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Relato de caso

Symptomatic spinal cord metastasis of glioblastoma multiforme

Metástase espinhal sintomática de glioblastoma multiforme

Emerson Magno F. de Andrade[1,2]
Sérgio de Freitas[2]
Antônio Carlos Montanaro[1,2]

RESUMO

Metástases espinhais sintomáticas de glioblastoma multiforme são raramente descritas na literatura. Relatamos o caso de um paciente de 27 anos que apresentou quadro de dor lombar e em membros inferiores bilateralmente nove meses após diagnóstico de GBM intracraniano. Exame de ressonância magnética da coluna lombar mostrou tumor em L1-L2 que foi removido com sucesso, e análise anatomopatológico foi consistente com metástase de GBM. Metástase espinhal deve ser investigada e incluída no diagnóstico diferencial de paciente com história prévia de GBM intracraniano e queixa de sintomas espinhais.

Palavras Chave: *glioblastoma multiforme, metástase espinhal sintomática, região lombar.*

ABSTRACT

Symptomatic spinal cord metastasis from glioblastoma multiforme (GBM) has rarely been reported in the literature. We report the case of a 27-year-old man that presented with back and bilateral leg pain nine months after the primary diagnosis of intracranial GBM. A magnetic resonance imaging (MRI) of the lumbar spine showed a L1-L2 tumor that was removed successfully and histopathological examination was consistent with GBM metastasis. Spinal metastasis should be investigated and included in the differential diagnosis if a patient with a previous history of intracranial GBM presents with spinal symptoms.

Key Words: *glioblastoma multiforme, symptomatic spinal metastasis, lumbar region.*

1. Division of Neurosurgery, Beneficência Portuguesa de São Paulo, Brazil.
2. Division of Neurosurgery, Hospital Municipal Dr. Arthur Ribeiro de Saboya, São Paulo, Brazil.

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Introduction

Glioblastoma multiforme is the most frequent primary brain tumor in adults, representing near 15-20% of all intracranial neoplasms and 50% of astrocytomas. There is a male predominance and the peak age is 45 to 60 years. Despite advances in early diagnostic imaging, microsurgical techniques and complementary therapies, patients with GBM have a median survival of 12 months[12]. Symptomatic spinal cord metastasis from brain GBM is a rare finding due the fast progression of this neoplasm and given that subarachnoid dissemination usually occurs lately[14]. We report on a rare case of symptomatic GBM metastasis to the spine and discuss the presentation of symptoms, mechanism of metastasis and treatment options.

Case Report

A 27-year-old man was admitted to the hospital complaining of headache. A computed tomography (CT) and contrast-enhanced MRI revealed a 3 cm mass lesion located in the right frontal lobe. A partial surgical resection was performed and histopathological studies showed glioblastoma multiforme (WHO grade 4). Postoperatively, irradiation of the whole brain was started and he received temozolamide as concurrent chemotherapy. Six months after surgery, he was admitted to the emergency room with a history of seizure and nausea. CT and MRI demonstrated an enlargement of the tumor and significant midline shift. A gross total resection was performed and the patient evolved with good neurological condition. Nine months after the primary diagnosis, the patient returns to the emergency room complaining of back pain with severe and persistent bilateral leg pain, that progressively got worse and urinary dysfunction. Physical examination revealed decreased pinprick sensation and numbness over both lateral legs. The patient was evaluated as having a possible herniated nucleus pulposus or spinal stenosis, but lumbar MRI revealed a contrast-enhancing intradural extramedullary mass at the level of the L1-L2 vertebral body. The lesion measured 2,7 cm in its craniocaudal dimension with an anteroposterior dimension of 1,5 cm (Fig. 1 e 2). The patient underwent a L1-L2 laminectomy with microsurgical resection of the tumor (Fig. 3). Microscopic examination showed that the tumor compressed the nerve roots of the cauda equina that was dislocated anteriorly. Histopathological and immunohistochemical examination was consistent with GBM (Fig. 4). Significant relief of pain and improvement of urinary dysfunction was observed in postoperative period.

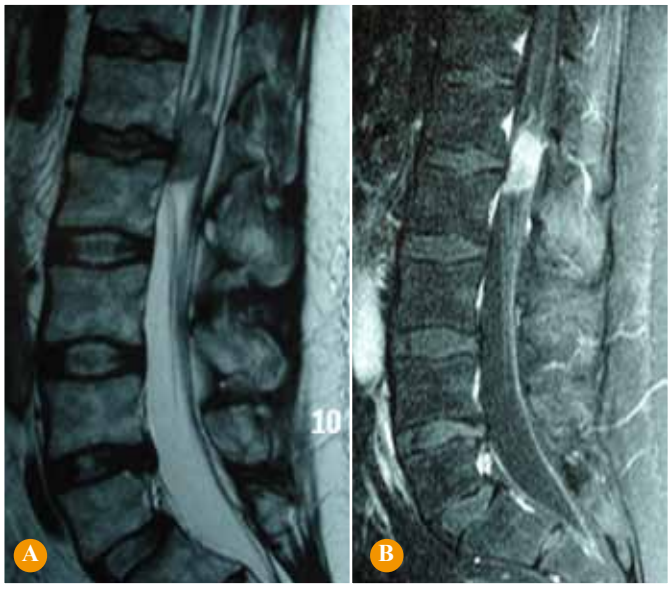

Figure 1 – Sagittal unenhanced (A) and contrast-enhanced (B) T1-weighted MRI of the spine demonstrating an intradural extramedullar mass at the level of the L1-L2 vertebral body.

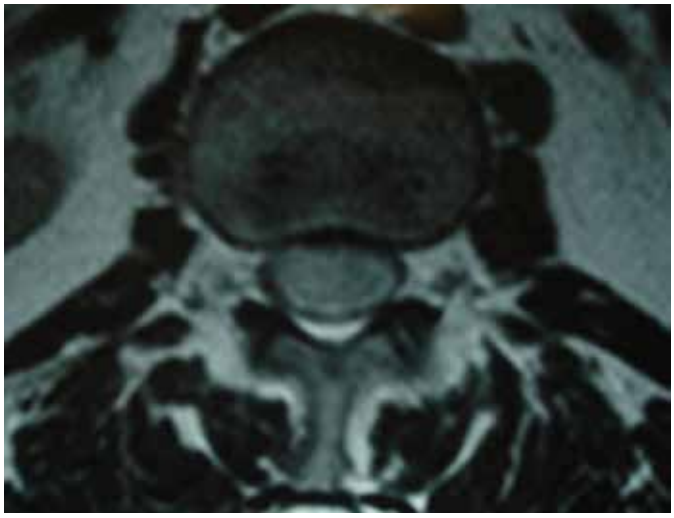

Figure 2 – Axial T1-weighted MR images at the level of the L1-L2 revealing intradural tumor.

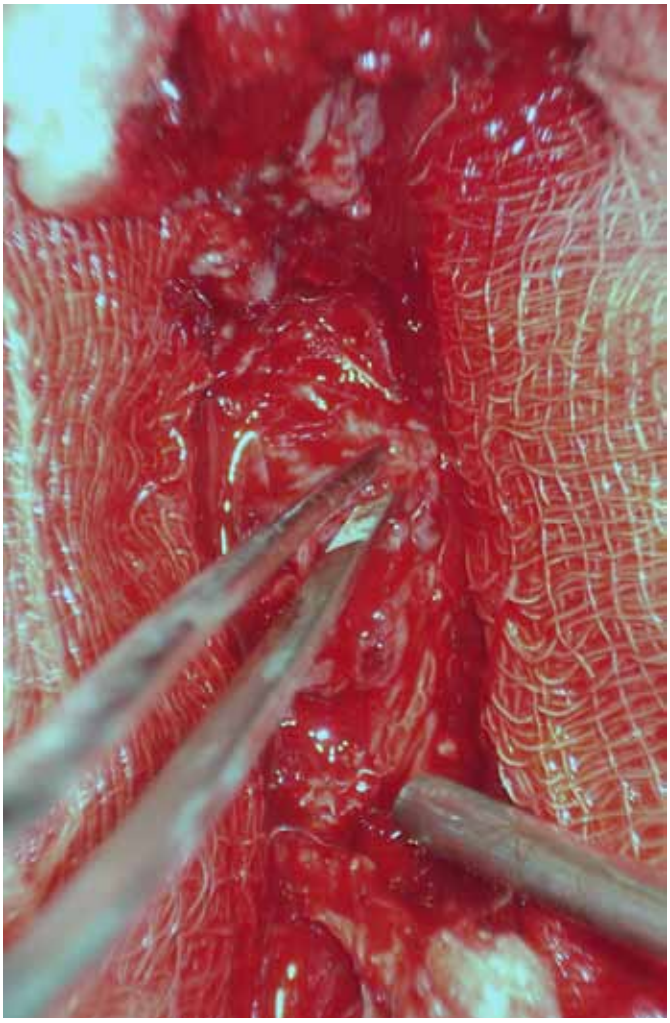

Figure 3 – Intraoperative view through laminectomy demonstrating biopsy of the exposed lumbar spinal cord.

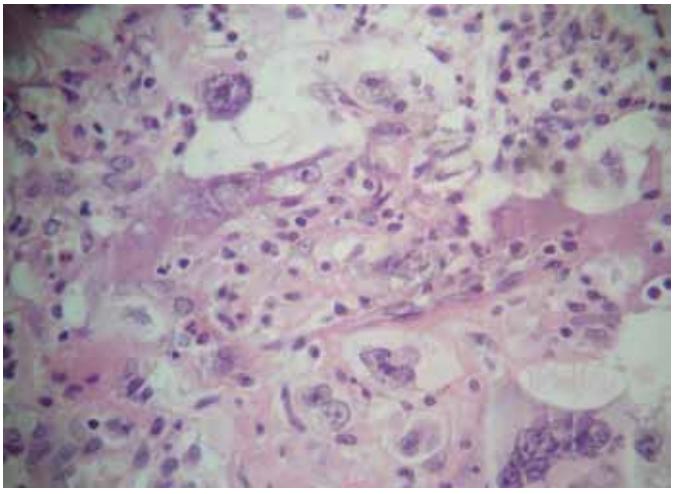

Figure 4 - Photomicrograph of the spinal GBM biopsy specimen showing atypical mitosis and nuclear pleomorphism. H & E, X 100.

Discussion

Spinal glioblastoma metastasis can be found often in postmortem studies, but symptomatic cases like the one reported is rare in the literature. Autopsy series reveal an intramedullary and leptomeningeal metastasis incidence of up to 20% in cases of intracranial GBM[14]. The rate of symptomatic spinal metastases was about 2% in a large series with 600 patients with GBM10, and a single institution study report only 1.1% of 267 patients harboring a glioblastoma presenting with spinal metastasis[12].

A recent meta-analysis revealed 19 cases of adult patients with previous diagnosis of intracranial glioblastoma harboring a symptomatic spinal metastasis: in this review, symptomatic spinal metastasis were leptomeningeal in 66,7% of the cases. The mean age at time of diagnosis was 45 years, considerably younger than the mean age of presentation described in literature for intracranial GBM[5].

The lumbosacral spine is the most common site for glioblastoma spinal metastasis, followed by thoracic and cervical region[5]. This may reflect the effects of gravity and the natural flow of cerebrospinal fluid (CSF)[1].

Controversy in the literature exists, regarding the origin of spinal metastasis. There are fewer articles reporting spinal metastasis in patients without previous brain surgery or radiation therapy[6,8] compared to a number of cases describing patients with spinal metastasis after cranial operation or irradiation. This supports the thesis that surgical manipulation or radiation therapy can alter the blood-brain barrier and spread the tumor cells by hematogenous dissemination and directly through the subarachnoid space[8,14]. However, another study shows that the contact of the intracranial tumor with the CSF due to opening of the ventricles during surgery or due to the primary tumor location seems not to be a precondition for dissemination of the gliomas[3].

The extended survival time due to advances in the treatment of gliomas and the modern diagnostic techniques increased the report of symptomatic metastasis cases of intracranial gliomas. Spinal leptomeningeal metastasis produce a constellation of symptoms. These may include focal back pain, radicular pain, numbness, paraparesis, tetraparesis, sphincter dysfunction, and others symptoms referable to the intracranial tumors such headache, seizures and nausea. Awareness of this symptomatology is important to neurosurgeons, oncologist and clinicians who treat high grade gliomas[4,5,8].

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In brazilian literature there are very few publications concerning spinal cord metastatic glioblastoma multiforme. We only found a single case describing an eleven years-old girl with a right temporo-parietal glioblastoma multiforme with metastasis to the caudal portion of the spinal canal after cranial resection and radiotherapy[7]. Another case reported a lumbar vertebral metastasis presenting with back pain in a patient harboring a right cerebral glioblastoma[9].

Considering that the treatment goal is not cure, radiotherapy is usually the treatment modality of choice . Surgical decompression is not considered as a first treatment option since it is not superior in improving quality of life compared to other treatment modalities[2,4,13]. The advantage of surgical resection is the possibility of hystopathological examination in the lack of previous craniotomy and unknown primary brain tumor, and also to achieve rapid pain control by decompression[13].

Stereotactic radiosurgery (SRS) can be an effective option in the treatment of spinal metastases and reduction of local pain. In the SRS a target is localized using three-dimensional image guidance and a high-energy radiation dose is delivered, minimizing the damage to the spine and surrounding structures. Some series report a pain relief in near 90% of patients after treatment. Compared with open surgery, it has the advantage of lower cost and less postoperative complications[2,11].

In conclusion, spinal metastasis should be investigated and included in the differential diagnosis if a patient with a previous history of intracranial GBM presents with radicular and/or back pain and others spinal symptoms.

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Autor Correspondente

Emerson Magno F. de Andrade
Av. Umbuzeiro, 1287 / 302, Manaíra
CEP: 58038-182 João Pessoa-PB
E-mail: emersonmagno@hotmail.com