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Pathology Summit 2018: Neuronal tumors diagnosed at Department of Pathology, Sir Salimullah Medical College, and Dhaka, Bangladesh during two years study period - Delwar Hossain - Sir Salimullah Medical College, Bangladesh.

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Over the past century, cancer has become the most difficult problem for public health systems in low and middle income countries. With a cancer rate of over a million, Bangladesh is no exception. The prevailing training demonstrations that out of 17 brain tumors, meningioma is the most frequent followed by anaplastic astrocytoma, fibrillary astrocytoma, pilocytic astrocytoma, glioblastoma, gemistocytic astrocytoma and astroblastoma. Out of 73 peripheral neuronal tumors, the ganglioneuroma is found in the highest number followed by schwannoma and finally neurofibroma. A benign tumor was found in 88.89% and a malignant tumor was found in 11.11% of the neuronal tumor studied. Benign neuronal tumor was found more in women than men in both age groups and was found highest in the adult age group. The malignant neuronal tumor was found to be highest in the adult age group and was highest in adult men and pediatric women. Overall, the benign tumor was found more in women than in men, and the malignant tumor was found equally in both sex groups, regardless of age.

Neuronal and neuronal-glial mixed tumors are a group of rare tumors that occur in the brain or spinal cord. Together, your brain and spinal cord make up your central nervous system (CNS). Many of these tumors are not cancerous (benign). Benign means that growth does not spread to other parts of the body. But these tumors can be dangerous. They can cause seizures or other problems by pressing against the surrounding brain tissue.

Your brain and spinal cord comprise many neurons and other supporting cells (such as glial cells). Neurons are specialized nerve cells that send messages to the CNS and the rest of your body. These neurons "talk" to each further using chemical and electrical signals. Glial cells do not send nerve signals but do many other jobs in your brain, such as isolating and supporting neurons.

A tumor is an abnormal growth of cells. Most brain tumors originate from glial cells or other non-neuronal CNS cells. Neuronal tumors are a rare group of brain tumors made up of abnormal neurons. Neuronal-glial mixed tumors are a rare group of brain tumors that have abnormal neural cells with glial cells.

Health care providers who specialize in examining tumor cells under a microscope normally classify them on a scale of I to IV. The classification is based on the abnormal appearance of the cells. The cells in a grade I tumor appear almost normal and grow slowly, while a grade IV tumor tends to grow very quickly. Most neuronal and neuronal-glial mixed tumors are low grade (grade I or II) and tend to grow slowly. The cells appear almost normal. Health care providers often remove low-grade tumors by surgery.

There is a grade III neuronal tumor subtype. It is the anaplastic ganglioglioma. This type tends to grow faster than most other neural tumors. It may require more aggressive treatment with chemotherapy and radiotherapy in addition to surgery.

Overall, neuronal and neuronal-glial mixed tumors tend to grow slowly. Certain neuronal and mixed neuronal-glial tumors occur more often in children or adolescents than in adults. Other types (such as cerebellar liponeurocytoma) are more common in the elderly. Almost all of these tumors can occur in people of any age.

What are the causes of neuronal and mixed neuronal-glial tumors?

Experts do not yet distinguish what causes neuronal and mixed neuronal-glial tumors to develop. Some theories suggest links to genetic mutations, environmental toxins or infections (such as viruses). However, the possible risk factors for these tumors are unclear.

This work is partly presented at 15th Global Experts Meeting on Pathology and Laboratory Medicine, July 02-03, 2018 held at Bangkok, Thailand.

What are the symptoms of neuronal and neuronal-glial mixed tumors?

The location of the tumor in the brain and its size determine the symptoms you may have. A neuronal or mixed neuronal-glial tumor can cause symptoms related to the part of the brain in which it grows.

In general, symptoms may include:

• Convulsions (often the first symptom)

• Headache

• Nausea and vomiting

• Dizziness and balance problems

• Difficulty walking

• Eye problems

• Changes in personality or thinking

• Drowsiness or inability to stay awake

How are neuronal and mixed neuronal-glial tumors diagnosed?

Health care providers often take a health history, asking questions about your recent symptoms, your past health problems, and your family health history. You will want a thorough physical exam, counting a nervous system exam. Your healthcare professional will likely check your coordination and reflexes and perform several nervous system tests. If a healthcare professional suspects a brain tumor, they will often want to look at pictures of your brain. You might need:

• Biopsy of tumor tissue to look at it for type and grade

• Blood and urine tests

• CT

• MRI of your brain and spinal cord

You can first consult your primary health care provider and then get a referral to a specialist. This health care provider should be an expert in the diagnosis and treatment of brain diseases, such as a neurologist, neurosurgeon or neuro-oncologist.

How are neuronal and neuronal-glial mixed tumors treated?

The usual action for these tumors is to remove them surgically. In many cases, treatment can only remove the tumor. If the tumor is in a place where it is not possible to remove it completely, radiation and chemotherapy are other options. You can work with your healthcare team to discuss the best treatment plan for you. You will likely need regular follow-up with your healthcare professional, including repeated imaging tests to check if the tumor comes back. It is very important to respect follow-up appointments so that your healthcare team can monitor any changes.

What are possible complications of neuronal and mixed neuronal-glial tumors?

Attacks are the most common symptoms of the nervous system. In some cases, the tumor can block the drainage of cerebrospinal fluid from your brain. This causes fluid to build up and increases the pressure in your brain. If this ensues, you may essential surgery to insert a tube to drain excess fluid and lower the pressure. After the tumor is removed, this problem often goes away.

The tumor may grow back if you have not removed everything. In very rare cases, a tumor can develop into a higher grade form.

Key points on neuronal and mixed neuronal-glial tumors

Neuronal and neuronal-glial mixed tumors are rare tumors of the brain or spinal cord. These tumors include abnormal nerve cells. Some key points:

• Furthermost of these tumors remain low grade (grade I or grade II) and tend to grow slowly.

• The first symptoms may be seizures. Headache, nausea or other symptoms may occur.

• Surgery to eradicate the tumor is frequently the main treatment. Radiation therapy and chemotherapy are also options in some cases.

• Removal of the entire tumor often results in a good long-term outcome.

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