Case report

Spinal cord astrocytoma mimicking multifocal myelitis

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Introduction: Differential diagnosis of acute/subacute intrinsic spinal cord lesions can be challenging. In addition, intramedullary neoplasms typically show gadolinium enhancement, mass effect, and cord expansion. **Case report:** We report a patient with spinal cord and brain stem lesions resembling multifocal myelitis. Magnetic resonance imaging showed no spinal cord enlargement or gadolinium enhancing. Treatment of myelitis was undertaken without stopping the progression of the disease. Biopsy was made and led to a histological diagnosis of astrocytoma.

Discussion: Astrocytoma must remain as a possible diagnosis of spinal cord lesions, even without typical characteristics of neoplasms. Furthermore, biopsy should always be considered when diagnosis is uncertain.

Keywords: Non-enhancing spinal astrocytoma, Demyelinating diseases

Introduction

Differential diagnosis of acute/subacute intrinsic spinal cord lesions includes demyelinating, inflammatory or infectious diseases, and tumors. Despite the improvement of ancillary diagnostic techniques, including neuroimaging and serological testing, the correct diagnosis of acute and subacute myelopathy is challenging. In general, magnetic resonance imaging (MRI) findings of acute myelitis may be multifocal and/or longitudinally extensive, as in neuromyelitis optica, where hyperintensity in T2 weighted images characteristically spans over three or more contiguous vertebral segments.¹ On the other hand, intramedullary neoplasms typically show gadolinium enhancement, mass effect, and cord expansion.²

Case report

A 55-year-old male patient was admitted with left hand paresthesias, which in some weeks progressed to the ipsilateral hemibody, associated with left hemiparesis and sphincters involvement. He reported a recent onset of hiccups but denied visual disturbances. On neurological

examination, he presented a tetraparesis, predominantly on the left side, brisk osteotendinous reflexes in his left lower limb, left Babinski sign, painful hyperesthesia on the right side with a T5 sensory level, and the absence of deep sensation on the left side. MRI revealed two discrete lesions, one involving the medulla oblongata and upper cervical spinal cord, another the spinal cord at C7–T1 level, both hyperintense in T2, without cord enlargement and disclosing slight focal gadolinium enhancement (Fig. 1A–C). Brain MRI was otherwise normal. Lumbar puncture showed no cytochemical changes and cerebrospinal fluid was negative for the oligoclonal bands. Laboratorial screening, including autoantibodies for vasculitis and systemic infections, was unremarkable. Anti-aquaporine antibodies were negative. The patient went through two clinical non-successful cycles of methylprednisolone followed by plasmapheresis, admitting refractory myelitis. Three months later, MRI showed an extension of the upper lesion to the pons, and of the lower lesion to the upper thoracic spinal cord (Fig. 1D–F). A spinal cord biopsy at T3–T4 level revealed a pilocytic astrocytoma with moderate cellularity, slightly pleomorphic and with hyperchromatic nuclei, but without mitotic figures. The proliferative index, as measured by Ki67

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Figure 1 Brain and spinal MRI at admission. (A) T1, (B) T2, and (C) T1 with gadolinium MRI showed two discrete hyperintense lesions in the medulla and upper cervical spinal cord, and at C7–T1 level, without cord enlargement. Brain and spinal MRI 3 months later (D) T1, (E) T1 with gadolinium, and (F) T2 MRI showed an extension of the brainstem lesion to the pons (arrow) and down to the upper thoracic cord.

Figure 2 Neuropathological examination. (A) HE $\times 40$ – moderate cellularity, astrocyte elements with some pilocytic morphology, and slightly pleomorphic and hyperchromatic nuclei; (B) $\times 40$ – many neoplastic immunoreactive Ki67 nuclei; (C) BL $\times 40$ – the absence of axon and myelin in the lesional core; (D) $\times 40$ – GFAP immunoreactive neoplastic astrocytic elements.

immunoreactivity, was around 5% (Fig. 2). The patient went through standard radiation treatment but died 3 months later from progression of the disease.

Discussion

We report a rare case of multifocal but non-expansive spinal cord astrocytoma, mimicking myelitis at presentation. The largest case-series of MRI-non-enhancing intrinsic spinal cord tumors showed that the majority (10 out of 11) were astrocytomas.³ However, non-enhancing intramedullary astrocytomas usually demonstrate prominent mass effect or cord expansion, thus meeting the criteria for a neoplasm.² Early management of intrinsic spinal cord lesions remains based in clinical–radiological findings and consists of corticosteroids at high dosages for most patients, although additional treatments, such as plasmapheresis, may be appropriate. It may happen that positron emission tomography scan may help to identify a tumor, especially in malignant cases.⁴ In the event of an inadequate response to treatment, or a subsequent atypical course, early biopsy

must be considered.⁵ This case of multifocal but not expansive spinal cord astrocytoma reinforces the importance of spinal cord biopsy in lesions that do not improve, or progress 3–4 weeks after the onset of symptoms. Although uncommon, astrocytoma must remain in the differential diagnosis of non-enhancing intramedullary lesions.

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