Cervical schwannoma
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Section: Neuroradiology
Imaging Technique: MR
Case Type: Clinical Cases
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Patient: 30 years, female

Clinical History:
Neck pain radiating to the left shoulder.

Imaging Findings:
The patient presented with a 4-year history of neck pain radiating to the left shoulder. Physical examination was normal.
An oblique X-ray of the cervical spine showed a widened left C4/5 neural foramen (Fig. 1). An MRI scan showed a left-sided extra-medullary mass with extradural extension through the C4/5 neural exit canal. This gave the typical "dumbbell" appearance (Fig. 2) of a nerve tumour.

The tumour was excised and histopathology confirmed schwannoma.

Discussion:
Nerve sheath tumours are a rare group of tumours affecting the CNS. Pathologically they are schwannomas or neurofibromas (1). These tumours occur most often in the thoracic spine, but may occur in the cervical region, especially neurofibromas. Most are intradural and extramedullary, although about 10% are both intra- and extramedullary and rarely they are completely extradural.
Both schwannomas and neurofibromas usually become symptomatic in the middle decades. In general both sexes are equally affected. However there is a slight female preponderance with schwannomas (2). Of patients with nerve root tumours 35-45% have neurofibromatosis. Cervical schwannoma is rare, except in patients with neurofibromatosis (3).

Clinical symptoms are often indistinguishable from those associated with disc prolapse. Pain and radiculopathy are the most common presenting symptoms, followed by paresthesia and limb weakness. Some intradural nerve tumours can compress the spinal cord with resulting myelopathic symptoms. Schwannomas almost never become malignant; whereas sarcomatous transformation occurs in 4-11% of neurofibromas (2).

Osseous changes are common on plain films. The most common findings are pedicle erosion and enlarged neural foramen. Kyphoscoliosis and so-called "ribbon ribs" are seen with neurofibromatosis. Posterior vertebral body scalloping can occur with intradural lesions but is more commonly due to dural ectasia than neoplasm (2).

Schwannomas and neurofibromas have a similar radiographic appearance. They are well-circumscribed intradural, extramedullary lesions, are fairly isointense on T1-weighted images. Schwannomas may be bright or isointense on
T2-weighted images; neurofibromas are almost always bright on T2-weighted images (1).

Virtually all nerve sheath tumours enhance following contrast administration, regardless of histology. Patterns vary from homogenously hyperintense to inhomogeneous, cystic – appearing masses. Neurofibromas may have a central, nonenhancing dark focus giving a “target appearance” (2). With intravenous Gadolinium, these tumours are more readily detected. However, the appearances of the lesions are sometimes so typical that contrast need not to be given. Cervical schwannomas, unlike meningiomas, tend to be lateral to the cord and to be dumbbell in shape. Meningiomas enhance brightly and homogenously and characteristically are dural- based, occasionally with a dural tail. Meningiomas have MRI signal characteristics similar to schwannomas. Occasionally calcifications are seen in meningiomas and contribute to the dark signal on T2 weighted images (1).

**Differential Diagnosis List:** Nerve sheath tumour, cervical schwannoma

**Final Diagnosis:** Nerve sheath tumour, cervical schwannoma

**References:**


Figure 1

Description: Left oblique x-ray of the cervical spine shows a widened C4/5 neural canal (arrow).

Origin:
Description: Sagittal T2-weighted MR image shows a high signal intensity soft tissue mass expanding the C4/5 neural canal. Origin:
Description: Axial T2-weighted MR image shows the typical "dumbbell" appearance of a nerve tumour.
Origin: