

Medulloblastoma (Essay, Special Conditions 2.)

Medulloblastoma is a type of brain tumour that occurs in children and infants. This is the most common form of malignant (cancerous) brain tumour effecting children under the age of 15. The tumour develops in the cerebellum, which is the region of the brain that controls movement, balance and fine motor skills. Medulloblastomas are very rapid growing tumours and are usually diagnosed within one to three months from the time of onset. Almost half of the cases of these brain cancers are diagnosed in children aged 3-8; with children below the age of 3 being the next most commonly diagnosed age group.

Medulloblastoma are thought to be a primitive tumour that is formed from immature and underdeveloped cells of the brain. Instead of the cells growing in an orderly manner, they continue to divide uncontrollably and form large clumps of cells (a tumour). Sometimes, cells from the tumour break away and can move to other parts of the body or the brain and form a new second tumour. This can make the disease very aggressive and harder to treat. Unfortunately at present, the causes of why and how medulloblastomas form is still not fully understood.

The most common symptoms of medulloblastoma usually include acute headaches and severe vomiting. These symptoms are generally due to the increased intracranial pressure (pressure in the skull) caused by the presence of the tumour mass. Problems with speech, walking and movement and loss of balance may also arise, which can be attributed to the region of the brain (cerebellum) in which medulloblastomas form. Commonly changes in a child's behaviour and personality are noted as an early indicator of a brain tumour. The disease is diagnosed by using imaging techniques, such as MRI (magnetic resonance imaging) or CT (computerized tomography) scans, to look at the brain and detect any abnormal masses. A lumbar puncture may also be performed, in which a small sample of spinal fluid is taken to detect any cancerous cells that may be circulating in the cerebrospinal fluid (CSF). This can be used to detect if any cells have broken away from the primary tumour and are moving (metastasizing) to other parts of the body.

The course of treatment of medulloblastoma is highly dependant on age, time of diagnosis, as well as the general health of the child. The size and location of the tumour is also taken into account. As this disease usually strikes in younger children whose brains are still developing, precautions must be taken to try and further prevent damage to the healthy growing brain tissue. Generally, the first step of treatment is surgery to remove the tumour and relieve the pressure in the skull. It is rarely possible that the tumour can be entirely removed and further therapies may be necessary. Radiotherapy, the use of radiation to kill the cancerous cells, is commonly used as a secondary treatment in patients that are over 3 years old. This form of treatment is not tolerated in those under 3, as it is too harmful for the developing brain. Chemotherapy is the use of cytotoxic drugs to kill tumour cells. A combination of both radio- and chemotherapy may be used as a secondary treatment.

Researchers are trying to discover what causes brain tumours to form. A lot of these studies are looking at the genetic basis of the disease. It is hoped that in the not too distant future, we will understand exactly what goes wrong in the development of the brain that causes these tumours. Once the causes are known, better and more effective treatments can be developed and children inflicted with this disease will make a full recovery.