

# Survival in patients with newly diagnosed conventional glioblastoma: a modified prognostic score based on a single-institution series

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## ABSTRACT

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**Aims and background.** Recursive partitioning analysis (RPA) is commonly used to define the stratification of patients with glioblastoma. Epigenetic silencing of the O<sup>6</sup>-methylguanine methyltransferase (*MGMT*) gene by promoter methylation plays an important role in regulating *MGMT* expression in gliomas and this is an established independent prognostic factor. We tested a prognostic scoring system including all clinical variables used by RPA classification (age, ECOG performance status and type of surgery) and *MGMT* gene promoter methylation status.

**Methods.** Seventy-eight consecutive patients with newly diagnosed, histopathologically confirmed conventional glioblastoma were included. Information about *MGMT* promoter methylation status was available for all of them. Based on the patients' age (<50 *vs* ≥50 years), ECOG performance status (0 *vs* ≥1), type of surgery (gross tumor resection *versus* partial resection/biopsy) and *MGMT* promoter methylation status (methylated *versus* unmethylated), three classes of risk were generated where the prognostic score was defined assigning 1 point to every favorable parameter (Class I: ≥3; Class II: 2; Class III: 0-1). All classes were correlated with overall survival.

**Results.** The median survival times were 32.4, 8.6 and 8.8 months for Class I, II and III, respectively, corresponding to 2-year survival rates of 69%, 13.5% and <1%. The same analysis was performed on 54 patients treated with postoperative concomitant chemoradiotherapy. The median survival times were 32.5, 13.4 and 8.9 months for Class I, II and III, respectively, corresponding to 2-year survival rates of 68.6%, 26.9% and <1%. In both groups of 78 and 54 patients the differences in survival between Class I and III were statistically significant ( $P < 0.0001$ ).

**Conclusions.** The proposed prognostic scoring system including clinical variables and *MGMT* promoter methylation status proved valuable in patients with primary conventional glioblastoma, especially those treated with postoperative chemoradiotherapy.

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**Key words:** glioblastoma, *MGMT*, prognostic score, clinical variables, molecular variables.

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