Glioblastoma: From Molecular Pathology to Targeted Treatment.
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Abstract
Glioblastoma (GBM) is one of the most lethal human cancers. Genomic analyses are defining the molecular architecture of GBM, uncovering relevant subsets of patients whose disease may require different treatments. Many pharmacological targets have been revealed, promising to transform patient care through targeted therapies. However, for most patients, clinical responses to targeted inhibitors are either not apparent or not durable. In this review, we address the challenge of developing more effective, molecularly guided approaches for the treatment of GBM patients. We summarize the current state of knowledge regarding molecular classifiers and examine their benefit for stratifying patients for treatment. We survey the molecular landscape of the disease, discussing the challenges raised by acquired drug resistance. Furthermore, we analyze the biochemical features of GBM, suggesting a next generation of drug targets, and we examine the contribution of tumor heterogeneity and its implications. We conclude with an analysis of the experimental approaches and their potential benefit to patients. Expected final online publication date for the Annual Review of Pathology: Mechanisms of Disease Volume 9 is February 28, 2014. Please see http://www.annualreviews.org/catalog/pubdates.aspx for revised estimates.

PMID: 23937436 [PubMed - as supplied by publisher]