

IMAGING OF SPINAL TUMORS

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Tumors of the spinal cord and neuraxis can pose a major challenge to the general neurologist and practitioner in terms of symptom presentation, diagnostic workup and overall management.

Based on their anatomical location in the spine, tumors can be classified into intramedullary, intradural-extramedullary, and extradural neoplasms.

Intramedullary tumors include primary spinal tumors, such as ependymomas and astrocytomas, that are derived from glial or ependymal cells. In addition, metastases from tumors outside the nervous system, such as breast and lung cancer, may present as intramedullary lesions.

Intradural-extramedullary tumors arise from the dura but are located outside the spinal cord, such as meningiomas, nerve sheath tumors and myxopapillary ependymomas.

Extradural tumors are frequently metastatic in nature and typically involve tumors of the vertebral bodies that might exert mass effect and compression of the spinal cord or nerve roots. In addition, nerve sheath tumors can occur in extradural location and sometimes extend their growth along intervertebral foramina.

In general, intramedullary tumors are considered rare neoplasms, accounting for approximately 5-10% of all spinal tumors. Benign tumors, such as meningiomas and schwannomas are more common and account for at least 60% of all spinal tumors. Compared to the frequency of intracranial tumors, spinal tumors are much less common.

The clinical manifestation of spinal tumors varies depending on the location of the tumor. Symptoms may include non-specific back pain, sensory loss, weakness, radicular pain or autonomic dysfunction.

Neuroimaging is critically important in establishing the diagnosis of a spinal tumor. Gadolinium-enhanced magnetic resonance imaging (MRI) remains the study of choice for most tumors, though functional imaging studies (e.g., positron-emission tomography) and computed tomography (CT) have a role in the diagnosis of specific tumor entities and in the detailed assessment of bony structures. In addition, CT-myelograms might have an important diagnostic role, such as in patients unable to undergo magnetic resonance imaging.

Importantly, the differential diagnosis of some spinal imaging abnormalities includes non-neoplastic disorders, such as vascular malformations, inflammatory and infectious lesions, degenerative spine disease and neurotoxicity from cancer therapy, such as spinal cord necrosis from prior radiation in patients with underlying malignancy.

This presentation will highlight important imaging features of common spinal tumors. The differential diagnosis and important management considerations will be discussed.

Suggested References:

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