

Extracranial Metastasis Of Glioblastoma Multiforme Confirmed By Ct Scan Guide Biopsy: Case Report And Review Of The Literature

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Citation

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Abstract

We herein give report of a patient with vertebral metastasis from a right temporal glioblastoma (GBM) eleven months after surgery and combined radio and chemotherapy. Computed tomography (CT) and Magnetic resonance imaging (MRI) of the lumbar spine depicted a lytic lesion at L4 vertebral body. A CT scan biopsy was undertaken and immunohistochemical analysis confirmed a metastasis of GBM. In patients with malignant glioma and lower-back pain, bone metastasis, although uncommon, does occasionally occur and its possibility should be investigated.

INTRODUCTION

Extracranial metastases from glioblastoma multiforme (GBM) are rare, with a reported frequency of only 0.44%, occurring in lymph nodes, lungs and pleura, with bone and liver metastases being even rarer [1, 2]. We herein give report of a vertebral metastasis from GBM diagnosed by computed tomography (CT)-guided biopsy and discuss possible mechanism for metastasis.

CASE REPORT

A 42-year-old male was presented to the neurosurgery outpatient clinic due to progressive low back pain, not relieved by administration of standard pain-killing drugs. Palpation of the lower lumbar region induced pain. Neurological examination revealed a left-sided paresis. No other neurological deficits were evident. The patient had been operated to a right-sided temporal GBM eleven months prior to this episode, with macroscopic total resection of the mass. He then received whole-brain radiation and systemic chemotherapy. During this time no local recurrence was noted.

Investigation included a computed tomography (CT) and magnetic resonance scan (MRI) of the lumbar spine, disclosing a lytic lesion at L4 vertebral body. Prevertebral and epidural masses were present as well. There was no disc involvement (fig. I and II).

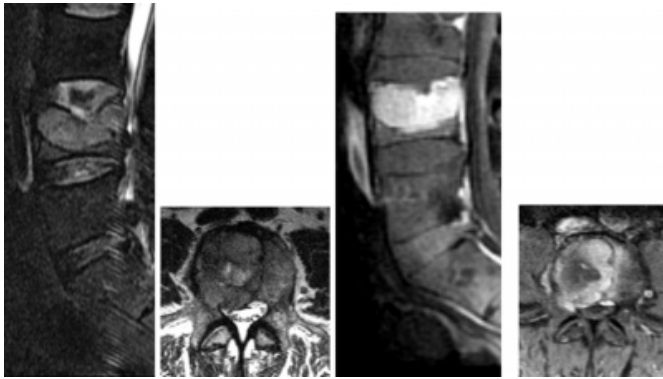
Figure 1

Figure 1: CT: Lytic lesion involving the fourth lumbar vertebral.



Figure 2

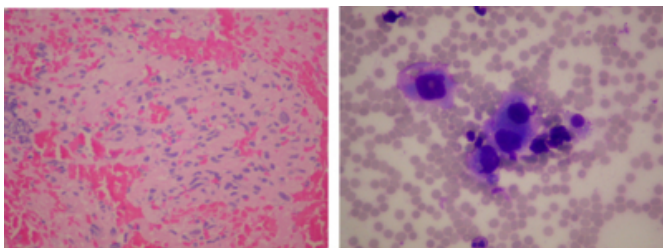
Figure 2: MRI : Sagittal short tau inversion recovery (STIR). Axial T2 weighted images (T2WI). Sagittal and axial postcontrast T1 weighted images (T1WI): lesion involving the vertebral body and posterior elements of the fourth lumbar vertebra, hypointense on T1WI and hyperintense on T2 and STIR, with strong enhancement after administration of gadolinium. Presence of prevertebral and right epidural soft tissue masses. Intervertebral disc spared.



A fine needle aspiration and microbiopsy were performed under CT scan was undertaken. Fragment histological examination including immunohistochemical analysis demonstrated cells immunoreactivity to vimentin, S100 protein, epithelial membrane antigen (EMA) and glial fibrillary acidic protein (GFAP) with negative mesenchymal, epithelial and neuronal markers allowing us to make the diagnosis of metastasis of GBM (fig. III).

Figure 3

Figure 3: Immunohistochemical analysis: expression of vimentin, S100 protein, epithelial membrane antigen (EMA) and glial fibrillary acidic protein (GFAP). Mesenchymal, epithelial and neuronal markers were negative.



DISCUSSION

Metastases of GBM outside the central nervous system are rare with the most preferable locations being regional lymph nodes, lungs and pleura, bone and liver. Vertebrae are the most preferable site for bone metastases [3, 4, 5, 6, 7].

Its incidence may be increasing as longer survival rates are achieved due to improvement in the treatment of Gliomas [3,

4].

Most of the reported cases associated with extracranial GBM metastases occurred in patients who had had previous surgery or benefited from ventriculoperitoneal shunting, stereotactic biopsy or interstitial brachytherapy [3, 4, 5, 8].

Although the exact physiopathology is still not completely elucidated there is evidence that manipulation of the duramater allows neoplastic cells to gain access to extraneural tissues through dural vessels and hence create the conditions of extraneural GBM metastases to occur. [8] Nevertheless this mechanism does not explain those cases where surgery or other dural manipulation has not taken place.

In our case a possible pathway for the neoplastic cells to spread outside CNS could be the anastomoses between the cerebral dural venous sinuses and the vertebral venous plexus [9, 10].

CT-guided biopsy proved to be an invaluable tool in the workout investigation of this case as it allowed us to establish the diagnosis through histological analysis.

CONCLUSION

Clinicians should be aware of the fact that as patients with GBM are expected to live longer due to the improvement in therapeutic options they are at increased risk of developing extraneural metastases.

Back pain refractory to oral analgesics can be the sole manifestation of secondary extrameningeal malignancy.

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