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HIGH GRADE GLIOMA IN A 2 1/2 YEAR OLD: A CASE REPORT

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ABSTRACT

INTRODUCTION- Gliomas are the tumor of glial cells found in Central nervous System. High Grade Gliomas are rare in pediatric age group. Definitive diagnosis is made by histopathological examination. A 2 ½ year old male admitted with the complaint of abnormal tonic-clonic body movements along with headache, nausea, vomiting and fever. CT scan showed a poorly circumscribed hypodense lesion involving fronto-parietal region. Surgery was performed and specimen sent for histopathological examination. Histopathological examination showed features of high grade glioma like microvascular proliferation, necrosis and haemorrhage. Cerebral tumors are the most common childhood neoplastic tumors. Gliomas are generally classified into low grade glioma and high grade glioma. High Grade glioma is rare in pediatric age group. Most commonly they present in supra tentorial compartment. The most common cerebral cortex involved are frontal lobe followed by parietal and temporal. Clinical signs and symptoms of High grade gliomas are seizure, headache, nausea, vomiting and visual disturbances. CT scan showed a poorly circumscribed hypodense lesion involving left fronto-parietal region mainly. Definitive diagnosis of high grade glioma is by histopathological examination. Histopathological examination showed hypercellular heterogeneous tumor lying on a fibrillary background. Areas of microvascular proliferation along with necrosis and haemorrhage are also seen. Surgical resection followed by chemotherapy and local radiotherapy are the present recommendation. High grade gliomas are rare pediatric tumor associated with poor outcome. Surgery was performed due to neurological worsening, which was unsuccessful and patient died. Diagnosis was confirmed on histopathological examination. Poor prognosis and high morbidity even after evolution of treatment, demands further research to improve the prognosis and reduce morbidities

KEYWORDS: Pediatric, High Grade Glioma, Microvascular proliferation, Necrosis.

INTRODUCTION

Gliomas are the tumor of glial cells found in Central nervous System (1). Gliomas are generally classified into low grade glioma (WHO grade 1 & 2) and high grade glioma (WHO grade 3 & 4) traditionally (2). High Grade Gliomas are rare in pediatric age group. Pediatric high grade glioma and adult high grade glioma are similar histologically but differ on molecular, genetic and biological level (3) . Definitive diagnosis is made by histopathological examination and on immunohistochemistry, however the diagnosis and management of high grade gliomas are complex and controversial due to its rarity and less research (1). Here we present a rare case of high grade glioma in a 2.5 year old male.

CASE REPORT

A 2 ½ year old male admitted with the complaint of abnormal tonic-clonic body movements of 10-15 min followed by unconsciousness. He had a past history of headache for 1 month, which was associated with nausea, vomiting and fever along with visual disturbances as stated by the mother of patient. Headache was more in the morning, involving the frontal region. There were 2-3 episodes of vomiting, which was non bilious and non-projectile. He also complaint of fever which was on and off and got relieved on medication. Computerized tomography (CT) scan showed a poorly circumscribed hypodense lesion involving left fronto-parietal white matter, left gangliothalamic region with few haemorrhagic areas, with a midline shifted to right side. On general examination, he was sick with GCS of 4/15, BP 130/90, PR- 84/min, RR-23/min and RbS- 123 mg/dl. The surgery near subtotal excision of SOL with Left fronto-temporo parietal craniotomy was done. The specimen was sent to the histopathology department. These histomorphological features mainly necrosis and microvascular proliferation, helped in making the provisional diagnosis of Glioblastoma multiforme. Patient was started on valproate and steroids, no improvement in the patient was there. Progressive

neurological worsening led to surgical resection of tumor, which was unsuccessful and later the patient died.

PATHOLOGICAL FINDING

Grossly, tumor was received in multiple gray-brown to gray-black soft tissue pieces altogether measuring 4.5 x 4.5 cm.

Microscopically, tumor showed hypercellular heterogeneous areas, composed of round to oval atypical cells showing high nuclear- cytoplasmic ratio, hyperchromasia and some cells showing nuclear pleomorphism, lying on a fibrillary background (Fig. 1,2). High mitotic activity (4-5/10 HPF) was present. The stroma showed microvascular proliferation (Fig. 2) along with areas of necrosis and haemorrhage (Fig. 3-4).

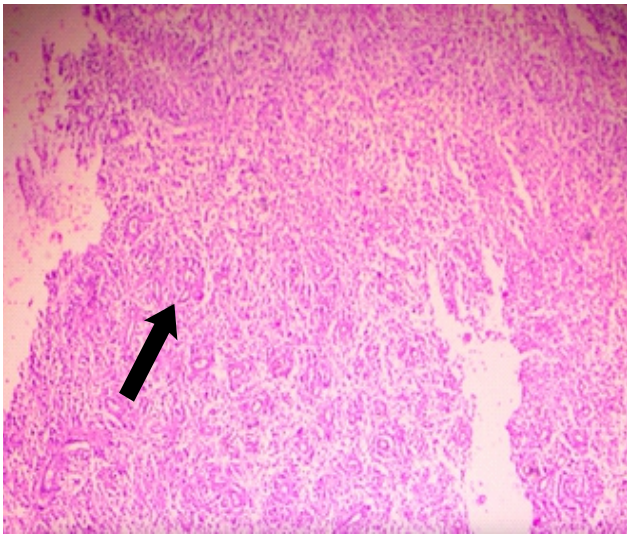

Fig. 1: High Grade Glioma (4x) Showing Micro Vascular Proliferation

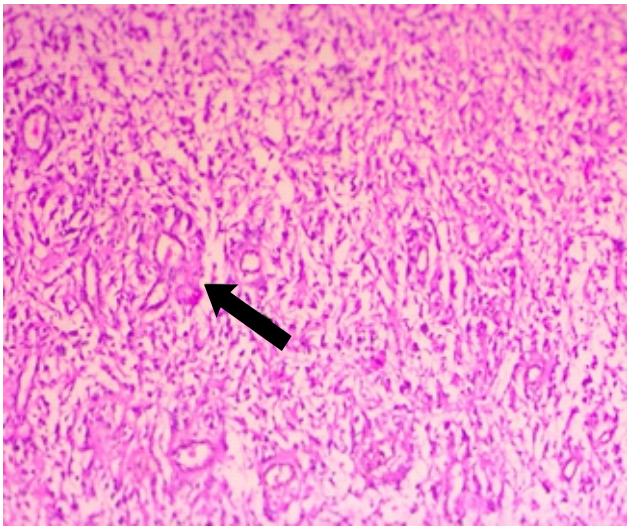

Fig. 2: High Grade Glioma (10x) Showing Micro Vascular Proliferation

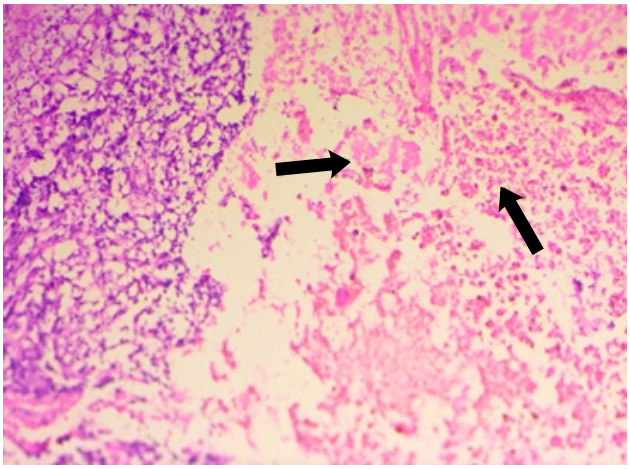

Fig. 3: High Grade Glioma (10x) Showing Necrosis (Left Arrow) and Haemorrhage (Right Arrow)

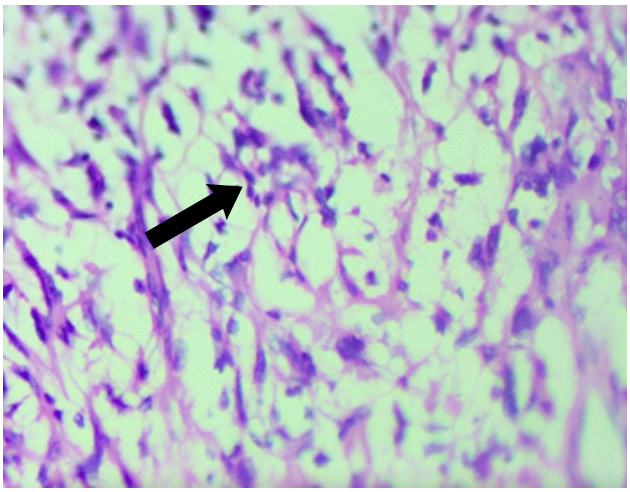

Fig. 4: High Grade Glioma (40x) Showing Tumor Cells

DISCUSSION

Cerebral tumors are the most common childhood neoplastic tumors (1,4). Gliomas comprises of 60% of all cerebral tumors and around 27% of them are malignant.(Khan, borgo). Gliomas are generally classified into low grade glioma (WHO grade 1 & 2) and high grade glioma (WHO grade 3& 4) traditionally.(2). High grade gliomas are common in adults in contrast to pediatric population comprising approximately 8-12% of all primary CNS tumors. (3). Most commonly they present in supra tentorial compartment.(4) The most common cerebral cortex involved are frontal lobe followed by parietal and temporal. Rarely found in pineal, meninges and cranial nerves. (1). Male to female ratio is slightly more (i.e. 1.5:1) (4)

Clinical signs and symptoms of High grade gliomas are often due to increased intracranial pressure such as headache, nausea, vomiting and visual disturbances.

Other symptoms include seizures, due to cerebral cortex involvement In our case, the first clinical presentation was headache associated with nausea, vomiting and visual disturbances. Cerebral cortex involvement leads to seizures, which are also seen in our case. These symptoms were similar to the symptoms found in case report by Khan et al and Borgo MCM et al.(1,4)

MRI is the investigation of choice for the diagnosis of high grade glioma. In our case it was planned after the patient gets stabilized, but couldn't perform. On CT scan a poorly circumscribed hypodense lesion involving left fronto-parietal region, left gangliothalamic region, with a midline shift to right side was seen.

Definitive diagnosis of high grade glioma is by histopathological examination. Histopathological examination showed hypercellular heterogeneous tumor, composed of round to oval atypical cells showing high nuclear- cytoplasmic ratio, hyperchromasia and some cells showing nuclear pleomorphism, lying on a fibrillary background. High mitotic activity (4-5/10 HPF) was present. The stroma showed microvascular proliferation along with necrosis and haemorrhage. Histopathological findings in our case were similar to the findings by Khan et al, Borgo MCM et al.(1,4). Glial fibrillary acidic protein (GFAP), Ki-67 and S-100 are antigens used for immunohistochemistry to confirm the diagnosis (4).

Surgery is the mainstay treatment for high grade gliomas, if it is feasible. Chemotherapy and radiotherapy also give satisfactory results but associated with morbidities(1,5,6). Current guidelines include surgery, chemotherapy and local radiotherapy. (1). However, they increases the survival of the patient but donot change the course of inexorable disease.(4). Only few cases show good outcome after treatment in children (4).

Supportive treatment should also be given to the patient to reduce symptoms because of increased intracranial pressure. Supportive treatment includes steroids (like dexamethasone) and antiseizure drugs (like valproate) which was given in our case too.

CONCLUSION

High grade gliomas are rare pediatric tumor associated with poor outcome. Our patient developed symptoms of raised intracranial pressure and abnormal body movements. Supportive treatment in the form of steroids and antiseizure drugs were given. Surgery was planned and patient taken and surgical removal of tumor was performed, which was unsuccesful and patient succumbed to death. Diagnosis was confirmed on histopathological examination. sHigh grade glioma shows high mitotic activity, necrosis and microvascular proliferation. Poor prognosis and high morbidity even after evolution of treatment, demands further research to improve the prognosis and reduce morbidities.

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