Cerebellar glioblastoma

Cerebellar glioblastoma is rare in adults, accounting for <1% of all patients with glioblastoma multiforme (GBM).

Clinical Presentation

Presents with increased intracranial pressure and cerebellar syndrome.

Diagnosis

The accurate diagnosis of cGBM is important for establishing a suitable therapeutic schedule. However, the diagnosis of cerebellar GBM is not usually suspected preoperatively because of its rarity.

Some evaluated cases of cerebellar GBM did not exhibit the common CT, MRI, and PET findings of supratentrial GBM, leading to considerable difficulty with preoperative differential diagnosis [1].

Treatment

The recommended treatment is radical resection, if possible, with radiation and chemotherapy.

Outcome

In view of their rarity, a metaanalysis is required to assess the pathogenesis and prognostic factors affecting overall survival [2].

Case series

2016

Kikuchi et al., retrospectively reviewed seven patients with cerebellar GBM (six men and one woman: mean age: 56 years, range: 18-73 years). They reviewed medical records and radiological data, including preoperative CT, MRI and PET. All patients underwent CT and MRI. DWI data were acquired in four patients. Three patients underwent FDG- and MET-PET examinations. All patients underwent total or subtotal tumor resection and received pathological diagnoses.

Four patients had imaging findings consistent with GBM and received preoperative cerebellar GBM diagnoses. Two patients exhibited homogeneous patchy and nodular enhancement without necrosis on MRI, which resembled malignant lymphoma and metastasis. One case exhibited Lhermitte-Duclos disease-like parallel linear striations (i.e.,“tiger-striped” appearance). Although the imaging findings of these three patients were inconsistent with GBM, pathological diagnosis confirmed cerebellar GMB.

Some evaluated cases of cerebellar GBM did not exhibit the common CT, MRI, and PET findings of supratentrial GBM, leading to considerable difficulty with preoperative differential diagnosis [3].

2012

Five adult patients with cerebellar GBM was evaluated and their outcome was assessed. They observed local failure in patients who reported back with recurrence. The presence of brainstem infiltration was a significant factor influencing progression-free survival. The overall prognosis was worse than for patients with supratentorial GBM. In view of their rarity, a meta-analysis is required to assess the pathogenesis and prognostic factors affecting overall survival in patients with cerebellar GBM [4].

Case reports

2016

Gao S et al., reported a cerebellar glioblastoma multiforme patient, with his clinical presentations and imaging characteristics mimicking a vestibular schwannoma. To the best of authors knowledge, this is the first reported patient of cGBM mimicking a vestibular schwannoma [5].

2014

A 53-year-old man presented with hypertensive cerebellar bleeding and a 2-day history of severe headaches, nausea, vomiting, gait instability, and elevated blood pressure. Computed tomography (CT) showed a left cerebellar hematoma with no obstruction of cerebrospinal fluid and no hydrocephalus. CT angiography showed no signs of pathologic blood vessels in the posterior cranial fossa. The patient was observed in the hospital and discharged. Subsequent CT showed complete hematoma resorption. Two weeks later, he developed headaches, nausea, and worsening cerebellar symptoms. Magnetic resonance imaging (MRI) showed a 4-cm diameter tumor in the left cerebellar hemisphere where the hemorrhage was located. The tumor was radically resected and diagnosed as GBM. The patient underwent radiation and chemotherapy. At a follow-up of 1.5 years, MRIs showed no tumor recurrence.

Hypertensive cerebellar hemorrhage may be the first presentation of underlying tumor, specifically cerebellar glioblastoma. Patients undergoing surgery for cerebellar hemorrhage should have clot specimens sent for histologic examination and have pre- and postcontrast MRIs. Patients not undergoing surgery should have MRIs done after hematoma resolution to rule out underlying tumor [6].

2012

Hernandez-Gonzalez et al., report a case of cerebellar GBM in a 27-year-old woman. Magnetic resonance imaging (MRI) showed a 3×3.6 cm-sized, ill-defined, heterogeneously enhancing mass in the left cerebellum. GBM was histologically confirmed following radical surgery. Postoperative radiotherapy with concomitant and adjuvant temozolomide chemotherapy was subsequently administrated. She has no evidence of recurrence and is in good clinical conditions up-to date, three

years after surgery [7].

2008

A 69-year-old man. Neurologic examination revealed the presence of cerebellar signs. Magnetic resonance imaging (MRI) showed a 4.5 x 3.6 cm-sized, ill-defined, heterogeneously enhancing mass in the left cerebellum and two patchy hyperintense lesions in the right cerebellum with minimal enhancement. After operation, glioblastoma was histologically confirmed. Postoperative radiotherapy with concomitant and adjuvant temozolomide chemotherapy was subsequently followed. Here, a case of unusual GBM in the cerebellum is reported with review of literature regarding the pathogenesis, the differential diagnosis and prognosis. There was no evidence of recurrence during postoperative one year. This patient showed a good prognosis in spite of the multiple lesions [8].

2005

Two cases of unusual de novo cerebellar glioblastomas, one of which is the giant-cell variant [9].

1983

A 39-year-old woman. Postoperative irradiation to the posterior fossa enabled her to work for the next 5 1/2 years. At readmission, progressive pontocerebellar signs were observed. In spite of repeated irradiation and intrathecal chemotherapy, she died after 1 month. Autopsy revealed extensive tumorous infiltration of the right cerebellar hemisphere, pons, and medulla. Both the biopsy and autopsy specimens showed typical features of GM. Tumorous propagation resulted in extreme enlargement of the right inferior olive. Electron microscopic analysis disclosed characteristic bundles of glial filaments, cytoplasmic inclusions lying within nuclear folds, and intracytoplasmic granules of uncertain nature. The possible cause of the long survival is discussed and a comparison is made with previously reported cases [10].

1982

Kopelson G. Cerebellar glioblastoma. Cancer. 1982 Jul 15;50(2):308-11. PubMed PMID: 6282439 [11].

1981

Approximately 38 cases of cerebellar glioblastoma have been reported. The authors report a case which seems to be the first report of such in the Brazilian literature [12].

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12)

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