Lymphomatous Meningitis:
Early Diagnosis and Treatment

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The incidence of central nervous system (CNS) metastases has increased steadily since 1999, likely because of the use of drugs with poor access to the CNS as well as the successful treatment of extraneural cancers, resulting in longer survival. Lymphomatous meningitis is a profoundly morbid and often fatal CNS metastasis that develops in at least 4%–8% of patients with non-Hodgkin lymphoma. Risk factors for lymphomatous meningitis include uncontrolled systemic and extranodal disease, testicular and parasinus tumors, and being younger than age 60. A high index of suspicion for the condition may result in earlier detection and improved outcome. Lymphomatous meningitis diagnostic methods include a thorough neurologic examination, magnetic resonance imaging (MRI), and multiple samplings of cerebrospinal fluid (CSF). Treatment regimens typically include radiation to areas of bulky disease or intrathecal chemotherapy. Available chemotherapeutic agents include methotrexate, cytarabine, and liposomal cytarabine. In addition to follow-up CSF and MRI monitoring, questioning patients and caregivers can provide insight into treatment response in terms of quality of life. Special care to avoid a nihilistic outlook in patients and clinicians is essential in treating patients with lymphomatous meningitis.

Lymphomatous meningitis is an increasingly frequent, devastating complication of primary central nervous system (CNS) and systemic non-Hodgkin lymphomas (Chamberlain, 2006). The pathologic hallmark of lymphomatous meningitis is the spread of malignant cells to the cerebrospinal fluid (CSF). Multiple and often subtle symptoms and signs are common, progress rapidly, and result in profound morbidity and mortality (Gleissner & Chamberlain, 2006) (see Table 1). Diagnosis often is challenging, and treatment is primarily palliative (Gleissner & Chamberlain, 2007).

Lymphomatous meningitis symptoms can reflect involvement at any level of the neuroaxis. The neuroaxis consists of the meninges (the three-layered sheath enclosing the organs of the nervous system), brain, spinal cord, and CSF (see Figure 1). CSF is produced by the choroid plexus from arterial blood in the lateral and fourth ventricles of the brain at a rate of 600–700 ml per 24 hours (McComb, 1983). At any given time, the average adult has about 140 ml of circulating CSF, 25 ml of which resides in the ventricles (McComb). CSF cushions the brain and spinal cord and has roles in homeostasis and nervous system metabolism (McComb).

Malignant cells can access the CSF in various ways. Direct extension may occur from a solid tumor in the brain parenchyma or from vertebral, subdural, or epidural metastases (Demopoulos, 2004). Metastases to the choroid plexus may shed malignant cells, or spread may occur by retrograde invasion via peripheral or cranial nerves (Demopoulos).

The frequency of hematologic and solid tumor metastases to the CNS has risen steadily since 1999 (Drappatz & Batchelor, 2007). Possible explanations for the trend include increased success at treating extraneural cancers (resulting in longer survival) and the use of drugs with poor access to the CNS (e.g., large-molecule targeted agents) (Chamberlain, 2006; Demopoulos, 2004). At least 4%–8% of patients with non-Hodgkin lymphoma develop lymphomatous meningitis (Kim & Glantz, 2001), but the true incidence may be higher because of under-recognition.

At a Glance

- Lymphomatous meningitis is underdiagnosed and undertreated, so awareness of risk factors, diagnostic tools, and treatments may improve diagnosis and outcomes.
- Nurses have a central role in counseling and advising patients with lymphomatous meningitis and their caregivers.
- Despite poor prognosis, some patients can have significant palliative benefit with treatment.

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