Case Report

Childhood Pineal Glioblastoma: Case Report

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Pineal glioblastomas (GBMs) are extremely rare tumors. Herein we will present a pediatric patient with GBM located in pineal region who was admitted with the symptoms of increased intracranial pressure and treated with surgical resection and radiotherapy. **Introduction:** Pineal region tumors are extremely rare accounting for less than 1% of all brain tumors. The most common type of pineal region tumors is germ cell tumor, followed by pineal parenchymal tumors, gliomas, atypical tumors, and the others. **Case Report:** A 5-year-old girl was admitted with complaints of headache, dizziness, imbalance in walking, and impaired vision for 1 month. Her neurological examination revealed a tendency to sleep, anisocoric pupillae, mesh eye pupil, dilated lateral gaze paralysis, and left hemiparasia (4/5 muscle strength). In magnetic resonance imaging, a mass was observed in the pineal region that infiltrates the right thalamus and right superior peduncle, isointense and hyperintense in T1 sections, hyperintense in T2 sections, having centrally contrasted areas in post-contrast sections. Due to the presence of evident hydrocephalus, a ventricular shunt was inserted and then through supracerebellar to infratentorial approach the lesion was removed subtotally. The histopathological diagnosis was GBM. GBMs in the pineal region are extremely rare tumors carrying poor prognosis. The patients are generally presented with the signs and symptoms of increased intracranial pressure. GBMs should be kept in mind in differential diagnosis of tumors in the pineal region.

**Keywords:** Childhood, glioblastoma, pineal

**INTRODUCTION**

Pineal region tumors are extremely rare accounting for less than 1% of all brain tumors. The most common type of pineal region tumors is germ cell tumor, followed by pineal parenchymal tumors, gliomas, atypical tumors, and the others.¹,²

Glioblastoma (GBM) is the common CNS malignancy which is an aggressive diffuse glioma of astrocytic lineage. Unfortunately, pediatric GBM is a lethal cancer with no effective therapies due to destructive genetic alterations.³,⁴

Herein we will present a pediatric patient with GBM located in the pineal region.

**CASE REPORT**

A 5-year-old girl was admitted with complaints of headache, dizziness, imbalance in walking, and impaired vision for 1 month. Her neurological examination revealed a tendency to sleep, anisocoric pupillae, mesh eye pupil, dilated lateral gaze paralysis, and left hemiparasia (4/5 muscle strength).

In brain computed tomography, a slightly hyperdense mass lesion with a size of approximately 40 × 50 × 52 mm having cystic-necrotic hypodense areas with lobulated contours located in the pineal region was present. Lateral ventricle was slightly wider than normal. In magnetic resonance imaging (MRI), a mass...
was observed in the pineal region that infiltrates the right thalamus and right superior peduncle, isointense and hyperintense in T1 sections, hyperintense in T2 sections, having centrally contrasted areas in post-contrast sections [Figure 1]. In her laboratory analysis, no hematological or biochemical abnormalities were determined. Tumor markers including alpha-fetoprotein, human–human chorionic gonadotropin, and placental alkaline phosphatase were within normal limits.

Due to the presence of evident hydrocephalus, a ventricular shunt was inserted and then through supracerebellar to infratentorial approach the lesion was removed subtotally. In histological evaluations, tumoral lesions characterized by hypercellularity, nuclear hyperchromasia, atypia, increased vascular structures, vascular endothelial proliferation, and necrosis were reported [Figure 2]. In histochemical studies, the results were as follows: [Figure 3] GFAP (+), S-100 (+), P53 (+) [Figure 3], Vimentin (+), Ki 67 (40%), Chromogranine (–), Synaptophysin (–), CD68 (–), PanCK (–), EMA (–), CD95 (–), CD30 (–), CD117 (–), Actin (–), Myogenin (–), amd CD34 (–).

The histopathological diagnosis was GBM. The patient was discharged 8 days after the operation to another center for radiotherapy. Her treatment is still ongoing from the 7 month of diagnosis.

**DISCUSSION**

Pineal gland tumors are highly rare and pineal gland GBMs are extremely rare. To the best of our knowledge, less than 40 cases with pineal GBM are reported before. In general, GBMs of the pineal region infiltrate the upper portion of the midbrain and disseminate through the ependymal and leptomeningeal regions. Patients usually present with symptoms of intracranial hypertension due to obstructive hydrocephalus and to a deficit in vertical conjugate gaze. Nausea, vomiting, gait abnormalities, and vision changes are the most common symptoms of patients at admission. Radiological findings are the mainstay in diagnosis. Presence of the obstructive hydrocephalus, irregular borders, and heterogeneous contrast uptake due to central necrotic regions are the main radiological findings. Our patient was also admitted with headache, dizziness, imbalance in walking, and impaired vision, and a pineal tumor was first diagnosed with the radiological findings.

Orrego et al. reported four cases of GBMs in the pineal region who presented a severe headache and vomiting and treated with subtotal or total resection and radiotherapy.
with/without chemotherapy. The authors reported that the survival periods of these cases were between 8 and 31 months after the initial diagnosis. In the previous literature, the median reported survival was about 6 months.\[^8\]

Pediatric GBMs are aggressive tumors. In a study of Nikitović et al.,\[^9\] on a series of 15 children with GBM, the median survival time was 13.5 months, the presence of neurological deficit initially prior to radiotherapy was reported to have an impact on the overall survival, and children treated with gross total resection had longer overall survival. The main treatment options in pediatric GBMs are total surgical resection of the tumor, followed by chemotherapy and/or radiotherapy. In our patients, we also performed a local resection as large as possible, followed by radiotherapy.

GBMs in the pineal region are extremely rare tumors carrying poor prognosis. The patients are generally presented with signs and symptoms of increased intracranial pressure. GBMs should be kept in mind in differential diagnosis of tumors in the pineal region.

**Financial support and sponsorship**
Nil.

**Conflicts of interest**
There are no conflicts of interest.

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