

Case Report on Brain Stem Glioma

Urvashi Kapgade¹, Bibin Kurian², Aniket Pathade³

¹B. BSc. nursing, Smt. Radhikabai Meghe Memorial College of Nursing Sawangi (Meghe), Wardha, Datta Meghe Institute of Medical Sciences (Deemed to be University) Maharashtra, India.

²Associate Professor, Department of Child Health Nursing, Smt. Radhikabai Meghe Memorial College of Nursing Sawangi (Meghe), Wardha, Datta Meghe Institute of Medical Sciences (Deemed to be University) Maharashtra, India.

³Research Scientist, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi, Wardha, Maharashtra.

Abstract

Brain stem glioma is one of the diseases of CNS. It is brain and spinal cord tumor. It is a type of tumor caused when healthy cells in the brain stem change and increase abnormally and forms a mass that mass called as tumor. This tumor may be malignant. It grows abnormally and spread other parts of body. Glioma is a tumor, it grows from glial cell is supportive cell in the brain. A 13 year old male patient presented in neurology ward with the chief complaint of difficulty chewing and swallowing food, drooping of the face on left side, difficulty while talking, weakness in the left arms and legs, unable to walk along with Headache and Vomiting. After examination and specific investigation following blood test, cytology and MRI scan, the patient was diagnosed as brain stem glioma. Initial management was done by Physician by antibiotic, intravenous fluid, some vitamin and nutritional supplement and diuretics to remove fluid into body. Following the appropriate treatment patient's condition improved day by day.

Keywords: brain stem glioma, CNS, malignant, glial cell, pons.

INTRODUCTION

Brain stem glioma is one of most difficult pediatric cancer to treat. To diagnosed the brain stem glioma doctor advice to CT Scan, MRI and sophisticated neurophysiology monitoring techniques and advice to do surgical treatment of this disease condition.(1) Brain stem glioma is generally occurs in childhood. This disease formed in male and female in same proportion.(2)

Brain stem glioma is a heterogeneous group of tumors. Brain stem glioma is difficult to diagnose and challenging to treat. Most of the brain stem cancer formed in the pons and developed in the part of the brain stem and they complicated to do surgery.(3) Therefore more than 60% of children are treated as the part of clinical practice. A clinical practice is research study that helps finding the best treatment. Clinical trials given a new drug, combination of existing treatments or recent dose of current therapies.(4) After giving clinical current therapies. After giving clinical practice medication observe the children and do close monitoring to see adverse effect.(5)

Developed imaging and surgery, imaging techniques are developed that help the surgeon to located particular point of brain. Developed radiation therapy, Radiation therapy is given to the particular point of tumor not on healthy cell of the brain to stop the tumor growth and slow the growth of tumor. (6)

In children, 10–20percent of all cancers of the nervous system are gliomas of the brain stem. Individuals who are under the age of 10 are more likely to have them. Glial cells inside the brain stem give rise to brain stem gliomas. Glial cells are the cells that make up the supporting tissues.(7) A brain stem glioma's behaviour, diagnosis, and growth pattern depend on where it develops (midbrain, pons, medulla), whether it does so (diffuse or confined, inherent or exophytic), and what type of glioma it really is (low grade or high grade).

Address for correspondence: Urvashi Kapgade

Smt. Radhikabai Meghe Memorial College of Nursing, Datta Meghe Institute of Sciences (Deemed to be University) Maharashtra, India.

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The three main parts of the brain stem are the midbrain, pons, and medulla. The pons is the most common location for glioma of the brain stem, but it can occur anywhere in the brain stem.(8)

Glioma of the brain stem in children is a disorder in which benign (noncancerous) or malignant (cancerous) cells grow in the brain stem tissues. In children, there are two forms of brain stem gliomas.(9) The majority of juvenile brain tumors have no recognized cause. The sign and symptoms of brain stem glioma differ from one child to the next. Childhood brain stem glioma is detected (found) via brain imaging tests. Certain kinds of brain stem glioma may require a biopsy to be diagnosed. The prognosis is influenced by a number of things (chance of recovery).(10)

The brain stem gives rise to the nerves that govern perception and mobility in the neck and head. The brainstem contains nerve cells that regulate mobility, synchronization, and feelings in the body as they go from the brain to the spinal cord. Last but not least, the brain stem affects the regulation of symptoms by compromising the action of the nearby nerve fibers.(11) Brain stem tumours can also interrupt the flow of spinal fluid, causing hydrocephalus and signs of high intracranial pressure (headache, vomiting, poor gait and unconsciousness).(12)

Case presentation:

A 13 year old male patient presented in neurology ward with the chief complaint of difficulty chewing and swallowing food, drooping of the face on left side, difficulty while talking, weakness in the left arms and legs and later progressing to difficulty in lifting hand, unable to walk along with Headache and Vomiting.

Cytology Report of CSF showed smears are paucicellular and occasional lymphocytes in clear background. No any typical cells/ malignant cells are seen. MRI of Brain indicated the pons, right middle cerebellar peduncle and right side of midbrain. These areas appears slightly hypointense to normal gray matter on T1W and heterogeneously hyperintense on T2W, T2 FLAIR images. They show patchy area of moderated diffusion.

After all examination and specific investigation following blood test, cytology and MRI scan, the patient was diagnosed as brain stem glioma. Initial management was done by Physician by antibiotic, intravenous fluid, some vitamin and nutritional supplement and diuretics to remove fluid into body. He was started on Injection mannitol 100ml intravenous, syp. Levera 5ml (orally twice in a day), DNS + KCL 400ml + 4ml is given intravenously, inj. Ceftriaxone 1.5gm (intravenously once a day). The Surgical Resection of Brainstem Glioma was performed after which patient is on conservative management. Patient did not identified with any neurological deficit. Following the appropriate treatment patient's condition improved day by day. Patient

prognosis remains good.

Discussion:

Brain stem glioma is the one of the type of cancer in which the patient might experience similar symptoms. But in some other case of brain stem glioma patient shows other symptoms according to the damaged part of brain and spinal cord. Patient shows symptoms like double vision or can't close eyelids, droop the face, unable to chewing and swallowing food, headache, vomiting, etc.(13-21)

The third most common kind of glioma, oligodendroglioma makes up 2- 5% of primary brain tumours, 5- 18 percent of glial neoplasms, and less than 15% of adolescent CNS neoplasms. Calculating estimated prevalence is difficult since there are no recognised morphologic parameters, immunohistochemical indicators, or molecular biomarkers. Adults were the most frequently diagnosed. The prevalence of anaplastic oligodendrogliomas peaks in the seventh or sixth decades of adulthood. (22-23)

Because of periodic updates, fluctuating grading rules, and limited interrater consistency even among trained pediatric pathologists, determining the prognostic values of brain tumors in the most extensively used (WHO). Classifying high grade gliomas based on histological features, on the other hand, can be difficult, resulting in low repeatability and large interobserver variability. Further more, despite comparable histology terminology, the prognosis of adult and pediatric high grade gliomas differs.(24)

During an operation, the tumor and same surrounding healthy tissue are removed. A neurosurgeon is a doctor who specialized in utilizing surgery to treat a CNS tumor. Only when the tumor appears localized on an MRI scan is surgery utilized to treat brain stem glioma. This means that in some cases, such as when a tumor develops out of the brain stem rather than into it, it may be possible to remove the tumors without causing damage to the brain. Talk to your kid's health care team about the potential adverse effects of the surgery your child will have before undergoing it. Surgery is not recommended for most children with diffuse kinds of brain stem glioma. Immunotherapy: immunotherapy, also known as biologic therapy, aims to strengthen the body's natural defense against tumors. It improves, targets, or restores immune system function by using materials created by the body or in a laboratory. Doctors are looking at developing vaccines to treat brain stem glioma. Learn more about cancer vaccination and immunotherapy basics.(25)

Chemotherapy in new form, many kind of chemotherapy is blocked by the spinal cord from harmful substance. Convection-enhanced delivery, a new way of administering chemotherapy, is also being investigated. A narrow tube called a cathet is used in this approach.(26)

When a child is diagnosed with brain stem glioma, treatment does not terminate when active treatment is completed. The

child health care team will continue to evaluate his or her overall health, check for recurrence of the tumour, and manage any adverse effect. This is referred to as follow-up care. All children with brain stem glioma should be followed up on for the rest of their lives. Regular physician examination, medical testing, or both may be part of your child's follow-up care. Physician monitors child's progress over the coming month and years. The best technique to see if the tumour is stable or trying to come back is to have regular MRI scans combined with a history and physical examination.(27-29).

Conclusion:

Any age can be employed to identify brainstem gliomas. One of the most frequent pathological indications is ependymoma/anaplastic ependymoma. The prognosis is dismal, although early detection and surgery can significantly improve it. Brain stem glioma is one of the dangerous diseases in children. If the brain stem glioma is not treated early as possible it can cause death of the patient. In this case, the patient was diagnosed as brain stem glioma. Initial management was done by Physician by antibiotic, intravenous fluid, some vitamin and nutritional supplement and diuretics to remove fluid into body followed by surgical resection of gliomas. Following the appropriate treatment patient's condition improved day by day.

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