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Intramedullary spinal cord tumors in pediatric patients presenting later with brain lesions: case series and systematic review of the literature

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Abstract

Purpose: Intramedullary spinal cord tumors are an uncommon pathology in adults and children. Most descriptive studies of intramedullary spinal cord tumors have not focused on a possible association with future brain lesions. To the best of our knowledge, few reports describe this potential relationship. This is one of the most extensive case series of secondary brain lesions of intramedullary spinal cord tumors in the pediatric population.

Methods: Retrospective chart review was performed on pediatric patients (21 years old and younger) who underwent resection of an intramedullary spinal cord tumor at two tertiary care hospitals from 2001 to 2020. Patients previously treated or diagnosed with spinal cord tumor, and subsequent development of intracranial manifestation of the same or different tumor, were included. Data regarding epidemiology, surgical intervention, and clinical and follow-up course were gathered. Data analysis was performed according to a standardized clinical protocol with a literature review.

Result: More than 500 patients underwent intradural spinal tumor resection surgeries at participating hospitals from 2001 to 2020. After excluding adult patients (older than 21 years old) and those with extramedullary lesions, 103 pediatric patients were identified who underwent resection of an intramedullary spinal cord tumor. Four underwent resection of an intermedullary tumor and later in their follow-up course developed a secondary intracranial neoplasm. In every case, the secondary neoplasm had the same pathology as the intramedullary tumor. Three of the patients had tumors at the cervico-thoracic junction, and one patient had a high cervical tumor. These patients had a negative primary workup for any metastatic disease at the time of the presentation or diagnosis. Complete and near complete resection was performed in three patients and subtotal in one patient.

Conclusion: Secondary brain tumors disseminated after initial spinal cord tumor are extremely rare. This study aims to allow specialists to better understand these pathologies and treat these rare tumors with more certainty and better expectations of unusual associated lesions and conditions.

Keywords: Brain tumor; Intramedullary spinal cord tumor; Pediatric; Secondary neoplasm; Spinal cord neoplasm.