ABSTRACT

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Craniospinal irradiation as part of re-irradiation for children with recurrent medulloblastoma.

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BACKGROUND: Many studies have demonstrated in the last years that once medulloblastoma has recurred, the probability of regaining tumor control is poor despite salvage therapy. Although re-irradiation has an emerging role in other relapsed brain tumors, there is a lack of strong data on re-irradiation for medulloblastoma.

METHODS: This is a retrospective cohort study of patients aged 18 years or under, treated at least by a second course of external beam for recurrence medulloblastoma at Garrahan Hospital between 2009 and 2020. Twenty-four patients met eligibility criteria for inclusion. All patients received upfront radiotherapy as part of the curative-intent first radiotherapy, either craniospinal irradiation (CSI) followed by posterior fossa boost in 20 patients or focal posterior fossa radiation in 4 infants. The second course of radiation consisted of CSI in 15 and focal in 9. The 3-year post first failure OS (50% vs. 0%; $p = 0.0010$) was significantly better for children who received re-CSI compared to children who received focal re-irradiation. Similarly, the 3-year post-re-RT PFS (31% vs. 0%; $p = 0.0005$) and OS (25% vs. 0%; $p = 0.0003$) was significantly improved for patients who received re-CSI compared to patients who received focal re-irradiation. No symptomatic intratumoral haemorrhagic events or symptomatic radionecrosis were observed. Survivors fell within mild to moderate intellectual disability range, with a median IQ at last assessment of 58 (range 43-69).

CONCLUSIONS: Re-irradiation with CSI is a safe and effective treatment for children with relapsed medulloblastoma; improves disease control and survival compared with focal re-irradiation. However this approach carries a high neurocognitive cost.

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