Abstract

PURPOSE OF REVIEW: This review summarizes recent studies on the predictive value of molecular markers in adult gliomas, including 1p/19q codeletion, MGMT methylation, IDH mutation and markers identified using omics and next-generation sequencing studies.

RECENT FINDINGS: The long-term results of the Radiation Therapy Oncology Group and European Organization for Research and Treatment of Cancer trials in anaplastic oligodendroglial glioma have shown that the 1p/19q codeletion predicts an overall survival benefit from early PCV (procarbazine CCNU vincristine) chemotherapy. This benefit can also be predicted using gene expression-based molecular subtypes of gliomas while the predictive value of the IDH mutation in this context requires further study. In elderly patients with glioblastoma, the analysis of MGMT methylation status in two phase III trials suggests that this alteration may guide treatment decisions; however, this finding still needs confirmation in prospective studies. Omics and next-generation sequencing studies have identified additional potential predictive markers. In particular, IDH mutations, BRAF V600E mutations and FGFR gene fusions might predict efficacy of therapies targeted against these alterations.

SUMMARY: Currently, the 1p/19q codeletion is the only well established predictive marker with clinical utility. However, it is likely that other molecular markers such as MGMT methylation, IDH mutation and those identified using omics and next-generation sequencing studies will further guide treatment decisions in adult gliomas.

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