

Astrocytoma of cervical spine

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Section: Neuroradiology

Case Type: Clinical Cases

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Patient: 57 years, female

Clinical History:

A 57-year-old female patient presented with left shoulder pain and sensory disturbances of the left upper extremity.

Imaging Findings:

A 57-year-old female patient presented with left shoulder pain and sensory disturbances of the left upper extremity. To explore the cause of patient's symptoms, an MRI examination of the cervical spine was performed and T1 and T2 weighted images in three planes, pre- and post-contrast media injection were acquired. The MR images revealed a focal expansion of the spinal cord from the C4 to C6 level, with slightly decreased signal intensity on the T1-weighted sequences, and markedly increased signal intensity on the T2-weighted sequences, seen mostly at the left half of the spinal cord. After an iv administration of a gadolinium, a mild inhomogeneous contrast enhancement was noted. Small disk hernias were also present at C4-C5, C5-C6 and C6-C7 levels, which could not be related to the signal abnormalities and the expansion of the spinal cord. The patient underwent a surgical resection of the lesion and the subsequent histological examination disclosed a Grade II astrocytoma.

Discussion:

The astrocytoma is the second most common type of glioma in the spinal cord and comprises approximately 40% of spinal cord gliomas. It is more frequent at the cervical and thoracic cord as opposed to the most common type of spinal cord gliomas, namely the ependymoma, which occurs more frequently at the lower parts of the spinal cord. They are more commonly seen in children; in adults, the peak age of incidence of astrocytomas is during the third and fourth decades of life. Typically, they produce a fusiform expansion of the spinal cord and they are usually eccentric and located posteriorly. The potential friability of the tumor often results in the formation of cysts (which are frequently eccentric, smaller, and irregular in shape when compared with benign cysts). The occurrence of syrinxes is also common, especially in pilocytic types. Albeit the frequent non-invasive nature of these lesions, they do not have a clear line of demarcation from the normal spinal cord. On T2-weighted MR images the lesion and the associated edema exhibit a high intensity signal whereas on T1 images the signal intensity may be slightly decreased or it may be indifferent from the normal cord's signal. In contrast to intracranial neoplasms, the vast majority of spinal cord neoplasms, including even low-grade forms, enhance at least to some degree after the administration of contrast material, but often, the margins of the lesion are poorly defined and irregular. In our case, the bulging of the spinal cord, the increased signal seen on T2-weighted images and the enhancement after contrast media administration were indicative of a neoplastic process. A differential diagnosis from ependymomas that may occasionally be located in the cervical spine is difficult to make based on the imaging criteria alone. Astrocytomas arise from the cord parenchyma and not from the central canal, as ependymomas do, and consequently they are usually (57% of cases) eccentric within the cord, although a significant number of ependymomas are eccentric too. In addition, ependymomas usually exhibit signal intensity, heterogeneity and occasionally, low signal intensity areas

on T2-weighted images due to the presence of hemosiderin, a finding that is not observed in astrocytomas.

Differential Diagnosis List: A Grade II astrocytoma of the cervical spine

Final Diagnosis: A Grade II astrocytoma of the cervical spine

References:

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Figure 1

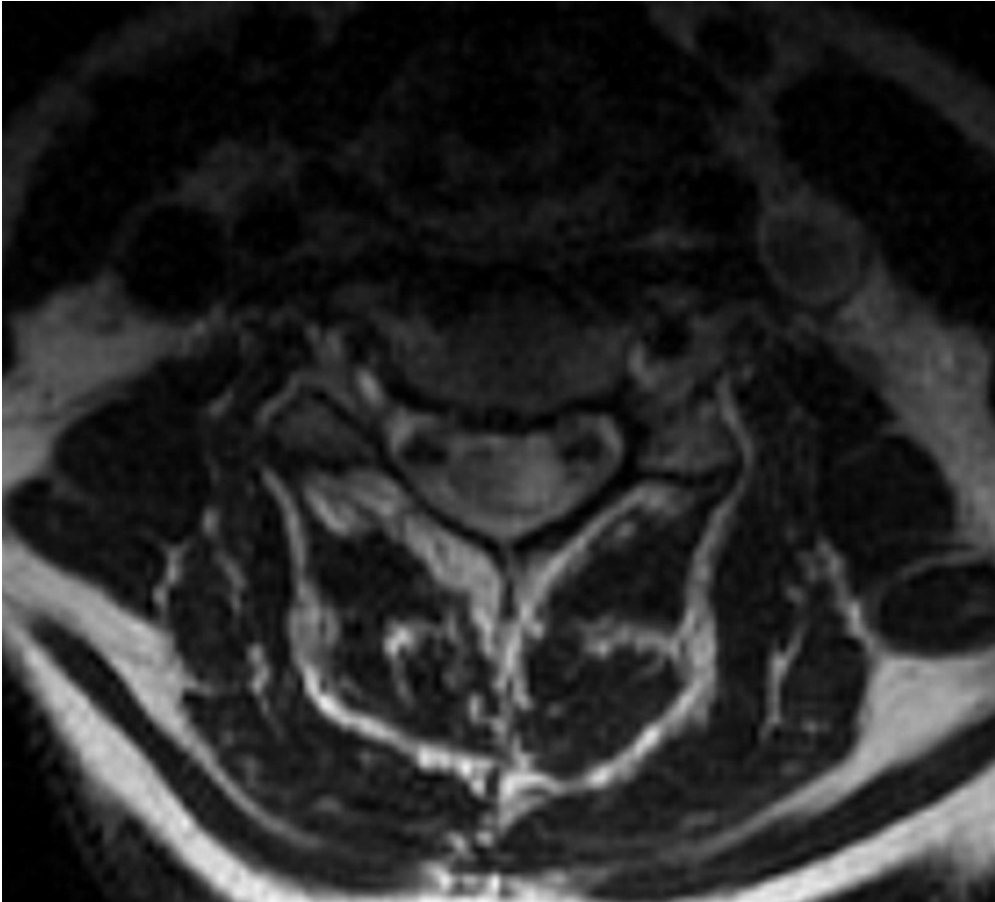
a



Description: T1 weighted images without contrast enhancement shows a small bulging of the spinal cord at C3-C4 level. There is also a slight lower signal in contrast to the **Origin:**

Figure 2

a



Description: Axial T2- Weighted images. There is increased signal intensity in the spinal cord, slightly off-midline to the left. **Origin:**

b



Description: In Sagittal T2 - Weighted Images the increased signal is located at C5-C6 level. **Origin:**

Figure 3

a



Description: T1-Weighted Images after gadolinium administration, shows enhancement in the location of spinal cord bulging and increased signal in T2-WI. **Origin:**