A CASE STUDY ON GLIOBLASTOMA MULTIFORME

Banita Rana and Rupali

Shri Mata Vaishno Devi College of Nursing SMVD Narayana Hospital Campus
Kakryal, Katra, J & K, India,

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ABSTRACT

GBM is the most common and aggressive malignant brain tumor in adults comprising 16% of all primary brain and central nervous system neoplasms. It occurs almost exclusively in the brain, they can also appear in the brain stem, cerebellum, and spinal cord. Sixty-one percent of all primary Gliomas occur in the four lobes of the brain: frontal (25%), temporal (20%), parietal (13%), and occipital (3%). It is classified as primary and secondary. A majority of GBMs are primary, and these patients tend to be older aged and have a poorer prognosis than patients with secondary GBMs. In this article, we report a case of Glioblastoma multiforme in a male patient.

INTRODUCTION

Gliomas are the most prevalent type of adult brain tumor, accounting for 78 percent of malignant brain tumors. They arise from the glia (supporting cells of brain). GBM is the high grade glioma and most invasive type of glial tumor. These tumors tend to grow rapidly, spread to other tissue and have a poor prognosis. They may be composed of several different kinds of cells, such as astrocytes and oligodendrocytes. GBM is more common in people ages 50-70 and are more prevalent in men and women. These are malignant Grade IV tumors.

Glioblastoma may arise do novo, which means they begin as a Grade IV tumor with no evidence of a lower grade precursor. De novo tumors are the most common form of glioblastoma and tend to be more aggressive and tend to affect older patients. Alternatively, secondary glioblastomas may progress from a lower grade astrocytic tumors (Grade II or Grade III) and evolve into Grade IV tumors over time. In general these tumors tend to be slower growing initially, but can progressively become aggressive.

Staging of Gliomas

The WHO has developed a grading system for gliomas, which more accurately predicts outcomes. This system grades the tumor based on hypercellularity, mitosis rates, presence of necrosis, and vascular proliferation.

WHO Grading System for Gliomas

<table>
<thead>
<tr>
<th>Grade</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade I tumor (Juvenile pilocytic Astrocytomas)</td>
<td>Benign, slow-growing tumor; usually associated with long-term survival; least likely to recur.</td>
</tr>
<tr>
<td>Grade II tumor (Astrocytomas)</td>
<td>Increased hypercellularity; no mitosis; no vascular proliferation; no necrosis; can recur as a higher-grade tumor</td>
</tr>
<tr>
<td>Grade III tumor (anaplastic astrocytoma)</td>
<td>High rate of hypercellularity; high rate of mitosis; no vascular proliferation; no necrosis, high rate of tumor recurrence</td>
</tr>
<tr>
<td>Grade IV tumor (glioblastoma)</td>
<td>Very high rate of hypercellularity; very high rate of mitosis; presence of vascular proliferation; presence of necrosis.</td>
</tr>
</tbody>
</table>

Epidemiology

The National Cancer Institute estimates that 22,850 adults (12,630 men and 10,280 women) were diagnosed with brain and other nervous system cancer in 2015. It also estimates that in 2015, 15,320 of these diagnoses resulted in death. The prevalence of GBM has an incidence of two to three per 100,000 adults per year, and accounts for 52 percent of all primary brain tumors. Overall, GBM accounts for about 17 percent of all tumors of the brain (primary and metastatic). These tumors tend to occur in adults between the ages of 45 and 70. Between 2005 and 2009, the median age for death from

*Corresponding author: Banita Rana
Shri Mata Vaishno Devi College of Nursing SMVD Narayana Hospital Campus Kakryal, Katra, J & K, India,
cancer of brain and other areas of central nervous system was age 64.7

**Clinical Manifestations**

Symptoms may vary depending on the location of the brain tumor and the anatomic structures of the involved brain.8 Patient often present with symptoms of increased intracranial pressure, including headache and focal or progressive neurologic deficits. A seizure is the presenting symptom in as many as 25% of patients and can occur at a later stage of the disease in as many as 50% of patients.9

**Clinical Diagnosis**

The initial diagnostic imaging may include a computed tomography or Magnetic Resonance Imaging scan. On MRI, nearly all GBMs enhance with gadolinium contrast and show an irregularity shaped mass with a dense ring of enhancement and hypointense center of necrosis. Necrosis is the main feature of Grade IV GBM. On the World Health Organization classification system. Surrounding vasogenic edema, hemorrhage, and ventricular distortion or displacement may also be present on diagnostic imaging.10,11 We report a case of Glioblastoma Multiforme in 50 year old male patient

**Case Report**

A 50 years old male patient without any relevant family history or personal risk factors for cancer had suffered from severe headache on 17 January 2019. He is taken to Government hospital Tanda (HP). There the Diagnostic (radiological) examination reveals presence of multiple tumors. On 18 January 2019 Computed tomography scan of his brain was remarkable for the following findings “Heterogeneous Iso to hypo dense lesions in left-fronto-parietal lobe with peri lesional edema”. Pathology reports reveals of specimen excision tumor brain reported in gross examination received multiple grey brown to grey white soft tissue pieces all together measuring 4 cm³. In microscopic examination, the section examined shows histopathological features consistent with glioblastoma. The histopathology examination confirmed a diagnosis of GBM IV stage.

On 19 January 2019 the patient underwent surgical therapy, including craniotomy, excision of tumor from left fronto-parietal lobe. The prognosis after the surgery was very poor and unsatisfactory and patient was shifted to SMVDNSH.

On 09/02/2019 the patient got admitted in HDU of SMVDNSH with complaints of severe headache, drainage from head, marked swelling on left side of head and face and fever.

Surgery is predominant modality of management of GBM The possibility of prognosis was discussed with patient and relatives and informed consent was obtained.

Post operatively the patient was given Injection

<table>
<thead>
<tr>
<th>S. No</th>
<th>Trade Name</th>
<th>GenericName</th>
<th>Action</th>
<th>Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inj. Omnikacin</td>
<td>Amikacin Sulphate 1g</td>
<td>Aminoglycoside</td>
<td>Diarrhea, hearing loss, spinning sensation, numbness, skin tingling, muscle twitching, convulsions and dizziness, Uncontrollable eye movements,</td>
</tr>
<tr>
<td>2</td>
<td>Tab. Epitoin 300 mg</td>
<td>Epitoin 100</td>
<td>Anti epileptic</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Tab. Dexamethasone 2 mg</td>
<td>Dexamethasone sodium phosphate</td>
<td>Glucocorticosteroid</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Tab. Temcad 100 mg</td>
<td>Tenzolamide</td>
<td>Anti cancerous (Alkylating agent)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Tab. Pantocid</td>
<td>Pantoprazole 40 mg</td>
<td>Antacid</td>
<td></td>
</tr>
</tbody>
</table>

**Outcome and Follow Up**

At the end of two weeks treatment plan, the patient was suggested to undergone chemotherapy and radiotherapy. The radiotherapy was started on 4th March and chemotherapy started on 6th March for 42 days which includes 30 sessions of radiotherapy (external radiotherapy).

**DISCUSSION**

GBM is a aggressive and rapid growing brain cancer which spread quickly. The survival rate of patient with GBM is around 15 months. There is no cure but there are treatments to help ease symptoms. The treatments for GBM are surgery, Chemotherapy and Radiotherapy. In surgery most of the portion of tumor is removed. Radiation is used to kill leftover tumor cells, it also slows the growth of tumors. Chemotherapy is also used to retard growth of tumors.

**References**

4. https://www.aans.org/Patients/Neurosurgical-conditions-and-Treatments/Brain-Tumors

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