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Surgical management of recurrent medulloblastoma: a scoping review

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Abstract

Objective: This scoping review aims to provide a comprehensive analysis of our current understanding of the role of neurosurgery in treating recurrent medulloblastoma in children. Focusing specifically on repeat resection and biopsy, this review offers insights into the existing strengths and weaknesses of the literature and explores future directions for the treatment of recurrent medulloblastoma cases.

Methods: This review was performed following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for scoping reviews guidelines. The Ovid MEDLINE, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Scopus, and Cochrane databases were searched for terms regarding medulloblastoma, pediatric patients, and tumor subtypes.

Results: A total of 2381 articles were retrieved from the database search along with an additional 7 studies from manual reference searching. After deduplication, 1347 articles were screened by title and abstract for inclusion and exclusion criteria. Full-text review was completed for 45 articles, and 21 were included in the final review. This review found limited evidence suggesting potential survival benefits of repeat resection in select cases, while the role of biopsy remains largely investigational.

Conclusions: Despite significant scholarship on primary medulloblastoma, new approaches are urgently needed concerning surgical options for recurrence. More common interventions such as repeat resection are limited due to the metastatic propensity of medulloblastoma at relapse and the lack of information about the specific applications to tumor subtypes. Robust protocols and studies involving the utility of repeat biopsy at relapse for targeted therapy are lacking and further studies are required. The absence of studies evaluating the role of surgery revealed by this review highlights that to truly understand the biology of personalized approaches to recurrent medulloblastoma, it will be critical that neurosurgeons are intimately involved in these efforts.

Keywords: medulloblastoma; oncology; relapse; resection; salvage therapy; tumor.