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Quality of life in survivors of pediatric medulloblastoma: a systematic review and meta-analysis

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Abstract

Introduction: Medulloblastoma (MB) is the most common malignant pediatric brain tumor. The mainstay of treatment is maximum surgical resection and craniospinal radiation, which may be followed by chemotherapy. The debilitating effect of the tumor and the intensive treatment approaches in MB lead to long-term neuropsychological, physical, and chronic medical problems. We conducted a systematic review to assess the quality of life (QoL) in the long-term survivors of MB and the factors leading to compromised QoL.

Methods: We utilized the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines for our review. A comprehensive literature search was performed using PubMed, Cochrane Library, Digital Commons Network, and Wiley Online Library databases to search for articles having quality of life, medulloblastoma, and pediatric survivors in title or abstract. We removed duplicates and screened through titles, and full texts. Twelve articles were included in our study. Articles using and reporting all domains of PaedsQL were included in the meta-analysis. The PaedsQL scores of survivors and their caregivers were compared. Subgroup analysis was conducted for craniospinal and proton radiotherapy groups.

Results: As compared to other posterior fossa tumors, MB survivors have the lowest QoL scores. There is a difference in the perception of QoL of survivors between caregivers and survivors

themselves with survivors rating themselves higher in several domains. The overall PaedsQL scores were significantly different for both groups ($p < 0.001$). Subgroup analysis showed that the difference between those who were treated with craniospinal or proton radiation was not significant ($p = 0.76$). For the subscales, physical ($p = 0.005$), psychosocial ($p = 0.0003$), and school ($p = 0.03$) perceptions were significantly different for the survivors and their caregivers; however, psychosocial ($p = 0.80$) and emotional ($p = 0.93$) scales were not different for the survivors or caregivers. Patient characteristics related to a worse QoL included disease severity, metastatic disease, lesser family income, smaller current ventricle size, need for permanent hydrocephalus treatment, and lesser age at diagnosis.

Conclusion: An analysis of various studies, using different measures of QoL, concludes that QoL is compromised in all pediatric survivors of MB; however, the perception of QoL of the survivors is better than objective or caretaker-rated QoL.

Keywords: CNS tumors; Health-related Quality of life; Medulloblastoma; Pediatric tumors; Posterior fossa tumors.

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