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# Recursive partitioning analysis of prognostic factors in WHO grade III glioma patients treated with radiotherapy or radiotherapy plus chemotherapy.

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**ABSTRACT:** **BACKGROUND:** We evaluated the hierarchical risk groups for the estimated survival of WHO grade III glioma patients using recursive partitioning analysis (RPA). To our knowledge, this is the first study to address the results of RPA specifically for WHO grade III gliomas. **METHODS:** A total of 133 patients with anaplastic astrocytoma (AA, n=56), anaplastic oligodendroglioma (AO, n=67), or anaplastic oligoastrocytoma (AOA, n=10) were included in the study. These patients were treated with either radiotherapy alone or radiotherapy followed by PCV chemotherapy after surgery. Five prognostic factors, including histological subsets, age, performance status, extent of resection, and treatment modality were incorporated into the RPA. The final nodes of RPA were grouped according to their survival times, and the Kaplan-Meier graphs are presented as the final set of prognostic groups. **RESULTS:** Four risk groups were defined based on the clinical prognostic factors excluding age, and split variables were all incorporated into the RPA. Survival analysis showed significant differences in mean survival between the different groups: 163.4 months (95% CI: 144.9-182.0), 109.5 months (86.7-132.4), 66.6 months (50.8-82.4), and 27.7 months (16.3-39.0), respectively, from the lowest to the highest risk group (p=0.00). **CONCLUSIONS:** The present study shows that RPA grouping with clinical prognostic factors can successfully predict the survival of patients with WHO grade III glioma.

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