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RESEARCH ARTICLE

Hypofractionated re-irradiation for diffuse intrinsic pontine glioma

Nikhil P. Mankuzhy, Kathryn R. Tringale, Ira J. Dunkel, Sameer Farouk Sait, Mark M. Souweidane, Yasmin Khakoo, Matthias A. Karajannis, Suzanne Wolden

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Abstract

Background

Re-irradiation (reRT) increases survival in locally recurrent diffuse intrinsic pontine glioma (DIPG). There is no standard dose and fractionation for reRT, but conventional fractionation (CF) is typically used. We report our institutional experience of reRT for DIPG, which includes hypofractionation (HF).

Methods

We reviewed pediatric patients treated with brainstem reRT for DIPG at our institution from 2012 to 2022. Patients were grouped by HF or CF. Outcomes included steroid use, and overall survival (OS) was measured from both diagnosis and start of reRT.

Results

Of 22 patients who received reRT for DIPG, two did not complete their course due to clinical decline. Of the 20 who completed reRT, the dose was 20–30 Gy in 2-Gy fractions (n = 6) and 30–36 Gy in 3-Gy fractions (n = 14). Median age was 5 years (range: 3–14), median interval since initial RT was 8 months (range: 3–20), and 12 received concurrent bevacizumab. Median OS from diagnosis was 18 months [95% confidence interval: 17–24]. Median OS from start of reRT for HF versus CF was 8.2 and 7.5 months, respectively (p = .20). Thirteen (93%) in the HF group and three (75%) in the CF group tapered pre-treatment steroid dose down or off within 2 months after reRT due to clinical improvement. There was no significant difference in steroid taper between HF and CF (p = .4). No patients developed radionecrosis.

Conclusion

reRT with HF achieved survival duration comparable to published outcomes and effectively palliated symptoms. Future investigation of this regimen in the context of new systemic therapies and upfront HF is warranted.

CONFLICT OF INTEREST STATEMENT

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