Spinal cord glioblastoma multiforme

The incidence of primary spinal cord glioblastoma multiforme (GBM) in the pediatric age group is very rare. Only a few case series and case reports have been published in the literature; therefore, overall survival (OS) outcome and the as-yet poorly defined management options are not discussed in detail. The authors performed a cumulative survival analysis of all reported cases of pediatric spinal cord GBM to identify the predictive factors related to final survival outcome. METHODS A comprehensive search for relevant articles was performed on PubMed's electronic database MEDLINE for the period from 1950 to 2015 using the search words “malignant spinal cord tumor” and “spinal glioblastoma multiforme.” This study was limited to patients younger than 18 years of age. Survival rates for children with various tumor locations and treatments were collected from the published articles and analyzed. RESULTS After an extensive literature search, 29 articles met the study inclusion criteria. From the detailed information in these articles, the authors found 53 children eligible for the survival analysis. The majority (45%) of the children were more than 12 years old. Thirty-four percent of the cases were between 7 and 12 years of age, and 21% were younger than 7 years. In the Kaplan-Meier survival analysis, children younger than 7 years of age had better survival (13 months) than the children older than 7 years (7-12 years: 10 months, > 12 years: 9 months; p = 0.01, log-rank test). Fifty-five percent of the children were female and 45% were male. A cervical tumor location (32%) was the most common, followed by thoracic (28.3%). Cervicothoracic (18.9%) and conus (18.8%) tumor locations shared the same percentage of cases. Cervical tumors had a worse outcome than tumors in other locations (p = 0.003, log-rank test). The most common presenting symptom was limb weakness (53%), followed by sensory disturbances (25%). Median OS was 10 months. The addition of adjuvant therapy (radiotherapy [RT] and/or chemotherapy [CT]) after surgery significantly improved OS (p = 0.01, log-rank test). Children who underwent gross-total resection and RT had better outcomes than those who underwent subtotal resection and RT (p = 0.04, log-rank test). Cerebrospinal fluid spread, hydrocephalus, brain metastasis, and spinal metastasis were not correlated with OS in primary spinal GBM. CONCLUSIONS Adjuvant therapy after surgery had a beneficial effect on overall outcome of spinal GBM in the pediatric age group. Gross-total resection followed by RT produced a better outcome than subtotal resection with RT. Further large-scale prospective study is required to establish the genetic and molecular factors related to OS in primary GBM of the spinal cord in pediatric patients [1)].

Case series

Liu et al. performed a retrospective review of five male patients with intramedullary spinal cord glioblastoma who underwent surgical resection from 1990 to 2014. Demographic, operative, and postoperative factors were recorded. The median age at treatment was 31 years (range: 18-61) and all men presented with motor or sensory dysfunction. Two had prior surgical resection of an intramedullary World Health Organization Grade III anaplastic astrocytoma lesion with adjuvant chemoradiation. All tumors were present in the cervical (n=2; 40%) or thoracic (n=3; 60%) spine, spanning a median of three levels (range: 2-4). Gross total resection was achieved in three men (60%), and there were no intraoperative mortalities or complications. Although one had improvement in his neurological status postoperatively, all five men died with a median time to death of 20 months (range: 2-31). Adult intramedullary spinal cord glioblastoma is rare, and despite aggressive treatment, prognosis is poor, with a median survival in our series of only 20 months. New treatment strategies are necessary to improve survival in this patient population [2)].

Case reports

Drop metastases from glioblastoma multiforme (GBM) to the spinal cord are extremely rare in clinical practice. We report herewith multiple drop metastases to the cervical and thoracic spinal cord presenting as paraplegia in a patient treated initially with tumor resection followed by chemoradiation and later with temozolomide-.based adjuvant chemotherapy [3].

A case of cerebellar anaplastic astrocytoma receiving operation and subsequent concurrent chemoradiotherapy. One year later, progressive weakness of both lower limbs and unsteady gait occurred. Spine magnetic resonance imaging showed cervical and thoracic spine intramedullary tumor. They then performed laminectomy and tumor biopsy. The histopathological report demonstrated primary spinal cord glioblastoma multiforme with positive glial fibrillary acidic protein, high MIB-1 labeling index and negative staining of isocitrate dehydrogenase-1 mutation. After reviewing the English literature to date, most metastatic spinal glioblastoma resulted from previous intracranial glioblastoma, and there are few studies mentioning spinal glioblastoma originating from intracranial low-grade gliomas. Over time, improvement in local control of the primary tumor has raised patient risk of the possibility of spinal metastasis, and clinical physicians should be aware of this aspect so that quicker diagnosis and management will be accomplished, even in patients with lower grade of intracranial gliomas [4].

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