



# Presumed Glioblastoma Multiforme: A Case for Biopsy Prior to Treatment

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Glioblastoma multiforme (GBM) is the most lethal and aggressive primary brain tumor. Several other abnormalities (neoplastic, infectious, or vascular) can mimic symptoms seen with GBM. This article reviews GBM and presents a case study that demonstrates the rationale for biopsy and pathologic diagnosis prior to the initiation of treatment for malignant brain tumors.

## At a Glance

- Many conditions present as clinical mimics of glioblastoma multiforme.
- Surgical intervention allows for biopsy, which permits accurate clinical diagnosis and possible debulking of tumor mass.
- Pathologic diagnosis enables safe and effective treatment decisions and planning.

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**G**lioblastoma multiforme (GBM) is the most common, aggressive, and difficult to treat primary brain tumor in adults. It accounts for about 50% of all primary adult malignant brain tumors. More than 23,000 cases are diagnosed annually in the United States (Ohagaki & Kleihues, 2005) with a mean survival of 12–24 months and little improvement in survival times despite treatment (Kumar, Abbas, & Fausto, 2004). Treatment issues include the relative inability of chemotherapy to cross the blood–brain barrier (BBB), avoidance of damage to non-regenerating neurons while causing damage to malignant regenerating astrocytes, and the likelihood of several different molecular signatures within the broad class of GBM (Chamberlain, Glantz, Chalmers, Van Horn, & Sloan,

2006; Dall’oglio et al., 2008; Mason, Mirmanoff, & Stupp, 2006).

Diagnostic biopsy and maximal safe resection are recommended prior to treatment planning (National Comprehensive Cancer Network, 2015). Some community clinical practices start treatment based on radiographic data without pathologic confirmation. Avoiding surgery and biopsy has been seen as beneficial if the presumption is that surgery will be debilitating, futile, or result in prolonged convalescence. Some clinicians have suggested that surgery is not indicated with a presumed terminal diagnosis because the treatment would not change. This case study presents compelling evidence for biopsy to confirm the diagnosis prior to initiating treatment for brain tumors.

## Case Study

C.C. is a 71-year-old right-handed retired man who was in good health until four weeks prior to evaluation. He had noted difficulty reading and an inability to see letters on the left side of the page. An ophthalmologic examination revealed a left homonymous hemianopsia, a visual defect involving visual loss on the same side of both eyes. Magnetic resonance imaging (MRI) revealed a contrast enhancing right occipital lesion with significant vasogenic edema. C.C. was started on dexamethasone 4 mg orally three times a day and referred to a neurosurgeon. His prior medical history was negative. A review of systems was negative with the exception of visual changes. C.C. is retired and widowed, and he is living with a female partner. He did not have a history of smoking or of drug use or abuse. He reported no recent foreign travel. On physical examination, he had left homonymous hemianopsia on gross confrontation. The differential diagnosis included primary brain tumor, metastatic brain tumor, and intracranial abscess.

A computed tomography scan of C.C.’s chest, abdomen, and pelvis revealed no radiographic evidence of primary cancer. Based on his age, presentation, MRI characteristics, and absence of obvious systemic neoplasm, primary brain tumor was the most likely diagnosis. The plan was to perform biopsy immediately, followed by maximal safe tumor resection, if indicated, during the initial surgery.

## Epidemiology

The incidence of gliomas, like many cancers, is associated with aging; this diagnosis occurs more often in older