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Perspective

Should biomarkers be used to design personalized medicine for the treatment of glioblastoma?

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Significant progress has been made in understanding the molecular pathogenesis of gliomas and in predicting general outcome depending on a limited set of clinical parameters and molecular markers. However, methylation of the O⁶-methylguanine DNA methyltransferase (*MGMT*) gene promoter is the only molecular marker linked to sensitivity of a specific treatment, that is, alkylating agent chemotherapy, and this predictive value may be limited to glioblastoma. Moreover, in the absence of potent alternative drugs, temozolomide chemotherapy should not be withheld from patients with newly diagnosed glioblastoma without *MGMT* promoter methylation in general practice. In the context of clinical trials, however, irrespective of whether classical cytotoxic drugs, tyrosine kinase inhibitors or antiangiogenic agents are used, tissue should be centrally collected. Appropriate research programs should seek to define enriched patient populations for future trials and ultimately facilitate individualized cancer treatments.

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