

# Describing Symptom Burden and Functional Status at the Diagnosis of Leptomeningeal Metastasis

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**OBJECTIVES:** To investigate the associations of primary cancer, tumor characteristics, and cancer treatment with symptom burden and functional status.

**SAMPLE & SETTING:** 52 patients with leptomeningeal metastasis (LM) at the University of Texas MD Anderson Cancer Center in Houston.

**METHODS & VARIABLES:** Records of 52 patients were reviewed, and presenting symptoms were recorded. Mean differences in number and specific symptoms and functional status were explored. Correlations between age and overall number of symptoms with specific symptoms were assessed with Pearson correlations.

**RESULTS:** Pain was the most frequently reported symptom. Hormonal ablation therapy within six months of LM diagnosis was associated with a higher number of symptoms. Receiving biotherapy more than six months prior to an LM diagnosis was associated with pain, and cerebrospinal fluid leukocytosis was associated with a poor Karnofsky Performance Status score.

**IMPLICATIONS FOR NURSING:** Nurses caring for patients with advanced cancer can help ensure the highest possible quality of life by obtaining a careful history, assessing symptoms, and noting any changes since the last encounter.

**KEYWORDS** leptomeningeal; metastasis; central nervous system; symptom burden; functional status

**ONF, 45(3), 372-379.**

**DOI** 10.1188/18.ONF.372-379

Cancer brings physical and psychosocial challenges to patients. However, when cancer metastasizes to the leptomeninges and cerebrospinal fluid (CSF), a unique symptom burden arises that is further complicated by the site of primary cancer, sites of metastasis, cumulative treatment toxicities, and neurologic symptom burden because of tumor involvement in the neuroaxis. Patients with leptomeningeal metastasis (LM) typically undergo multiple treatment regimens and may have multiple metastatic sites. In addition, multifocal symptoms frequently occur because of the involvement of unrelated sites along the neuroaxis (Olson, Chernik, & Posner, 1974), creating an unusual neurologic burden that may include cognitive and other neurologic symptoms, such as radicular pain, weakness, or cauda equina syndrome.

## Neurologic Symptoms of Leptomeningeal Metastasis

The presence of multifocal neurologic symptoms is a hallmark of LM and frequently leads to testing and diagnosis (Olson et al., 1974). Neurologic symptoms may be referable to the cerebrum, cranial nerves, meninges, or spinal nerve roots. However, many patients experience symptoms in more than one of these areas. For example, patients have reported cerebral symptoms in combination with cranial nerve symptoms (Chamberlain & Kormanik, 1997), as well as symptoms referable to the cerebrum, cranial nerves, and spinal nerves in combination (Duan, Li, & Sun, 2014). Frequently, symptoms may be identified in two or three locations along the neuroaxis (Duan et al., 2014; Wasserstrom, Glass, & Posner, 1982). Recognizing neurologic signs or symptoms related to the involvement of multiple sites along the neuroaxis is key to the diagnosis of LM.