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Recurrence pattern after temozolomide concomitant with and adjuvant to radiotherapy in newly diagnosed patients with glioblastoma: correlation With MGMT promoter methylation status.

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Abstract

PURPOSE: The aim of the present study was to evaluate factors predicting the recurrence pattern after the administration of temozolomide (TMZ), initially concurrent with radiotherapy (RT) and subsequently as maintenance therapy, which has become standard treatment for patients with newly diagnosed glioblastoma (GBM).

PATIENTS AND METHODS: Ninety-five patients with newly diagnosed GBM were treated with RT plus TMZ (75 mg/m²/d) followed by maintenance TMZ cycles (150 to 200 mg/m²) for 5 days every 28 days). Assessable MGMT methylation status and magnetic resonance imaging follow-up were mandatory in all cases.

RESULTS: After a median follow-up of 18.9 months (range, 6.6 to 44.8 months), 79 patients (83%) had recurrence: inside the RT field in 57 patients (72.2%), outside in 17 patients (21.5%), and at RT margin in five patients (6.3%). MGMT status was correlated with the site of recurrence, which occurred inside, or at the margin of, the RT field in 51 patients (85%) with MGMT unmethylated status and in 11 patients (57.9%) with MGMT methylated status ($P = .01$). Recurrences outside the RT field occurred after a longer time interval than those inside the RT field (14.9 v 9.2 months, $P = .02$).

CONCLUSION: After the administration of TMZ concomitant with and adjuvant to RT in patients with GBM, the pattern of, and time to, recurrence are strictly correlated with MGMT methylation status.

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