Spine (Phila Pa 1976). 2023 Jul 19. doi: 10.1097/BRS.0000000000004775. Online ahead of print.

Epidemiology and Comparative Analysis of Outcomes of Intramedullary Spinal Cord Tumor Between Pediatric and Adult Patients

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PMID: 37466205 DOI: 10.1097/BRS.0000000000004775

Abstract

Study design: Clinical retrospective study.

Objectives: We sought to evaluate the characteristics of Pediatric intramedullary spinal cord tumors (PISCTs) and to identify differences between pediatric and adult intramedullary spinal cord tumors.

Summary of background data: Pediatric intramedullary spinal cord tumors (PISCTs) represent a rare clinical entity with limited evidence-base in the literature.

Methods: This study is a subanalysis of the retrospective multicenter observational study authorized by the Neurospinal Society of Japan, including consecutive patients with spinal intramedullary tumor treated surgically at 58 institutions between 2009 and 2020. Data on 1080 intramedullary spinal cord tumors were obtained, consisting of 91 pediatric and 939 adult patients. Survival was compared using Cox hazard regression while clinical differences were evaluated using multivariable logistic regression that controlled for confounders.

Results: Pediatric patients had a shorter overall, and progression-free, survival than adults. Pediatric patients with ISCTs were likely to have scoliosis (odds ratio [OR] = 6.49, 95% confidence interval [CI]: 2.26-18.7), short preoperative symptom duration (OR = 0.99, 95% CI: 0.98-0.99), lower incidence of paresthesia (OR = 0.41, 95% CI: 0.22-0.77), higher incidence of paresis (OR = 2.10, 95% CI: 1.01-4.35), histopathology of astrocytoma (OR = 2.97, 95% CI: 1.19-7.43), and postoperative functional deterioration upon discharge (OR = 2.83, 95% CI: 1.43-5.58). Age was not a statistically significant prognostic factor of overall survival among the pediatric cohort.

Conclusion: We found that the clinical characteristics of PISCTs differed between pediatric and adult patients. In terms of histopathological types, astrocytoma was most common in pediatric patients. ISCT occurring at an early age may not be an indicator for poor prognosis.