Thoracic spinal schwannoma

Published on 01.07.2002

DOI: 10.1594/EURORAD/CASE.1573
ISSN: 1563-4086
Section: Neuroradiology
Imaging Technique: MR
Case Type: Clinical Cases
Authors: S. Carvalho, D. Balériaux, J. Brotchi, I. Salmon, Fl. Lefranc
Patient: 44 years, female

Clinical History:

The patient presented with progressive decreased motor strength of both lower extremities, bilateral hypoesthesia below the level of T12 and urinary incontinence.

Imaging Findings:

The patient presented with a 2-months history of progressive motor weakness of both lower extremities and urinary incontinence. She also had a long history of lumbar pain. Neurological examination revealed decreased motor strength of both lower extremities (grade 2 in proximal muscles and grade 3 in distal muscles), atrophy of the quadriceps muscles and bilateral hypoesthesia below the level of T12. There was urinary incontinence.

An MR study of the thoracic-lumbar spine was performed. The examination revealed a well-demarcated intradural mass in the dorsal region, between T9 and T11, which compressed the spinal cord and displaced it anteriorly and to the right. No bone erosion was noted. The precise location of the tumor (intradural extramedullary versus intramedullary) was not obvious to define. The spinal cord displacement, better demonstrated on axial T2-weighted images, and the slight enlargement of the ipsilateral subarachnoid space led to the diagnosis of intradural extramedullary lesion. An intramedullary tumor with an exophytic component seemed less likely. The lesion was hypointense on T1-WI and showed some heterogeneity and hyperintensity on T2-WI. It enhanced intensely but heterogeneously. Schwannoma was suspected. The tumor was totally excised and patients' neurological deficits progressively improved after surgery. At neuropathological examination a schwannoma was confirmed.

Discussion:

Nerve sheath tumours represent 16-30% of all intraspinal masses (1) and are the most common intradural extramedullary tumours, accounting for 25-30% of all cases (2). Two main types of nerve sheath tumours are found in the spine: schwannoma (neurinoma) and neurofibroma. Both arise from Schwann cells of nerve sheaths. These benign tumours are well-circumscribed and lobulated; cyst formation is common but gross haemorrhage is not (1). Nerve sheath tumours are most commonly intradural extramedullary (58%), but may also be purely extradural (27%) or combined intra- and extradural "dumbbell" masses (15%). Less than 1% are intramedullary (1). They may appear at all levels of the spine, with a slight lumbar predominance (2).

Schwannomas usually become symptomatic in the fourth decade of life. The most frequent presenting symptoms are pain and radiculopathy, followed by paresthesias and limb weakness. Schwannomas occur sporadically or in
Typically, schwannomas cause posterior scalloping of vertebral bodies and widening of the neuronal foramina, seen on plain films. CT shows bone erosion and their density varies from hypo- to slightly hyperdense. Contrast-enhanced CT usually show marked enhancement. The “dumbbell” shape is typical (2). On MR, the majority of neurinomas (73.9%) are isointense to spinal cord on T1-weighted images, while the minority (26.1%) are hypointense. On T2-weighted images these lesions are usually hyperintense (3). Central areas of decreased signal on T2-weighted images are frequent, which may represent denser areas of collagen and Schwann cells. These lesions usually enhance intensely and fairly homogeneously (1), but may also enhance heterogeneously. Peripheral enhancement has been reported (4). Their size is often less than the height of one vertebral body but occasionally it can exceed the height of three vertebral bodies (5). MR demonstrates the importance of secondary medullary compression.

The major differential diagnosis with intradural extramedullary schwannoma is meningioma. Several criteria help to differentiate these two lesions. Neuronal tumours tend to be more anteriorly located within the spinal canal, where spinal meningiomas frequently have a posterolateral location. Meningiomas usually have a broad-based dural attachment and frequently show the dural tail sign on contrast-enhanced study. In addition to this, neural tumours can have a central area of decreased signal on T2-weighted images, not seen in meningiomas (1). Schwannomas have been described as being of higher signal intensity on T2-weighted images and more heterogeneous than meningiomas. Other intradural extramedullary tumours, including conus and filum terminale ependymoma, paraganglioma, epidermoid and dermoid tumours, and metastasis should also be included in the differential diagnosis (2). Spinal intradural extramedullary capillary haemangiomas are extremely rare lesions that should also be considered when a well-demarcated, strongly enhancing mass is observed in the intradural extramedullary space of the spine.

**Differential Diagnosis List:** Thoracic spinal schwannoma

**Final Diagnosis:** Thoracic spinal schwannoma

**References:**

Pathologie tumorale et pseudo-tumorale intradurale.
Description: Sagittal T1-weighted MR image reveals a hypointense intradural mass at T9-T11. Origin:
Description: Sagittal T2-weighted image shows a heterogenous hyperintense tumour and demonstrates the intradural extramedullary location of the lesion. Origin:
Description: The spinal cord compression is well seen on axial T2-weighted images. The spinal cord is markedly displaced and flattened. Origin:
Figure 2

Description: Postcontrast sagittal T1-weighted image demonstrates an intensely but heterogeneously enhancing tumour. Origin:
Description: Axial gadolinium enhanced T1-weighted image. Origin: