-Farber Cancer Institute in Boston, MA. At the time this article was written, Auger was a physician assistant at Tufts Medical Center in Boston. Warnick is a member of the speakers bureau for Millennium Pharmaceuticals, Inc. (Submitted August 2008. Accepted for publication September 2, 2008.)

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