

Journal Article



FDG-PET to predict different patterns of progression in multicentric glioblastoma: a case report

Journal	Journal of Neuro-Oncology
Publisher	Springer Netherlands
ISSN	0167-594X (Print) 1573-7373 (Online)
Category	Clinical-Patient Studies
DOI	10.1007/s11060-008-9629-y
Subject Collection	Medicine
SpringerLink Date	Saturday, June 21, 2008


 PDF (246.5 KB)
  HTML

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Received: 10 February 2008 **Accepted:** 4 June 2008 **Published online:** 21 June 2008

Abstract True multicentric glioblastoma multiforme (GBM) is rare and consists of separate distinct tumors in different cerebral lobes or hemispheres without any apparent route of dissemination. Few data are available describing its imaging using positron emission tomography (PET) with [18F]-fluoro-2-deoxy-D-glucose (FDG). In this paper, we report on the case of a man with bifocal tumor in the right frontal and temporal lobes who underwent FDG-PET imaging. Visual and semiquantitative analysis showed two different metabolic patterns with much more intense uptake in the smaller temporal lesion. Subtotal surgical removal of the main frontal lesion allowed satisfactory control in the operative site, whereas the temporal lesion was rapidly progressive with occurrence of necrosis, which led to a second neurosurgery. The diagnosis of glioblastoma was confirmed by neuropathological examination in both cases but with much higher immunohistochemical expression of O⁶-methylguanine-DNA-methyltransferase (MGMT) in the temporal lesion. This report illustrates the potential interest of FDG-PET in multicentric GBMs to identify different metabolic patterns, in accordance with clinical, morphological, and molecular aggressiveness.

Keywords Brain tumor - Fluorodeoxyglucose F18 - Glioblastoma multiforme - Multicentric gliomas - Positron emission tomography

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