IMPORTANCE: Postoperative radiotherapy to the craniospinal axis is standard-of-care for pediatric medulloblastoma but is associated with long-term morbidity, particularly in young children. With the advent of modern adjuvant chemotherapy strategies, postoperative radiotherapy deferral has gained acceptance in children younger than 3 years, although it remains controversial in older children.

OBJECTIVE: To analyze recent postoperative radiotherapy national treatment patterns and implications for overall survival in patients with medulloblastoma ages 3 to 8 years.

DESIGN, SETTING, AND EXPOSURES: Using the National Cancer Data Base, patients ages 3 to 8 years diagnosed as having histologically confirmed medulloblastoma in 2004 to 2012, without distant metastases, who underwent surgery and adjuvant chemotherapy with or without postoperative radiotherapy at facilities nationwide accredited by the Commission on Cancer were identified. Patients were designated as having "postoperative radiotherapy upfront" if they received radiotherapy within 90 days of surgery or "postoperative radiotherapy deferred" otherwise. Factors associated with postoperative radiotherapy deferral were identified using multivariable logistic regression. Overall survival (OS) was compared using Kaplan-Meier analysis with log-rank tests and multivariable Cox regression. Statistical tests were 2-sided.

MAIN OUTCOMES AND MEASURES: Postoperative radiotherapy utilization and overall survival.

RESULTS: Among 816 patients, 123 (15.1%) had postoperative radiotherapy deferred, and 693 (84.9%) had postoperative radiotherapy upfront; 36.8% of 3-year-olds and 4.1% of 8-year-olds had postoperative radiotherapy deferred (P < .001). On multivariable logistic regression, variables associated with postoperative radiotherapy deferral were age (odds ratio [OR], 0.57 per year; 95% CI, 0.49-0.67 per year) and year of diagnosis (OR, 1.18 per year; 95% CI, 1.08-1.29 per year). On survival analysis, with median follow-up of 4.8 years, OS was improved for those receiving postoperative radiotherapy upfront vs postoperative radiotherapy deferred (5-year OS: 82.0% vs 63.4%; P < .001). On multivariable analysis, variables associated with poorer OS were postoperative radiotherapy deferral (hazards ratio [HR], 1.95; 95% CI, 1.15-3.31); stage M1-3 disease (HR, 1.86; 95% CI, 1.10-3.16), and low facility volume (HR, 1.75; 95% CI, 1.04-2.94).

CONCLUSIONS AND RELEVANCE: Our national database analysis reveals a higher-
than-expected and increasing rate of postoperative radiotherapy deferral in children with medulloblastoma ages 3 to 8 years. The analysis suggests that postoperative radiotherapy deferral is associated with worse survival in this age group, even in the modern era of chemotherapy.

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