SPACE OCCUPYING LESION

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Abstract: SOL is a extended lesion in brains including tumor, hematoma and abscesses. Because the cranium is stiff with a fixed volume,then the lesions will increase the intracranial pressure. A lesion that extends first will be accommodated by removing the cerebrospinal fluid from the cavity of the cranium. Eventually venous will compression and disorders braincirculation and cerebrospinal fluid will appears, so the intracranial pressure will increase. Venosa congestion gives rise to increased production and decreased absorption of cerebrospinal fluid and increase the volume and going back to things like above.[1] The position of the lesion in the brain space urges can have a dramatic influence on the signs and symptoms. For example a lesion can clog the spaces flow urges out of cerebrospinal fluid or directly pressing on a large vein, makethe intracranial pressure increased rapidly. Signs and symptoms allows doctors to localize the lesion will depend on the occurrence of a disorder in the brain as well as the degree of tissue damage caused by nerve lesion. Great head pain, possibly due to stretching durameter and vomiting due to pressure on the brain stem is a common complain. A lumbar pungsi should not be performed on patients suspected intracranial tumors. Spending on the cerebrospinal fluid will lead to the onset of sudden shifts hemispherium cerebri through notch into posterior fossa cranii cerebelli or herniation of the medulla oblongata and serebellum through the foramen magnum. At this time the CT-scan and MRI is used to enforce a diagnose.
Keywords: Space, Occupying, Lesion

A. Introduction

Brain tumor in a general sense means lumps, in terms of radiology known as Space Occupying Lesion (SOL). Central nervous system neoplasm is generally progressive neurological dysfunction which causing damage. Symptoms caused by slow growing tumor give you symptoms that slowly emerging, while the tumor lies on a vital position will give you symptoms that appear quickly. Approximately 10% of all of neoplasm process in the rest of the body found in the nerves and itscover, 8% are located in intracranial space and 2% in canalis spinalis. The process of neoplasm in nerves include two types: [2]

a. The primary Tumor, a tumor originating from the brain tissue itself that tend to develop in certain places. Like ependimoma which located near the walls of the ventricles or canalis centralis of medulla spinalis, glioblastoma multiforme is mostly found on parietal lobe, frontal lobe and spongioblastoma in corpus calosum or pons.
b. Secondary Tumor (metastasis), a tumor originating from metastatic carcinoma from other parts of the body. The most frequent metastatic carcinoma found in bronchus and prostate in men as well as Carcinoma of the mammae in women. [2]

In order to discover the exact pathology underlying a brain tumor, it is essential that it is biopsied and sent for analysis to an experienced neuropathologist. This biopsy can be done via a stereotactic technique, which allows tissue to be sampled from the lesion in a relatively safe way. This deploys a co-ordinate system based on scans, which allows the surgeon to access the tumor for biopsy in a minimally invasive approach. The other alternative is that a biopsy is performed as part of the debulking or excision of a tumor.

Broadly speaking, brain tumors can be classified as either gliomas or non-gliomas. These are either tumors of the glial cells of the brain or tumors of the other intracranial cells. The vast majority of lesions in adults tend to be supratentorial (above the tentorium cerebelli) and 86% of these falls into the category of gliomas.This includes astrocytomas, oligodendrogliomas and ependymomas.

Gliomas. Astrocytomas are the most common type of glioma and are graded according to the WHO scale of grades one to four. Grade 1 astrocytomas include pilocytic astrocytomas which are benign. Grade 2 astrocytomas are low grade infiltrating tumors. Grade 3 anaplastic astrocytomas exhibit mitoses. Finally, the grade 4 glioblastoma multiforme (GBM)[3] is the most aggressive primary brain tumor in humans and has a median survival of 14 months following diagnose even if given optimal therapy.[4,5] GBM can arise as a first presentation or a secondary presentation to a lower grade astrocytoma. The gliomas most commonly encountered in adults are neoplasms of astrocytic or oligodenrocytic lineage. Mixed tumors also occur, the most common of which is termed anaplastic oligoastrocytoma.[10] In US studies, glioblastomas formed around 50% of these tumors. This was followed by oligodendrogliomas (9.2%), other astrocytomas (9.1%) and ependymomas (5.6%).[6]

Non-Gliomas. Non-gliomas form the remainder of brain tumors. This includes meningiomas, which arise from the meninges and compress the brain thereby creating a mass effect. With an incidence of around 2 per 100,000,[8] over 90% of these tumors are benign and are therefore potentially curable through resection. Loss of chromosome 22 is a characteristic genetic feature of these tumors.[6] Pituitary adenomas also fall into the category of non-gliomas and are eitherfunctioning or non-functioning. If functioning, they may secrete hormones causing endocrine disturbance.

The clinical manifestation of the tumor depends on the hormone secretion. Sexual dysfunction and galactorrhoea occur in prolactinoma. A “buffalo hump”, “moon face”, acne, weight gain, hypertension and diabetes mellitus occur in Cushing’s disease (ACTH hypersecretion). Acromegaly can result from an over-secretion of growth hormone with the typical changes that occurs with soft tissue growth in adult sufferers. Rarely, other secreting pituitary tumors such as TSHomas occur. Non-functioning pituitary tumors may exert a mass effect due to their proximity to the optic chiasm and can cause visual disturbance such as bitemporal hemianopia.[7]

Medulloblastomas are primitive neuroectodermal tumors which are rare in adulthood but much more common in children, accounting for 20% of childhood brain tumors.[8] These tumors are generally located in the cerebellum and therefore present with signs of cerebellar dysfunction. They can involve the 4th ventricle and lead to the development of hydrocephalus.[9]

With the correct initial treatment of medulloblastoma, long-term survival may be achieved in around 40-60% of all patients.[10] These tumors can however spread in the subarachnoid space to involve other parts of the CNS. Primary CNS lymphoma is another tumor within the grouping of non-gliomas. These constitute 2-3% of total brain tumors in people of normal immunity. Patients with immunodeficiency are at an increased risk of developing this form of cancer.

Cerebral metastases. Cancer cells of cerebral metastases have spread to the brain from cancer cells in other organs in the body. The most frequent cause of lung cancer is 48%, breast cancer 21%, cancer geniturinari 11%, skin cancer (melanoma) 9%, as many as 6% of gastrointestinal, head and neck cancer 5%. Such organs the primary cancer spreading through the bloodstream to spread to the brain so called secondary tumors. Most brain metastases have occurred in the cerebrum, the cerebellum 80% 16%, and 4% of the brainstem, the incidence of occurrence of metastases to the brain is 20%-40% of all cancer

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patients, as much as 70% had multiple lesions.[10]

Cancer cells that develop in the brain can suppress, irritating and or destroy normal brain tissue, so that it will give rise to a progressive headache, vomiting, seizures, impaired verbal symptoms, weakness of the limbs, paralysis, unconsciousness, and even death.This occurs if the size of the tumor already causing damage in the brain. But not everyone complained about it, even a third of sufferers are tumor metastases have no symptoms at all. [10]

Generally ypes of cancer can spread to the brain, so it's important for the doctor to determine the cause of the primary sources of the metastases tumor of brain. So that it can determine and implement for the effective option treatment. Early diagnose and treatment of brain metastases tumor can cause remission or recovery of symptoms of disorders of the brain and may improve the patient's quality of life and prolonging survival. [10]

Clinical Symptoms. There are 4 common clinical symptoms associated with brain tumors, like mental status changes, headaches, vomiting, and seizures. [9]

a. Changes in mental status. Early symptoms can be vague. The inability of the execution of daily tasks, irritability, labile emotions, mental inertia, impaired concentration, even psychosis.[2] Cognitive function is a complain often made by cancer patients with a variety of forms, ranging from mild memory dysfunction and difficulties concentrating until disorientation, hallucinations, or lethargy. [11]
b. Headaches. Headaches is an early symptom of intracranial tumors on 20% of sufferers. The character of the headache felt like being pressedor full flavor on the head as if willing to explode 2 Initially pain can be mild, episodic and dull, and then gain weight, blunt or sharp and also intermittent. Pain can also be caused by the side effects of chemotherapy drugs. This pain is more excellent in the morning and can be diperberat by coughing, tilt your head or physical activity.[3] The location of the pain that can be unilaterally in accordance with location of tumor. Tumors in the posterior fossa kranii head pain usually leads to ipsilateral retroaurikuler. Supratentorial tumors in pain cause head on the side of the tumor, in a frontal or parietal, temporal orbita.[11]
c. Vomiting. Vomiting is also often arise in the morning and not food-related. Where vomiting is typical projectiles and not preceded by nausea. This situation is often found in the posterior fossa of tumor.[11]
d. Seizures. Focal seizure is another manifestation that is commonly found in the 14-15% of sufferers of brain tumor, 20-50% of patients brain tumor showed symptoms of seizures. Seizures arising first on age of consent indicating the presence of a tumor in the brain. Seizure related brain tumor was originally a form of focal seizures (focal damage indicative of serebri) as in meningiomas, can then become a public seizure is mainly a manifestation of glioblastoma multiforme.[11] Seizures usually paroxysmal, a result of the cortex in neurological serebri. Partial seizures due to focal areas of emphasis on the brain and menifestasi on the secondary, while local seizures occurring if the tumor is widespread on both hemisphere serebri. [12]

Support examination. A brain tumor can be detected with a CT-scan or MRI. The choice depends on the availability of facilities at each hospital. CT-scan cheaper than an MRI, commonly available in hospital and when you use the contrast can detect the majority of brain tumors. More specialized MRI to detect tumors with small size, tumors at the base of the skull and bones in the posterior fossa. In addition, MRI can also help the surgeon to plan the surgery because it showed tumors in a number of areas.[12]

Management. Treatment of patients with SOL include: [11,12] Symptomatic.

a. Antikonvulsi. Controlling epilepsy is an important part of the treatment patients with a brain tumor.
b. Cerebral edema. If patients with increased intracranial pressure and the description of Radiology showed cerebral edema, then dexametason can be used reduce the edema.
c. Radiotherapy. Radiotherapy played an important role in the treatment of brain metastases, and includes entirely namely irradiation, radiotherapy and radiosurgery. For decades, whole brain irradiation has been recommended for patients with multiple lesions, the life expectancy of less than three months, or the value of the performance of Karnofsky is low. However it should be noted often cause severe side effects, including radiation necrosis, dementia, nausea, headaches, and sore. In children who get this treatment can cause mental retardation, psychiatric disorders and other neuropsychiatric effects.
d. Chemotherapy. Chemotherapy is rarely used for the treatment of brain metastases, as chemotherapeutic agents penetrate the blood-brain barrier very badly. However, some types of cancer such as lymphoma, carcinoma small cell lung and breast cancer is a very chemosensitive and chemotherapy can be used to treat extracranial to metastatic disease cancer. Experimental treatment for brain metastases is intrathecal chemotherapy, a technique in which chemotherapy drugs delivered through intralumbar injection into the cerebrospinal fluid. However, it was not approved by the u.s. Food and Drug Administration (FDA) for the treatment of brain metastases. [12]
e. Operation. Brain metastasis frequently managed surgically, with a maximum of surgical resection followed by stereotactic radiosurgery or whole brain irradiation provides more benefits to patient survival compared with whole brain irradiation method using [11,12]

Prognosis. The prognosis for metastatic brain is variable. This depends on the type of primary cancer, the patient's age, the absence or presence of extracranial metastases metastatic and amounts in the brain. For all patients an average of average survival is only 2-3 months. However, in some patients, such as those with extracranial metastasis, those who are younger than 65, and those with one site of metastases in the brain, the prognosis is much better, with a survival rate of an average of up to 13 months. [11,12]

B. Research Metodology

This research will discuss Space Occupying Lesion. This research uses a research methodology with literature study.

C. Result and Discusion

Basic clinical diagnose. From the anamnesis the patients complain loss of consciousness. The neighbour told that the patient often felt severe headache. Headache start more than 5 month. The pain was mild for the first times and getting worse by time. The patient ever got seizure and also got hemiparese dextra. These symptomps is suitable with symptoms of increased intracranial pressure, where there are main symptoms of increased intracranial pressure like loss of consciousness, headache, vomiting, and neurological deficit . Intracranial pressure is influenced by three factors, namely the volume of brain tissue, cerebrospinal fluid and blood volume.

Basic topic diagnose. From this patient symptoms and sign there were found a loss of consciousness, chronic progressive headache, change status mental and hemiparese dextra, then the suspected topic diagnose in this case is in cortex cerebri regio lobus

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frontoparietal sinistra. Sign of brain tumor depends on true localizing sign from that lession such as frontoparietal lobe will be happen deficit neurology and contralateral hemiparesis.

Basic etiological diagnose. Patient had loss of consciousness and ever felt severe headache. The pain was mild for the first times and getting worse by the time. The symptomps is suitable with clinical symptomps of primary brain tumor, like mental status change, headache, vomiting and seizure. But in physical examination there wasn't find abnormalities. Its proven by radiology imagine that there's multiple lession at intracranial suspect metastase. Therefore final diagnose for this patient is SOL ec suspect tumor metastase but much better confirmed with Magnetic Resonance Imaging (MRI) and check tumor marker.

Basic differential diagnose. Patient's neurological deficit occur slowly and feels increasingly worse, such as loss of conscious, severe headache progressively, and hemiparese. The symptomps are caused by increased intracranial pressure. Increase intracranial pressure can be found in cerebral abscess, brain tumor or metastase. Patient didnt have sign of infection such as fever or focal infection, and non reactive of HIV, therefore brain abscess may not suitable.

Basic of supportive examination

a. Laboratory: knowing risk factors a loss consciousness and knowing the general condition of the patient.
b. Thoracic x-rays: to see the existence of a specific process, to see metastasis or originate tumor
c. Head CT-scan: to see a cross-sectional view of the brain as whole, which related to patient's complained.
d. VCT : Knowing HIV status in this patient and if positive HIV, it could be treated as soon as
e. MRI : To know the specific location of tumor

Basic management: 1) IVFD RL 20 dpm : to maintain the state of euvolemic; da 2) Dexametason: to reduce the brain edema.

D. Conclucion

Abstract: SOL is a extended lesion in brains including tumor, hematoma and abscesses. Because the cranium is stiff with a fixed volume,then the lesions will increase the intracranial pressure. A lesion that extends first will be accommodated by removing the cerebrospinal fluid from the cavity of the cranium. Eventually venous will compression and disorders braincirculation and cerebrospinal fluid will appears, so the intracranial pressure will increase. Venosa congestion gives rise to increased production and decreased absorption of cerebrospinal fluid and increase the volume and going back to things like above. The position of the lesion in the brain space urges can have a dramatic influence on the signs and symptoms. For example a lesion can clog the spaces flow urges out of cerebrospinal fluid or directly pressing on a large vein, makethe intracranial pressure increased rapidly. Signs and symptoms allows doctors to localize the lesion will depend on the occurrence of a disorder in the brain as well as the degree of tissue damage caused by nerve lesion. Great head pain, possibly due to stretching durameter and vomiting due to pressure on the brain stem is a common complain. A lumbar pungsi should not be performed on patients suspected intracranial tumors. Spending on the cerebrospinal fluid will lead to the onset of sudden shifts hemispherium cerebri through notch into posterior fossa cranii cerebelli or herniation of the medulla oblongata and serebellum through the foramen magnum. At this time the CT-scan and MRI is used to enforce a diagnose.

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