Methylation status of MGMT gene promoter in meningiomas

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Abstract

Meningiomas are usually cured by surgical resection. However, approximately 10% are characterized by more aggressive clinical behavior and higher risk of recurrence. Typically, recurrent meningiomas require further surgical resection followed, in some cases, by radiotherapy. To date, no chemotherapeutic agent has proven to be effective in either preventing or treating recurrence. The alkylating chemotherapeutic agent, Temozolomide (TMZ) has shown to increase overall survival in patients with glioblastoma (GBM) but its effectiveness for other types of brain tumor is less known. The clinical benefit of TMZ seems to be limited to those GBM tumors with promoter methylation of the MGMT gene. In this study, we assessed if a biologic rationale exists to support the use of TMZ as a treatment for meningiomas by assessing the MGMT promoter methylation status in these tumors using methylation specific PCR. We investigated the MGMT promoter methylation status in 36 tumors (32 newly diagnosed; 4 recurrent). Histologically, the majority were grade I. Patients were primarily female (64%) with a mean age of 52. None of the meningiomas in our series showed MGMT gene promoter methylation. Based on these data, we conclude that there is no biological rationale to suggest that TMZ might have significant anti-meningioma activity.