Study on DPG treatment

Here is an annotated summary of the paper by Ghalibafian M, Mirzaei S, Sadeghi Y, Afsar N, Yeganeh SH, Tasbihi M, Ashrafi M, Lahijani NJ & Bouffet E titled *"Diffuse pontine glioma (DPG): shorter or longer treatment time?"* (J Neurooncol. 2025 Oct 24;176(1):40. doi:10.1007/s11060-025-05308-2. PMID: 41134453). PubMed +1

Study overview

- The authors retrospectively reviewed a cohort of children with presumed Diffuse Intrinsic Pontine Glioma (DIPG) treated at the MAHAK Pediatric Cancer Treatment and Research Center in Tehran between April 2010 and February 2020. scienceopen.com +1
- Diagnosis was based on clinical and MRI criteria; biopsy was *not* mandatory. PubMed
- The key focus: comparing **normal-fractionation radiotherapy** (50-54 Gy in ~30 fractions) vs a **hypofractionated radiotherapy (HR)** schedule (shorter overall treatment time) in this setting. PubMed +1
- They also attempted to identify prognostic risk-factors and propose a scoring system to guide treatment fractionation decisions. PubMed

Key findings

- Total sample: 108 patients identified; of these 34 (32 %) underwent biopsy; among biopsied cases 18/34 (53 %) had high-grade glioma or glioblastoma. PubMed
- H3K27M mutation status was available only in 2 patients; most were *not* evaluated for that marker. PubMed
- Fractionation groups: 31 patients (29 %) received 50-54 Gy with conventional fractionation; the remainder (≈ 79 patients) received hypofractionated RT. PubMed
- Median overall survival (OS) for the entire cohort: 9.6 months (range 1 – 67 months). PubMed
- There was **no statistically significant difference** in OS between the normal-fractionation vs hypofractionated RT groups. PubMed
- Chemotherapy (given to 78/108, ~72 %) did *not* show survival benefit in this cohort. PubMed
- Eleven patients received re-irradiation at progression, with a post-progression survival (PPS) of ~6 months. PubMed

Prognostic factors & proposed scoring

- Poor-risk features identified (statistically significant, $p < 0.05$) included:
    - Age > 4 years
    - Symptom duration < 3 months (i.e., rapid onset)
    - Presence of the classical triad (cranial nerve palsy + long tract signs + cerebellar signs) simultaneously
    - Absence of hydrocephalus at diagnosis PubMed
- The authors suggest that, given the short life-expectancy in high-risk patients, a hypofractionated RT schedule may be preferable (to shorten treatment time, fewer hospital visits, cost-saving) especially in low-/middle-income countries (LMICs) where resources are constrained. PubMed

Interpretation & implications

- The lack of OS difference suggests that shortening RT (hypofractionation) *may be clinically acceptable* in DIPG in settings where resources or patient tolerance limit prolonged treatment.
- For patients with high-risk features (as above), the benefit of a shorter schedule is particularly argued (less burden, fewer visits) though not proven to give superior survival.
- The authors emphasise that fractionation choice might thus be adapted according to prognostic scoring, rather than a “one size fits all” 30-fraction schedule.
- Limitations: retrospective design, single-centre, limited molecular data (H3K27M only in 2 patients), potential selection bias, heterogeneity in treatments.

My commentary (for your neuro-oncology / paediatric BBB-delivery interest)

- While the study doesn’t directly involve drug-delivery or BBB issues, the findings *do* influence treatment burden and logistics in DIPG — shorter RT schedules may allow faster transition to novel protocols, trials, or drug-based therapies (including those targeting the BBB) in paediatric neuro-oncology.
- The identification of a scoring system to stratify risk could be helpful when considering experimental therapies (e.g., BBB-penetrant agents) and planning design of future trials: high-risk patients may warrant earlier or more aggressive experimental therapy.

- For LMIC settings, this data provides support that choosing shorter RT is not clearly inferior in terms of survival — which may free up clinical capacity for other interventions (e.g., drug-delivery research, convection-enhanced delivery, immunotherapy) and reduce delays and burden on children/families.

Reference

Ghalibafian M, Mirzaei S, Sadeghi Y, Afsar N, Yeganeh SH, Tasbihi M, Ashrafi M, Lahijani NJ, Bouffet E. Diffuse pontine glioma (DPG): shorter or longer treatment time? *J Neurooncol.* 2025 Oct 24;176(1):40. doi:10.1007/s11060-025-05308-2. PMID: 41134453. PubMed +1