Alleviating the Pain

Palliative Care of Spinal Cord Compressions

By Léo Cantin, MD, FRCPS

In this article:

1. What causes spinal cord compressions?
2. What are the typical symptoms?
3. How to examine a spinal cord compression.
4. What treatments are most effective?

For practical purposes in this article, the term spinal cord compression includes lesions that compress the medulla or the cauda equina.

What are the causes?

Metastatic spinal cord compressions are 25 times more often the cause than primary neoplastic compressions.[1] Metastases usually stem from neoplasia of the breast, lung, prostate, kidney, and lymphoma (Table 1).[2,3]

Primary spinal cord neoplasia can arise from various tissues that are present at the site itself (Table 2). The most frequent primary neoplasia is multiple myeloma.[4]

It is important to keep in mind that cancer patients may also present with other causes of acute myelopathy. As such, the therapeutic approach and treatment for these patients will be completely different (Table 3).[1]

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What are the symptoms?

The symptoms of spinal cord compression consist of pain, complete or partial medullary syn-

Table 1
Origin of tumours in patients affected with metastatic spinal cord compressions

Site	Sundaresan Study Number (%)	Constans Study Number (%)	Bruckman Study Number (%)	Posner Study Number (%)
Lungs	52 (20)	73 (12)	129 (16)	--
Breasts	16 (10)	153 (26)	94 (12)	30 (13)
Unknown (primary)	12 (5)	65 (11)	91 (11)	48 (20)
Lymphoma	3 (1)	38 (6)	86 (11)	4 (2)
Myeloma	8 (3)	--	68 (9)	26 (11)
Sarcoma	37 (14)	41 (7)	65 (8)	9 (4)
Prostate	11 (4)	47 (15)	52 (7)	9 (4)
Kidney	32 (12)	20 (3)	44 (6)	21 (9)
Tractus GI	11 (4)	28 (5)	34(4)	17(7)
Thyroid	4 (2)	22 (4)	24 (3)	9 (4)
Other	61 (24)	113 (19)	116 (15)	--
TOTAL	247	600	803	173

Source: Sundaresan N, Krol G, et al: Metastatic tumors of the spine. In: Saunders (ed): Tumors of the spine: Diagnosis and clinical management. W.B. Saunders, Philadelphia, 1990, pp 279-304.

drome, radiculopathy, or syndrome of the cauda equina. Pain is typically more severe at bedtime, which may awake patients during the night. It is usually located at a specific site on the spine and may be distributed within the area. The pain can be elicited by palpation or percussion. The pain may be accompanied by radicular radiation intensified by movement or Valsalva manoeuvres.

MR is responsible for the modification of a treatment plan in 53% of situations.

A certain level of paresis is detected in 75% of cases.[1] Motor deficit may involve a sensation of mere lethargy, or go as far as plegia. Patients will also experience equilibrium problems when standing or walking. If it is diagnosed early in the course of the disease, hypotonia associated with hyporeflexia will be detected. If, however, it

is diagnosed late, the patient may complain of spasticity stiffness associated with hyperreflexia.

Patients experience sensory impairment in 50% of cases, typically suffering from paresthesia and/or dysesthesia.[1] Fifty per cent of patients will also present with sphincter troubles, or autonomic symptoms, such as dysuria, urinary retention, constipation, and sexual dysfunction.[1] Impairment of the sphincter usually indicates that the disease is in an advanced stage.

Symptoms may be vague, and the cancer may or may not be known. Early diagnosis is important so that treatment can be started before irreversible lesions hindering the patient's quality of life appear during the course of the disease.

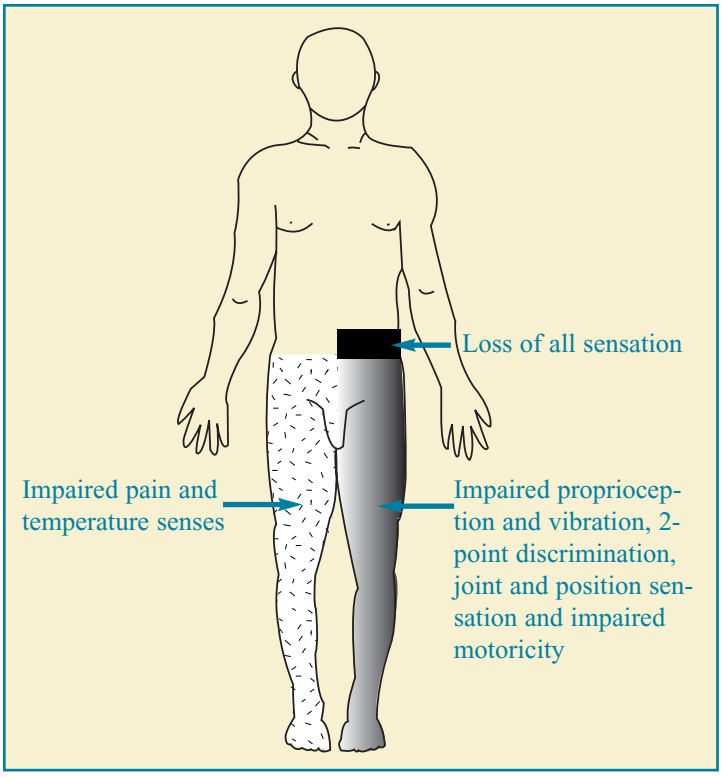


Figure 1. Brown-Sequard Syndrome

Clinical Examination

A very good neurologic examination of the patient with spinal cord compression must be completed in order to determine the appropriate therapy: Is the syndrome partial or total? Is the patient suffering from Brown-Sequard syndrome (Figure 1)?

The patient should undergo surgery or radiotherapy, depending on the neurologic impairment and the rate of onset. The examination should include the following assessments:

- muscular strength;
- tendon reflexes;
- presence of Babinski and Hoffman symptoms;
- superficial sensitivity (needle, sensitivity to temperature), vibration and position;
- rectal touch with anal tone, perianal sensitivity and bulbo-cavernous reflex.

How do I investigate?

Magnetic resonance (MR) is currently known as the Gold Standard in the investigation of spinal cord compression.[5,6] It can show lesions in spite of normal X-rays and normal isotopic bone

Table 2
Primary tumours of the spinal cord which may cause spinal cord compressions

Tissular Origin	Benign Tumour	Malignant Tumour
Fibrous tissue	Fibroma Fibrous dysplasia	Fibrosarcoma Malignant fibrous histiocytoma
Cartilage	Chondroblastoma Osteochondroma Enchondroma Fibroma Chondromyxoid	Chondrosarcoma
Bone	Osteoid osteoma Osteoblastoma	Osteosarcoma Osteosarcoma associated with Paget's disease and previous radiation
Hematopoietic elements		Myeloma Lymphoma
Fat cells	Lipoma	Liposarcoma
Vascular system Blood vessels	Hemangioma	Angiosarcoma Hemangiopericytoma
Lymphatic vessels	Lymphomangioma	Lymphangiosarcoma
Nervous system	Schwannoma Neurofibromatosis Pigmentary tumours of the nerve envelope Ganglioneuroma	Malignant tumours of the nerve envelope
Other		Chordoma

Source: Sundaresan N, Krol G, et al: Metastatic tumors of the spine. In: Saunders (ed): Tumors of the spine: Diagnosis and clinical management. W.B. Saunders, Philadelphia, 1990, pp 279-304.

Table 3
Other causes of acute myelopathy

- Radiation
- Para-neoplastic necrotic myelitis
- Carcinomatosis of the meninges
- Fractures/traumatism: crushing
- Disk herniation
- Epidural hematoma (anticoagulant, blood dyscrasia)
- Stenosis of the spinal cord
- Infection *e.g.,* epidural abscess

Table 4
Clinical manifestations and their degree of compression

Clinical Manifestations	Myelographic Finding
Asymptomatic	Varying degrees of intraspinal extension
Back pain, no deficit	Intraosseous or epidural disease
Neurologic deficit: stable on steroid	Varying degrees of epidural block
Neurologic deficit: unstable on steroids	Complete block, unstable spine

scans.[1] Occult compressions in 32% of patients with prostate neoplasia can also be detected.[7] Any clinical doubt is confirmed in almost 98% of cases. MR is responsible for the modification of a treatment plan in 53% of situations. It will, in fact, show two or more levels of compression in 25% of patients, and locate more than one affected site in 69% of cases. It is recommended that MR be done before any type of treatment is administered, to address a specific evaluation of the lesions.[8]

A correlation has been established between clinical manifestations and the degree of compression found in the myelography, an examination that may be used when it is impossible to obtain MR imaging (Table 4).

The isotopic bone scan may detect approximately 85% of patients suffering from metastases.[1] Computerized axial tomography, and simple or dynamic X-rays may be helpful in the diagnosis, but they will also be useful in analyzing the situation should reconstructive osseous surgery be required eventually.

What are the treatments?

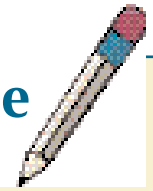
Once the diagnosis is made, it is imperative to act promptly to lower and prevent neurologic repercussions, ensuring that the patient has the best quality of life possible.

There is a neurologic urgency when the presentation is acute. A high-dosage steroid treatment must be started to lessen the pain, as well as to lower the medullary and/or radicular edema.[1] The patient must be referred for immediate treatment.

Radiotherapy remains the standard treatment and is often the first choice. The patient must be referred directly and promptly.[1,5]

Patients have a better prognosis and functional outcome if the disease progresses slowly: 93% of patients with symptoms over a period of more than 14 days will improve, compared to 10% of

Take-home message



- The palliative care medical team will be increasingly challenged with the pathology of spinal cord compressions.
- Early clinical and radiologic diagnoses of this condition are vital.
- A good neurologic examination is important. Magnetic resonance imaging is the recommended investigation.
- Patient management and prompt treatment of spinal cord compressions will have a major impact on the patient's rehabilitation prognosis.

patients with symptoms of less than 14 days.[9]

Radiotherapy-induced myelopathy is quite rare. Maranzano et al. followed 13 patients who lived for more than two years; only one exhibited evidence in the radiological MR imaging.[10]

Surgery is required when there is diagnostic doubt or instability. Quick deterioration and urgent decompression is required since the effects of radiotherapy are typically felt after days.[1] Surgery may be performed via various approaches: anterior, posterior, combined, *etc*. According to Hatrick et al., 90% of patients will have less pain after surgery, 69% will undergo an improvement from the pre-surgery neurologic impairment, and 78% will have an ambulatory post-operative improvement.[11]

The results from surgery performed before radiotherapy treatments are better than those from surgery performed after treatments:

- 32% of wound complications from surgery after radiotherapy versus 12% for de novo surgery;
- 75% of patients remain ambulatory and continent 30 days after de novo surgery versus 50% for patients who received radiotherapy before surgery.[12]

There seems to be a substantial functional improvement for patients who underwent surgery for osseous metastases without neurologic impairment, although there was no increase in the patients' longevity.[13]

In post-operative care, it is, of course, important to control the pain, establish a physiotherapy program, as well as to provide vesical and intestinal retraining to patients, giving them psychological support when they suffer temporary or permanent loss of autonomy. CME

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