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Case Report
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Thoracic Spinal Cord Glioblastoma: A Case Report

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Abstract

We report a case of a 62-year-old female patient with paraplegia. Magnetic resonance imaging showed an intramedullary mass lesion of thoracic region. Surgery was performed and histopathological evaluation revealed primary glioblastoma of the spinal cord. Primary spinal glioblastoma is a rare entity unlike cranial counterpart; with high mortality rate. Survival rates are still unsatisfactory even with surgery accompanied by adjuvant chemotherapy and radiotherapy.

Introduction

Glioblastoma is the most common primary cerebral tumor in adults [1] yet Primary Spinal Glioblastoma (PSG) is very rare. Intramedullary spinal tumors constitute 2% to 8.5% of all primary Central Nervous System (CNS) tumors [2]. Primary spinal glioblastomas involve only 4% to 8% of all intramedullary spinal tumors and 1.5% of all spinal tumors [3,4] and they mostly occur in the cervical and cervicothoracic region (60%) [5]. For this reason, we only have few data to interpret on how to manage and treat PSG's. In this article, we present a rare case of primary glioblastoma of the spinal cord that originated solelyfrom thoracic region.

Case Presentation

A 62-year-old female patient admitted to hospital with pain and numbness on both legs (dominantly on the left leg) and on her back for 6 months. She had a history of diabetes mellitus and mild anemia was spotted on laboratory tests. She complained of shortening her walking distance. She had no abnormality on physical examination. Neurological examination revealed hypoesthesia on right leg, hypoactive deep tendon reflexes on both sides and paraplegia. A gadolinium enhanced thoracic spinal magnetic resonance (MRI) was performed. MRI revealed a hypointense on T1 weighted, and hyperintense on T2 weighted sequences, heterogeneously enhanced lesion between T7 and T12 vertebral levels that expanded spinal cord (Figure 1).

By a vertical midline incision, laminoplasty was performed to T8, T9, T10 and T11 vertebrae. After dural opening, intramedullary yellow-grey colored lesion was reached. Due to adhesions to the rootlets, arachnoid membranes and spinal cord, only a partial removal could be achieved under neuromonitoring. Closing of laminoplasty was performed using mini titanium screws and plates. Histopathological examination showed Glioblastoma Grade IV with Ki-67 index of 10% to 15%. The day after surgery, the patient was mobilized with 4/5 paraparesis. She was sent to radiotherapy following one month after surgery and she still is under this treatment.

Discussion

Glioblastoma of the spinal cord can develop primarily or due to metastasis of a cerebral lesion. They tend to occur in the early stages (Mean age: 33.5) of life unlike cerebral glioblastomas[6]. In our case, the patient is 62 years old.

Clinical manifestations are not pathognomonic and depend on size and location of the lesion. Signs and symptoms differ from region to region where the tumor is located and are mostly generated due to mechanical compression or direct damage to the spinal cord or the rootlets. There are reported cases of malignant spinal astrocytomas that develop hydrocephalus which is suspected to be caused by increased protein concentration in the cerebrospinal fluid (CSF) resulting occlusion of CSF channels [5]. The initial symptoms can be mild and non- specific but in the later stages, the symptoms worsen including paraplegia, other various motor disorders and urinary incontinence [6].

The gold standard for imaging is gadolinium enhanced MRI for spinal tumors. Cerebrospinal fluid cytology and PET scan can also be used especially on glioblastoma drop metastasis but they are usually inconclusive [7] and PET-CT has a risk of increasing glycolysis in malignant tumors [8].

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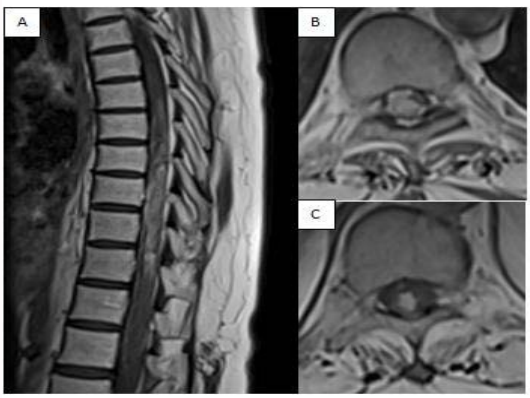

Figure 1: T1-Weighted Contrast Enhanced Preoperative sagittal (A), axial T7 Level (B), and axial T9 Level (C) MRIs.

Most of the PSG tumors are seen as infiltrative, expansive lesions that enhance heterogeneously on T1 sequence but using these findings on MRI scan, differentiation from other spinal pathologies is still difficult and histopathological evaluation following tissue sampling is needed [9]. Differential diagnosis for PSG includes other spinal malignancies, transverse myelitis, abscess and bacterial myelitis [10].

The first line treatment for patients presenting with neurological impairment is surgery. Total resection is the priority without worsening neurological condition of the patient. However the infiltrative growth pattern of these tumors and lack of cleavage plane to the adjacent tissues allow only subtotal resection or biopsy in most cases [6,11]. Therefore adjuvant chemotherapy and radiotherapy are of the utmost importance for prolonging survival. Since spinal glioblastoma is a rare entity, there is no consensus on how to treat it after surgery. Temozalamide is the most commonly used chemotherapeutic agent but its effects on long term survival are uncertain [12]. However including radiotherapy can improve results [13]. Median survival time for PSG is 8.18 months according to Ozgirayet. Median overall survival for spinal glioblastoma (including metastases) is calculated to be 11 months [14]. But glioblastoma metastases significantly lower this rate because the survival time for patients with glioblastoma metastases is calculated to be 2-3 months [15]. PSG seem to have worse outcome than its cranial counterpart but adjuvant therapy (chemotherapy, radiotherapy or both) significantly improve survival time.

Conclusion

PSG is a rare condition unlike cranial glioblastoma. Although total resection is unlikely, surgery is essential for patients with neurological deficit and for cytoreduction to prolong survival time. Surgery is the best option for these patients but even with adjuvant therapy, outcome is still poor.

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