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

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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.

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.

Staff required substantial guidance regarding assessment and management of the patient, particularly regarding his IVt CTX. This is a type of IT administration, which also can be given via LP. The institution had no policies for nursing care of patients receiving IVt CTX, pharmacy preparation of IVt CTX, or proper administration techniques.

The patient received CTX through the IVt port for one cycle. His lumbar pain worsened, and his neurologic status deteriorated. He exhibited symptoms of cauda equina syndrome, characterized by dull pain in the lower back and upper buttocks along with lack of feeling in the buttocks, genital area, and upper thighs. Bowel and bladder function often are impaired by LM, caused by nerve impairment in the spinal root nerves. He began spinal radiation but died within the week. Unfortunately, the man spent his last month of life in the hospital, in pain, with worsening neurologic status.

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.

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Digital Object Identifier:10.1188/08.CJON.429-435

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