Management of Adult Patients Receiving Intraventricular Chemotherapy for the Treatment of Leptomeningeal Metastasis

Lisa Aiello-Laws, RN, MSN, APN-C, AOCNS®, APNG, and Dana N. Rutledge, RN, PhD

Cancer in the central nervous system can arise from a primary brain tumor and metastasize to the brain or to the leptomeninges, leading to leptomeningeal metastasis (LM). LM also is called leptomeningeal carcinomatosis and carcinomatous meningitis. When LM occurs, signs and symptoms include headache, nausea, vomiting, lumbar back pain, and stiff or painful neck; LM also may lead to mental disturbances and seizures. Nursing care of patients with LM requires an understanding of neurologic anatomy and physiology, along with associated treatments and complications. Treatment of LM may involve intrathecal or, more likely, intraventricular chemotherapy. Very little has been written about appropriate care of patients with LM. The purpose of this article is to review the literature, summarize clinical care recommendations, and construct evidence-based guidelines for the administration of intraventricular chemotherapy and the care and monitoring of patients with LM.

At a Glance
- Leptomeningeal metastasis is a complex condition with multiple neurologic sequelae. It occurs primarily with leukemia and lymphoma but also is associated with solid tumor cancers.
- Treatment of leptomeningeal metastasis often involves intrathecal or intraventricular chemotherapy.
- Use of evidence-based guidelines for the care and management of patients receiving intraventricular chemotherapy will promote safe use of the infrequent treatment.

A 42-year-old man with AIDS and B-cell lymphoma was admitted to the inpatient mixed medical-surgical-oncology unit. He had been treated as an outpatient. He presented with severe lumbar back pain, right-eye ptosis, lower-extremity weakness, and anal "numbness." The physician performed a lumbar puncture (LP) but could not collect enough fluid, so a second LP was performed. Multiple diagnostic tests were run; the patient’s pain worsened, as did his lower-extremity weakness. He eventually required an indwelling catheter for urinary incontinence. Five to seven days later, leptomeningeal metastasis (LM) was confirmed. An intraventricular (IVt) reservoir (e.g., Ommaya port) was placed, and chemotherapy (CTX) agent cytarabine was administered.

At the time this article was written, Lisa Aiello-Laws, RN, MSN, APN-C, AOCNS®, APNG, was a manager at Shore Memorial Hospital’s Cancer Center in Somers Point, NJ; she now is an oncology care manager with ITA Partners in Philadelphia, PA; and Dana N. Rutledge, RN, PhD, is an associate professor in the Nursing Program at California State University, Fullerton. No financial relationships to disclose. (Submitted July 2007. Accepted for publication September 1, 2007.)