ABSTRACT

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High-dose salvage re-irradiation in recurrent/progressive adult diffuse gliomas: development of a novel prognostic scoring system.

Maitre M(1), Gupta T(2), Maitre P(1), Chatterjee A(1), Dasgupta A(1), Moiyadi A(3), Shetty P(3), Epari S(4), Sahay A(4), Patil V(5), Krishnatry R(1), Sastri GJ(1), Jalali R(1).

Author information:
(1)Department of Radiation Oncology, Advanced Centre for Treatment Research & Education in Cancer (ACTREC)/Tata Memorial Hospital (TMH), Homi Bhabha National Institute (HBNI), Mumbai, India.
(2)Department of Radiation Oncology, Advanced Centre for Treatment Research & Education in Cancer (ACTREC)/Tata Memorial Hospital (TMH), Homi Bhabha National Institute (HBNI), Mumbai, India. Electronic address: tejpalgupta@rediffmail.com.
(3)Department of Neuro-surgical Oncology, Advanced Centre for Treatment Research & Education in Cancer (ACTREC)/Tata Memorial Hospital (TMH), Homi Bhabha National Institute (HBNI), Mumbai, India.
(4)Department of Pathology, Advanced Centre for Treatment Research & Education in Cancer (ACTREC)/Tata Memorial Hospital (TMH), Homi Bhabha National Institute (HBNI), Mumbai, India.
(5)Department of Medical Oncology, Advanced Centre for Treatment Research & Education in Cancer (ACTREC)/Tata Memorial Hospital (TMH), Homi Bhabha National Institute (HBNI), Mumbai, India.

PURPOSE: Over the past two decades, high-dose salvage re-irradiation (re-RT) has been used increasingly in the multimodality management of adults with recurrent/progressive diffuse glioma. Several factors that determine outcomes following re-RT have been incorporated into prognostic models to guide patient selection. We aimed to develop a novel four-tiered prognostic model incorporating relevant molecular markers from our single-institutional cohort of patients treated with high-dose salvage re-RT for recurrent/progressive diffuse glioma.

MATERIAL AND METHODS: Various patient, disease, and treatment-related factors impacting upon survival following salvage re-RT were identified through univariate analysis. Each of these prognostic factors was further subdivided and assigned scores of 0 (low-risk), 1 (intermediate-risk), or 2 (high-risk). Scores from individual prognostic factors were added to derive the cumulative score (ranging from 0 to 16), with increasing scores indicating worsening prognosis.

RESULTS: A total of 111 adults with recurrent/progressive diffuse glioma treated with salvage high-dose re-RT were included. We could assign patients into four prognostic subgroups (A=15 patients, score 0-3); (B=50 patients, score 4-7); (C=33 patients, score 8-10); and (D=13 patients, score 11-16) with completely non-overlapping survival curves suggesting the good discriminatory ability. Post-re-RT survival was significantly higher in Group A compared to groups B, C, and D, respectively (stratified log-rank p-value <0.0001).

CONCLUSION: There exists a lack of universally acceptable 'standard-of-care' salvage therapy for recurrent/progressive diffuse glioma. A novel four-tiered prognostic scoring system incorporating traditional factors as well as relevant molecular markers is proposed for selecting patients appropriately for high-dose salvage re-RT that warrants validation in a non-overlapping cohort.

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