Intramedullary spinal metastases

Intramedullary spinal metastases are rare, occurring in ~1% of autopsied cancer patients. They represent 8.5% of central nervous system metastases and account for 5% of all intramedullary lesions. They are less common than leptomeningeal metastases.

Intramedullary lesions may result from:

growth along the Virchow-Robin spaces

haematogenous dissemination

direct extension from leptomeninges

Epidemiology

Demographics of affected patients reflect those of the underlying primary malignancy but over all the mean age of presentation is 55 years.

Clinical presentation

Intramedullary spinal cord metastasis most commonly occurs in the setting of advanced disease and only rarely is the first presentation of malignancy.

In contrast to the long duration of symptoms that are typical of primary intramedullary spinal neoplasms, up to 75% of patients with a spinal cord metastasis have symptoms for less than one month before diagnosis

The most common presenting symptom is motor weakness. Other common presenting features are pain, bowel or bladder dysfunction, paraesthesia or a rapid decline in neurological status in elderly patients.

Pathology

Lung cancer accounts for ~50% of cases

Other primary malignancies are breast cancer, lymphoma, leukaemia, malignant melanoma, renal cell cancer and colorectal cancer.

One-third of patients have concomitant cerebral metastasis and 25% have leptomeningeal metastases 5.

Radiographic features

The most commonly involved location is the cervical cord, followed by the thoracic cord and then the lumbar cord. Lesions are usually solitary and involve 2-3 vertebral body segments.

Plain film

Usually normal.

Myelography/CT myelography

Usually normal 6 although focal expansion or nodularity may be visible.

CT

Hypervascular metastases may rarely be seen as enhancing intraspinal lesions

MRI

Lesions are usually well-defined 4 and typically produce cord expansion over several segments. In contrast to primary intramedullary neoplasms, associated cysts are rare. Typical MRI signal characteristics are

T1: hypointense

T2 hyperintense prominent oedema commonly surrounds the tumor nodule

T1 C+ (Gd): avid homogeneous enhancement

Treatment and prognosis

Management of intramedullary metastases generally consists of fractionated radiotherapy, which usually maintains but does not improve the pretreatment level of neurologic function. As with the treatment of brain metastases and epidural spinal cord compression, corticosteroids are used to diminish the effects of radiation-induced edema.

Intramedullary metastases are associated with a poor prognosis. Up to two thirds of patients die within six months of diagnosis.

Differential diagnosis

General differential considerations include:

other intramedullary spinal tumours, for example

ependymoma

astrocytoma

haemangioblastoma

inflammatory lesions/transverse myelitis

usually longer length of cord involvement

variable contrast enhancement

rapidly progressive clinical course

multiple sclerosis

may not demonstrate enhancement less prominent cord expansion less prominent perilesional oedema lesions are usually multiple syrinx central cystic lesion no contrast enhancement