Pediatric spinal cord tumor

Epidemiology

Spinal cord tumors are a relatively rare diagnosis and account for 1% to 10% of all pediatric central nervous system tumors [1) 2) 3)].

In children with intramedullary tumors, astrocytomas represent around 60% of tumors, ependymomas 30%, developmental tumors 4%, and then a group of other less frequently identified types [4) 5)].

Case series

The medical records of 36 patients with spinal cord tumors were reviewed for clinical, radiological and histopathological data, chemotherapy, radiotherapy, surgical resection, treatment responses, events, and final outcome. Survival analyses were performed.

The median age was 7.9 years (range: 1-16 years; male/female ratio:1.4). Majority of the tumors were histopathologically diagnosed as spinal cord astrocytomas (n = 16, 44.4%) and spinal cord ependymomas (n = 19, 52.8%); whereas one was unclassified glioma. Overall, 94% of the astrocytomas and 84% of the ependymomas were low-grade, only three tumors were high-grade. In one patient with ependymoma, histopathological grade was undetermined. The primary tumor was commonly located in thoracic (47%) and cervical segments (28%). All patients had undergone surgery (gross-total resection, 33%; subtotal resection, 45%; biopsy, 22%). Radiotherapy was administered to 26 patients (72%) and chemotherapy to 15 patients (42%). The 3-, 5- and 10-year overall survival rates were 72%, 63% and 56%, respectively; and event-free survival rates were 43%, 40% and 40%. Survival did not significantly differ with gender, age groups, lag-time, neurologic status, histopathological tumor type, tumor location, extent of resection, treatment, or treatment responses in univariate survival analyses. Survival rates were significantly higher in patients with low-grade tumors and in ependymoma patients with resected tumors.

Patients with low-grade tumors and those who underwent gross-total tumor resection had better prognosis. Surgery remains the main treatment in intramedullary spinal tumors. The role of radiotherapy and chemotherapy is limited and even controversial in low-grade tumors [6)].

Nine patients, 16 years of age or younger with primary spinal cord tumors, diagnosed between 1991 and 2003 at The Kaohsiung University Hospital, were reviewed retrospectively. There were 2 female and 7 male patients. Two tumors were located primarily in the cervical cord (1 meningioma, 1 neurofibroma), five were predominantly thoracic (1 lymphoma, 1 meningioma, 1 astrocytoma, 1 fibrosarcoma and 1 osteoblastoma), one lumbar (ependymoma), and one sacral (Ewing's sarcoma). The most common clinical presentation was limb weakness (100%) followed by back pain (44.4%). All the patients underwent laminectomy for removal of their tumors. Five children with benign tumors improved postoperatively. At discharge, these 5 children could walk without assistance and have remained stable with long-term of follow-up. Radical surgery should be considered in benign primary spinal cord tumors. As would be expected, patients diagnosed and treated early and in whom a total resection was achieved had a better prognosis [7)].

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