Role of MGMT Methylation Status at Time of Diagnosis and Recurrence for Patients with Glioblastoma: Clinical Implications.


Abstract

BACKGROUND: MGMT methylation status represents a powerful prognostic factor in newly diagnosed glioblastoma (GBM). Recently, its role in recurrent tumors has also been suggested; however, few data investigating the stability of this biomarker during the clinical course of the disease are available. In this study, we evaluated the rate of change of MGMT methylation status between diagnosis and first recurrence in patients who received tumor resection for recurrent GBM.

METHODS: We included patients who received temozolomide concurrent with and adjuvant to radiotherapy after diagnosis of GBM and had a second surgery performed at least 3 months after radiotherapy completion. Other eligibility criteria were age ≥18 years and Eastern Cooperative Oncology Group performance status 0-2. We evaluated the MGMT methylation status by methylation-specific polymerase chain reaction.

RESULTS: From our institutional data warehouse, 295 patients with recurrent GBM who underwent second surgery were evaluated. MGMT methylation status at both first and second surgery was available for 108 patients. MGMT was methylated in both surgeries in 38 patients (35.2%), while it was unmethylated in 43 patients (39.8%). We found a significant concordance between the first and the second MGMT methylation assessments (K = 0.500, p < .001), MGMT methylation being stable in 75% of the cases.

CONCLUSION: MGMT methylation presents relative stability during the clinical course of GBM. The Oncologist 2017;22:1-6

Implications for Practice: MGMT methylation is a prognostic factor in newly diagnosed glioblastoma. In this study, we evaluated the rate of change of MGMT methylation during the clinical course of the disease, and we found a significant concordance between the first and the second MGMT methylation assessments, with MGMT methylation being stable in 75% of the cases. Thus, re-testing this biomarker at recurrence does not provide further information for clinicians. MGMT methylation at first surgery, extent of resection at second surgery, and time between first and second surgery are significantly correlated with overall survival. Age and extent of resection are correlated with post-progression survival.
