

Information Sheet 5: Low-Grade Glioma Brain Tumours, Astrocytoma and Oligodendroglioma

This leaflet contains information about low grade brain tumours. It has been written as an addition to our information on **Living with a Brain Tumour**.

What is a Glioma?

The brain substance is made up of nerve cells (Neurons) and supportive tissue (Glia). Supportive tissue comprises of three cell types:

- **Astrocytes**, which are thought to provide the brain's framework and help control the chemistry of brain cells
- **Oligodendrocytes**, which help as insulators in the transmission of messages in the brain
- **Ependymal Cells**, which line the cavities in the brain

Most primary brain tumours arise from the supportive tissue and are collectively called **Gliomas**. Gliomas can be separated further depending on their cell of origin:

Astrocyte – **astrocytoma**

Oligodendrocyte – **oligodendroglioma**

Ependymal lining cell – **ependymoma**

The World Health Organisation grades astrocytomas into four grades. Grade 1 tumours are the least malignant and grade four are the most malignant. **Pilocytic Astrocytoma** is graded as 1 and **Astrocytoma and Oligodendroglioma** are graded as 2 tumours. Together these grades are called **Low Grade Gliomas**.

What are the common symptoms?

The symptoms will vary depending on the size and location of the tumour. Everyone is an individual and the symptoms may vary in different people. People may experience all, some or none of the symptoms. A brain tumour that is slow growing, like a Low Grade Glioma, may be present for many years without symptoms. The first symptoms are usually seizures or headaches. 80-90% of people with Low Grade Gliomas of the cerebral hemispheres have seizures. Headaches, seizures and other symptoms such as numbness, weakness or speech problems can occur. Our information on **Living with a Brain Tumour** will explain these points further.

How is a diagnosis made?

Investigation of a suspected brain tumour follows a standardised procedure. A good neurological examination is essential along with a combination of the following tests, depending on the need and availability.

- **CT Brain scan** (Computed Tomography) is a specialised x-ray. It will take 20-30 minutes. An injection, into the back of your hand, of a contrast agent (dye) may be necessary to give the clearest picture of the tumour.

- **MRI Brain scan** (Magnetic Resonance Imaging) is a specialised imaging technique that gives very clear pictures of the brain and will show the site and extent of the tumour. It usually takes 30-40 minutes and uses magnetism instead of x-rays. People with pacemakers cannot have this test and those with any other metallic implants should inform the doctor well before the test.
- **EEG** (Electroencephalogram) is a test that measures the electrical activity coming from the brain. It does not give pictures but instead tells a little about how the brain is functioning. It is useful in confirming seizures if there is a clinical suspicion of epilepsy.

How common are these tumours and who gets them?

There are about 8 new cases of primary brain tumours diagnosed for every 100,000 people every year. In other words about 4,500 new cases in the UK each year. About 20% of primary brain tumours are **Low Grade Gliomas**. The cause remains unknown. Research has not proved a hereditary cause. There do not appear to be any links with occupation, infections or head injury.

- **Pilocytic astrocytoma** mostly occurs in children in the cerebellum or brain stem, but a third occur in the cerebral hemispheres.
- **Astrocytomas** account for 10% of adult primary brain tumours and most are situated in the frontal lobe.
- **Oligodendrogliomas** account for 5% of gliomas. They often contain both Oligodendrocytes and astrocytes and are therefore referred to as 'mixed glioma'. They occur most frequently in middle aged or young adults, but in rare cases also occur in children and the elderly.
- **Ependymomas** occur most frequently in children in the brain stem and occasionally in the ventricles (fluid filled sacs in the brain).

What treatment might be available?

Your doctor will plan your treatment taking into consideration your general health, your symptoms and signs and the size and position of the tumour. In other words the treatment is planned for each individual.

Surveillance

With many low grade gliomas the best treatment is to observe the tumour with regular CT or MRI scans. If the tumour is not causing any symptoms, surgery could cause more harm than good, as there are risks involved with all surgical procedures. The tumour may remain unchanged for many years and not cause any problems. If the tumour was found to be growing in size or causing symptoms then further treatment options can be considered.

Surgery

Accessible tumours may be operated on if they can be reached without a high risk of causing severe neurological damage. **Low Grade Gliomas** may occur in sites that are not easily reached by surgery. In these instances, biopsy alone – examination of a small sample of the tumour – may be performed. Biopsy results help establish the pathological diagnosis and indicate whether the tumour is amenable to other treatments. Tumours that are located in the areas of the brain that control breathing, intellect or physical movement would possibly be considered inoperable.

Radiotherapy is the use of high energy x-rays to destroy tumour cells. It may be given after surgery, depending on tumour location, its size and the signs and symptoms produced. For further information see our information on **Radiotherapy for Brain Tumours**

Chemotherapy is treatment with drugs which destroy tumour cells. It is usually not necessary for this type of tumour.

Please note that the information we give here is intended to provide simply a basis for discussions with your medical team. If you would like further information or support on brain tumours please contact: **Brain Tumour UK, Tower House, Latimer Park, Chesham, Bucks. HP5 3AP.** Helpline: **0845 450 0386** www.braintumouruk.org.uk or email helpline@braintumouruk.org.uk

Brain Tumour UK Helpline 0845 4500 386

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