

# Metastatic Spinal Cord Compression

## Presentation, Diagnosis, and Management



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### KEYWORDS

- Metastatic spinal cord compression • Neoplastic epidural spinal cord compression

### HOSPITAL MEDICINE CLINICS CHECKLIST

1. Metastatic spinal cord compression (MSCC) occurs in up to 6% of patients with malignancy when neoplastic metastases in the epidural space compress the spinal cord.
2. MSCC is an oncologic emergency that can begin with back pain and progress to loss of motor, sensory, and sphincter function. Average survival after the development of MSCC is 3 to 6 months.
3. Prognosis is dictated by tumor type and stage but most importantly by ambulatory function at the time of treatment.
4. Delay in diagnosis and treatment results in further neurologic decline. Back pain or motor weakness in a patient with malignancy should prompt immediate investigation for MSCC. Full-spine MRI is the optimal method for diagnosis.
5. Steroids should be administered promptly on diagnosis or suspicion of MSCC, followed by radiation or surgery consultation for definitive treatment planning.
6. Decompressive surgery may confer benefits compared with radiation alone in selected patients with good prognosis and longer predicted survival (markers of less aggressive disease often used for predictions), or patients with features that predict poor response to radiation (spine instability, bony compression). A multidisciplinary approach is required to determine the optimal treatment plan.

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Disclosures: None.

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## DEFINITION

### *What is metastatic spinal cord compression (MSCC)?*

MSCC is the radiographic finding of compressive indentation or displacement of the thecal sac or spinal cord from mass effect by spinal epidural metastases.<sup>1,2</sup> With high mortality and substantial morbidity from pain, sensory loss, and paralysis, MSCC is one of the most serious complications of malignancy and can greatly reduce quality of life.

### *Why is this entity relevant to hospitalists?*

Rapid progression of debilitating symptoms renders MSCC an oncologic emergency, resulting in a 3.4% annual incidence of hospitalization for MSCC in patients with cancer with inpatient mortality as high as 10%.<sup>3</sup> MSCC doubles hospitalization time during the last year of life; associated costs are increasing by more than 5% annually and are expected to increase further with the growing cancer incidence in the aging population.<sup>3</sup>

## EPIDEMIOLOGY

### *How common is MSCC?*

MSCC occurs in 2.5% to 6% of patients with cancer, a likely underestimation because of underreporting in asymptomatic or hospice patients.<sup>4,5</sup> Incidence varies with tumor histology from 0.2% in pancreatic cancer to 7.9% in myeloma.<sup>4</sup>

### *Which cancers most commonly metastasize to the spinal column?*

Of more than 15,000 hospitalized MSCC cases, the most prevalent underlying cancer diagnoses were lung (24.8%), prostate (16.2%), multiple myeloma (11.1%), and non-Hodgkin lymphoma (7.9%).<sup>3</sup> Prostate, lung, and breast cancer each comprise 15% to 25% of MSCC in various population series, followed closely by myeloma, non-Hodgkin lymphoma, and renal cell carcinoma, each estimated at 5% to 10% of cases.<sup>4-8</sup>

### *How often is MSCC the initial presentation of malignancy?*

Malignancy presents as MSCC in 20% of patients without a prior cancer diagnosis, and even one-third of lung cancers present as MSCC.<sup>5,9</sup> Lung cancer, multiple myeloma, and non-Hodgkin lymphoma disproportionately account for most initial presentations as MSCC (together almost 80%), followed by renal cell carcinoma.<sup>4,5,9</sup> MSCC commonly complicates but is rarely the initial presentation of breast and prostate cancer (less than 12% of cases).<sup>9</sup>

### *What is the pathophysiology of MSCC?*

Vertebral body metastases frequently arise at vertebral vessel entry sites, suggesting that hematogenous spread to the vertebral body is the origin of MSCC in more than 85% of cases.<sup>10</sup> Less commonly, a paravertebral tumor (typically lymphoma or lymph node metastasis) grows laterally through intervertebral foramina into the spinal canal.<sup>10</sup> MSCC occurs gradually as tumor expands, or acutely if bone destruction results

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