

Introduction

Patients with posterior fossa brain tumors often have hydrocephalus as a presenting symptom. The management includes emergent placement of external ventricular drains (EVD), placement of a shunt or intraoperative placement of EVD prior to surgical resection in the operating room. Shunting rates vary from 18% to 30%.

Methods

This was a retrospective analysis of all posterior fossa brain tumors operated on at Boston Children's Hospital (BCH) between January 1, 2006, and November 30, 2017. We reviewed clinical data, operative notes, and imaging. We tested the CPPRH score (the Canadian Preoperative Prediction Rule for Hydrocephalus) for its predictive value. According to the CPPRH scoring system, high-risk patients are more likely to need a shunt.

Results

We identified 235 patients with posterior fossa brain tumors who underwent surgery at BCH from January 2006 until November 2017. Utilizing the CPPRH scoring system, we stratified our patients into low 203/235(86.4%) and high 32/235(13.6%) risk groups

Of our 203 low-risk patients, 16 (7.9%) required a shunt; of our 32 high-risk patients, 6 (18.8%) required shunting, with a p-value 0.093. Our total rate of permanent CSF diversion was 22/235 (9.4%).

The CPPRH scoring system did not accurately predict the need for shunting in our cohort. We analyzed each predictor separately and we propose a modification to the scoring system (adding new variables and altering others).

We identified placement of EVD as a significant predictor - 18/27(66.7%) required a shunt (p value 0.000), extent of resection GTR 8/162 (4.9%) vs. all else 14/73 (19.2%) (p value 0.001) and age 4 years – under 4 13/64 (20%) and over 4 9/171 (5.3%) (p value 0.002).

Learning Objectives

Management strategies for hydrocephalus in pediatric posterior fossa brain tumor.

References

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- 2.Lin CT, Riva-Cambrin JK. Management of posterior fossa tumors and hydrocephalus in children: a review. Childs Nerv Syst. 2015;31(10):1781-1789.
- 3.Riva-Cambrin J, Detsky AS, Lamberti-Pasculli M, et al. Predicting postresection hydrocephalus in pediatric patients with posterior fossa tumors. J Neurosurg Pediatr. 2009;3(5):378-385.

Conclusions

We propose a new modified scoring system including placement of EVD, the extent of resection, age 4 years and dissemination.