Short delay in initiation of radiotherapy for patients with glioblastoma—effect of concurrent chemotherapy: a secondary analysis from the NRG Oncology/Radiation Therapy Oncology Group (RTOG) database.


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BACKGROUND: We previously reported the unexpected finding of significantly improved survival for newly-diagnosed glioblastoma patients when radiation therapy (RT) was initiated later (>4 weeks post-op) compared to earlier (≤2 weeks post-op). In that analysis, data were analyzed from 2855 patients from 16 NRG Oncology/RTOG trials conducted prior to the era of concurrent temozolomide (TMZ) with RT. We now report on 1395 newly-diagnosed glioblastoma patients from two studies, treated with RT and concurrent TMZ followed by adjuvant TMZ. Our hypothesis was that concurrent TMZ has a synergistic/radiosensitizing mechanism, making RT timing less significant.

METHODS: Data from patients treated with TMZ-based chemo-radiation from NRG Oncology/RTOG 0525 and 0825 were analyzed. An analysis comparable to our prior study was performed to determine whether there was still an impact on survival by delaying RT. Overall survival (OS) was investigated using the Kaplan-Meier method and Cox proportional hazard model. Early progression (during time of diagnosis to 30 days after RT completion) was analyzed using the Chi-square test.

RESULTS: Given the small number of patients who started RT early following surgery, comparisons were made between >4 and ≤4 weeks delay of radiation from time of operation. There was no statistically significant difference in OS (HR=0.93; p-value=0.29; 95% CI: 0.80-1.07) after adjusting for known prognostic factors (RPA and MGMT methylation status). Similarly, the rate of early progression did not differ significantly (p-value=0.63).

CONCLUSIONS: We did not observe a significant prognostic influence of delaying radiation when given concurrently with TMZ for newly-diagnosed glioblastoma. The effects of early (1-3 weeks post-operatively) or late (>5 weeks) initiation of radiation tested in our prior study could not be replicated.

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