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Pace A, Villani V

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Extra-Cranial Metastases from Glioblastoma Multiforme

Andrea Pace, Veronica Villani

Neurology Unit, National Cancer Institute Regina Elena, Rome, Italy

Introduction

Clinically detected extra-cranial metastases from glioblastoma multiforme (GBM) are quite rare, with an incidence of < 1 % reported in the published literature. Among the various reported sites of systemic metastases from GBM, there are few cases of clinically symptomatic bone marrow metastasis. Haematogenous metastases may occur in the bone with the vertebrae being the most common site of bony involvement. Extra-vertebral metastases from GBM are extremely rare.

Case Report

A 26-year-old woman complained of progressive headache over a period of 2 months. A contrast-enhanced MRI of the brain was performed, showing a heterogeneously enhancing

lesion in the right temporal lobe. In December 2010, she was operated for a right parieto-temporal lesion. Histology revealed a glioblastoma with no MGMT methylation and no IDH1 mutation. In January 2011, a post-operative brain MRI showed a gross total removal.

She was treated with radiotherapy and concomitant temozolomide and with adjuvant temozolomide with standard schedule for 9 cycles. At the end of treatment she presented no evidence of disease.

In November 2011, she complained of low back pain and gait disturbances. An MRI of the spine showed multiple vertebral body alterations and the presence of periradicular tissue at the lumbo-sacral level (Figures 1 and 2). At the cervical level, the MRI showed mild leptomeningeal enhancement (Figure 3).

Clinical examination showed no clinical sign of meningeal carcinomatosis.

A radionuclide bone scan performed 2 weeks later demonstrated extensive skeletal lesions (Figure 4). A brain MRI showed no signs of brain recurrence. The patient was submitted to lumbo-sacral biopsy and bone tissue needle aspiration which yielded the diagnosis “diffuse extra-cranial bone metastases from glioblastoma.” The histology documented metastases by glioblastoma multiforme and the immunohis-



Figure 1. Spine T1-weighted MRI image fat-sat showing a diffuse signal alteration in the vertebral bodies plus the presence of tissue at the lumbo-sacral level.

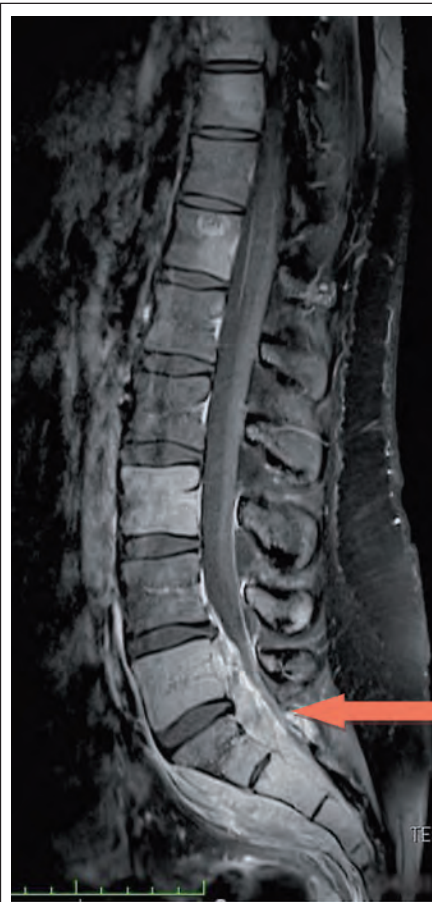


Figure 2. Spine T1-weighted MRI image with gadolinium. The red arrow indicates the epidural tissue in the epidural space at the lumbo-sacral level.



Figure 3. Cervical spine T1-weighted MRI image with gadolinium showing a mild leptomeningeal enhancement.

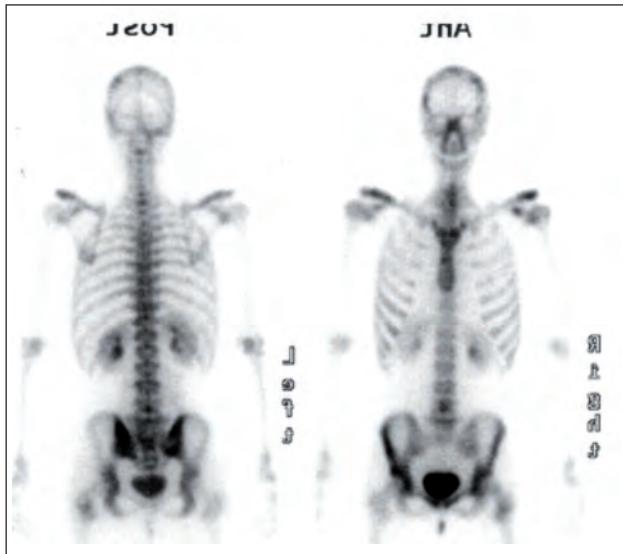


Figure 4. Radionuclide scan showing extensive skeletal involvement with diffuse vertebral and iliac bilateral localizations.

tochemistry of the lesion (immunoperoxidase preparation) was positive for glial fibrillary acidic protein (GFAP).

At present, the patient is being treated with fotemustine chemotherapy.

■ Comment

In the present case, the patient was initially thought to have another malignancy causing the diffuse distribution of bone metastases (vertebral, sacral, and iliac bones) and the lack of

signs of brain relapse. However, histopathologic confirmation obtained with biopsy revealed highly cellular pleomorphic cells similar to those seen in the primary cerebral glioblastoma multiforme. Therefore, the extensive bone lesions were accepted as extra-neural metastases of GBM and the patient was treated accordingly. The presence of sub-clinical leptomeningeal involvement, however, may explain the vertebral bone diffusion but not the extra-vertebral bone metastases.

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Correspondence to:

Andrea Pace, MD
 Neurology Unit
 National Cancer Institute Regina Elena
 Via Elio Chianesi, 53
 00144 Rome
 Italy
 e-mail: pace@ifp.it