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Diagnosis and Treatment of Brain Tumor

Haung Chen*

Department of Neurology, Juntendo University, Tokyo, Japan

Commentary

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***For Correspondence:**
Haung Chen, Department of Neurology, Juntendo University, Tokyo, Japan
E-mail: chenhaung123@gmail.com

DESCRIPTION

Taking a medical history and recording medical antecedents and symptoms is frequently the first step in making a diagnosis. Investigations in the clinic and lab will help rule out infections as the source of the symptoms. This stage may involve examinations of the eyes, otolaryngology (or ENT), and electrophysiology. When diagnosing brain tumors, Electroencephalography (EEG) is frequently used. When it comes to diagnosis and treatment, brain tumors are comparable to cancers found elsewhere in the body in terms of their traits and challenges.

However, they produce particular problems that closely match the characteristics of the organ they are in. When compared to tumors in other parts of the body, brain tumors are more difficult to diagnose. Due to the high activity of tumor cells, radioactive tracers are frequently taken up in great quantities in tumors, enabling radioactive imaging of the tumor. The Blood-Brain Barrier (BBB), a membrane that strictly regulates what substances are allowed to pass into the brain, keeps the majority of the brain isolated from the blood. As a result, a lot of tracers that could easily penetrate tumors in other parts of the body would be impossible to penetrate brain tumors until the tumor disrupted the BBB. BBB disruption can be easily seen on an MRI or CT scan; hence it is thought to be the primary cause of this condition. Increased intracranial pressure may manifest clinically as headaches, nausea, or a change in consciousness. In children, changes to the diameter of the skull and enlargement of the fontanelles may also occur due to swelling or obstruction of the Cerebrospinal Fluid (CSF) from the brain. In order to rule out brain tumors, doctors should be alert to more complex symptoms including endocrine dysfunctions.

A bilateral temporal visual field defect (caused by compression of the optic chiasm) or pupillary enlargement, as well as focal neurologic symptoms such as personality or emotional changes, hemiparesis, hypoesthesia, aphasia, ataxia, visual field impairment, impaired sense of smell, impaired judgement, and memory loss or lack of recognition, may occur either gradually or suddenly. Typically, a medical team evaluates the therapy options and

discusses them with the patient and their family. Depending on the nature and location of the tumor, many types of treatment are available and can be combined to increase survival rates.

The most common and ideal course of treatment recommended in medical literature is surgical removal (resection) by a craniotomy. In neurosurgery oncology, less invasive methods are more used. Surgery's primary goal is to eliminate as many tumor cells as possible; total tumor excision is the ideal result, but cytoreduction (also known as "debulking") of the tumor is an acceptable alternative. When the tumor is completely removed from view and subsequent scans reveal no discernible tumor, this procedure is known as a Gross Total Resection (GTR). Sometimes it's impossible to reach the tumor, which makes surgery difficult or impossible. With the exception of a few tumors around the base of the skull, most meningiomas can be effectively removed surgically. The majority of pituitary adenomas can be surgically removed, frequently through the nasal cavity and base of the skull (trans-nasal, trans-sphenoidal approach). The excision of large pituitary adenomas necessitates a craniotomy (opening of the skull). For situations that cannot be treated surgically, radiotherapy is used, including stereotactic techniques. By marking tumor cells with 5-aminolevulinic acid, which makes them glow, some recent research investigations seek to enhance the surgical excision of brain tumors. The therapeutic standard for malignant tumors includes postoperative chemotherapy and radiation as essential components. Surgery is typically not used to treat multiple metastatic cancers; instead, radiation and chemotherapy are typically used, and the prognosis is generally poor.