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Epidemiology and surgical outcomes of pediatric intradural spinal tumors: results from a retrospective series of patients operated in the first two decades of life

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Abstract

Study design: Retrospective cohort study.

Objectives: Due to the rarity of intradural spinal tumors (ISTs) in individuals under 20, comprehensive studies are lacking. This study aims to compare the clinical data of intramedullary and extramedullary IST cases in patients under 20 years of age with those of adult cases and to identify functional predictors that affect surgical outcomes.

Setting: The single institution in Japan.

Methods: This retrospective study included 1367 patients diagnosed with extramedullary or intramedullary ISTs who underwent surgery at our institution from 2001 to 2021. Patients were divided into two groups: under 20 years old (Under-20) and 20 years and older. Collected data included demographics, magnetic resonance imaging (MRI) results, and surgical and clinical information. Neurological status was evaluated using the modified McCormick Scale (mMS).

Results: Among 1367 cases, 55 patients (4.0%) were under 20 years old. The most frequent tumors in the Under-20 group were astrocytoma (18.2%), followed by myxopapillary ependymoma (16.4%). Seven patients in the Under-20 group died during follow-up. Among the surviving patients, unstable gait post-surgery was associated with malignant tumors and worse preoperative mMS scores.

Conclusions: This study highlights significant differences in IST epidemiology and pathology between minors and adults, emphasizing the need for early MRI to prevent paralysis progression and improve outcomes. Understanding these differences is crucial for effective diagnosis and treatment during the first two decades of life.