Healthscope

Brain tumours

If you or someone you love has been diagnosed with a brain tumour, we understand you want expert and attentive care. Our specialist neurosurgeons use state-of-the-art technologies and procedures to provide accurate and timely brain tumour diagnosis and management.

What is a brain tumour?

In a healthy brain, the cells grow at a certain rate. A brain tumour occurs when cells grow abnormally and form a lump. Brain tumours can be non-cancerous (benign) or cancerous (malignant). Benign tumours usually grow slowly and don't spread. Malignant tumours (also known as brain cancers) may spread to other parts of the brain or the body.

Types of brain tumour

Over 150 different types of brain tumour have been identified. They are grouped according to where they originated from.

Primary tumours

Some tumours start in the brain or the tissues surrounding it. These are called primary tumours. They are further categorised by what type of cell they started in.

Common primary brain tumours include:

- gliomas – these arise in a type of brain tissue called glia. Glial tumours include astrocytomas, ependymomas and glioblastomas.
- meningiomas – which start in the protective membranes surrounding the brain and spinal cord (the meninges).
- medulloblastomas – these start in the cerebellum, a part of the brain that sits at the back of your head just above the spinal cord.
- pituitary – this type of tumour arises in the pituitary gland and is usually benign.
- Schwannoma – these benign brain tumours arise in cells that provide insulation along nerve pathways (known as Schwann cells). Acoustic neuromas are a common type of Schwannoma.

Metastatic or secondary tumours

Other types of brain tumours start somewhere else in the body and spread to the brain. These are called secondary or metastatic brain tumours. Many types of cancer can migrate to the brain, including melanomas and cancers of the breast, lung, bowel and kidney.

Brain tumour symptoms

Your brain is like the control centre for all your body's functions and processes. A brain tumour can therefore cause a wide range of symptoms.

The symptoms of a brain tumour will depend on its size and location. Common brain tumour symptoms include:

- persistent headaches
- changes in vision, smell, hearing or taste
- seizures
- nausea and vomiting
- drowsiness or fatigue
- irritability
- personality changes
- balance and coordination problems
- tinging, numbness or weakness in the limbs
- cognitive (thinking) and memory problems.

Importantly, a range of other conditions can also cause these symptoms. That's why it's essential to see a specialist who can make an accurate diagnosis.

What causes brain tumours?

The cause of brain tumours isn't fully understood, and researchers continue to investigate this. Certain things can raise your risk of developing a brain tumour, including:

- age – while people of all ages (including infants) can be affected by brain cancer, the risk of developing a brain tumour increases with age
- being above a healthy weight – which can increase your risk of meningioma
- family history of brain tumour and some genetic conditions
- high doses of radiation therapy to the head.

If you are concerned about your risk factors for a brain tumour, talk to your doctor.

Referral for brain tumour management

If you have symptoms of a brain tumour, your GP might refer you to a neurologist or neurosurgeon for further investigations and treatment.

To start your treatment with us, ask your GP for a referral to one of our experienced neurological specialists.

Your doctor can address the referral to a specific specialist, or simply to 'Dear Doctor'.

If you are diagnosed with a brain tumour, your treatment will typically involve a multidisciplinary approach and be managed by a team of healthcare professionals.

Brain tumour prevention

It may not always be possible to prevent a brain tumour from developing. However, you can do things to help keep your brain healthy. The Brain Foundation recommends these strategies to support brain health:

- keeping your brain active with interests, hobbies and stimulating mental activities
- regular physical activity
- eating a healthy diet and drinking alcohol in moderation
- protecting your brain by driving safely, wearing a helmet, and taking any head injury seriously
- managing your mental health, including depression and stress
- learning to relax and getting enough sleep
- not smoking or using illegal drugs
- getting your blood pressure, blood sugar levels, heart rate, and cholesterol checked regularly.

How are brain tumours diagnosed?

If doctors suspect you may have a brain tumour, they will do a full evaluation. The following tests can help you and your healthcare team get an accurate diagnosis.

Physical examination

Your doctor will conduct physical tests to see how your nervous system is working. For example, they might look at your muscle strength, walking, co-ordination, balance, vision, sensation, and reflexes.

CT (computerised tomography) scan

This test uses x-rays to take multiple images of your brain, which a computer puts together to provide detailed pictures. CT scans can show tumour size and location, and whether there is any brain swelling or bleeding.

MRI (magnetic resonance imaging)

In an MRI scan, the machine uses a powerful magnet, radio waves and a computer to generate detailed, cross-sectional images. MRI images can help doctors see the size, location, and type of the tumour, and whether it has spread.

MRS (magnetic resonance spectroscopy)

This specialised type of MRI checks for chemical changes in the brain. It can help distinguish between healthy brain tissue and tumour tissue. MRS is helpful for assessing tumour grade and aggressiveness. It can be performed when you have an MRI.

MR perfusion scan

This scan shows how much blood is flowing to different parts of the brain, which can help to identify the tumour type.

SPECT (single photon emission computerised tomography) scan

This test takes three-dimensional images of blood flow through the brain. Areas with more blood flow (such as a tumour) appear brighter on the images.

PET (positron emission tomography) scan

This test involves injecting a small amount of radioactive dye that causes cancer cells to show up on the scan. PET scans can help distinguish between benign and malignant tumours. They are often used with other imaging tests to gain more information about a tumour.

Cerebral angiogram

In this test, specialists pass a thin tube (called a catheter) through an artery in the arm or leg to the area of the brain being investigated. Then they inject a small amount of radioactive solution, which clearly highlights the blood vessels on images. It shows up blood vessel irregularities and areas of increased blood flow, which may indicate a brain tumour.

Lumbar puncture

In a lumbar puncture, a needle is passed into the spinal column to collect a sample of cerebrospinal fluid (the fluid which flows around the brain and spinal cord). The sample is checked for cancer cells in a laboratory.

Biopsy

This procedure involves collecting a sample of tumour tissue for examination.

In many cases, a combination of imaging tests is helpful. Your neurosurgeon will decide on the most appropriate assessment strategy for your situation.

How are brain tumours treated?

Treatment for a brain tumour will depend on various factors, including the type, location and size of the tumour, its grade and stage, and your age and overall health. Treatment often involves a combination of approaches delivered by a team of healthcare professionals, including neurosurgeons, neuro-oncologists, radiation oncologists, medical oncologists and other specialists. The goal is to provide the best outcome with minimal side effects while preserving neurological function.

Your specialist will talk to you and your loved ones about the options and help you decide on the best course of action.

Surgery

A specialist neurosurgeon might perform a procedure to remove all or part of the tumour.

Surgical procedures used to manage brain tumours include:

- craniotomy – this involves making an opening in the skull to access and remove the tumour.
- awake craniotomy – this type of procedure might be chosen if a tumour is close to brain areas that control movement or speech. You remain awake so surgeons can check these functions while they work on removing the tumour.
- neuroendoscopy – these minimally invasive procedures involve passing a thin tube (known as an endoscope) through the nose, mouth, or small incisions in the head to access or remove tumour tissue.

Some tumours cannot be removed surgically because the risk of damaging vital functions is too high.

Radiotherapy

Radiotherapy (also known as radiation therapy) uses carefully guided x-rays to destroy tumours or slow their growth. You might be advised to have radiotherapy after surgery. Radiotherapy is sometimes combined with chemotherapy treatment.

Chemotherapy

Chemotherapy uses special drugs to destroy cancer cells while minimising damage to healthy ones. Chemotherapy drugs may be taken orally or given through a drip. You might be advised to have chemotherapy after surgery, to slow tumour growth, or to reduce your symptoms. Sometimes chemotherapy treatment will be combined with radiotherapy.

Targeted therapy

This involves prescribing drugs that target specific chemicals or pathways involved in tumour growth or progression. These drugs can disrupt the activity of tumour cells without affecting normal cells.

Immunotherapy

This type of therapy helps stimulate the body's natural immune defences to recognise and attack cancer cells. Immunotherapy is an evolving field in brain tumour treatment. It is mainly used in clinical trials or for certain tumour types.

Medications

Your doctor might prescribe medications to help control tumour symptoms. These include:

- steroids – which can help to reduce swelling and inflammation in the brain
- anticonvulsants – which help to control seizures
- pain relief – to relieve headaches.

Palliative care

This type of treatment is designed to ease symptoms and optimise your quality of life. A palliative care team might be involved in your care when cancer is advanced, but you might also benefit from their support in earlier stages of the illness.

Recovery after brain tumour treatment

Your recovery time will depend on the type of tumour and which treatment you have, along with factors like your age, general health, and lifestyle. All types of cancer treatment can have side effects. Your healthcare team will explain these to you and answer any questions you might have.

Most people with a brain tumour will have a multidisciplinary team involved in their recovery. Here's an overview of what you might expect following brain tumour treatment.

Hospital stay

Following brain surgery, most people will need a few days in hospital for close monitoring. How long this is will depend on the complexity of the surgery and your post-operative progress.

Physical rehabilitation

Physical recovery after brain tumour treatment often involves support to regain your function and independence. You might need physiotherapy to help restore your mobility, and exercises to build your strength, balance, fitness and coordination.

Cognitive recovery

Some people experience changes to their cognitive (thinking) functions after brain tumour treatment. For example, you might find it more difficult to concentrate, remember, and solve problems. Working with an occupational therapist can help with cognitive recovery.

Speech and language therapy

Brain tumour treatment can sometimes affect brain areas involved in speech and language. If this occurs, a speech-language pathologist can help you regain or improve your communication skills. They can help with swallowing difficulties.

Emotional and psychological support

A brain tumour diagnosis can have a significant emotional impact. Some people may experience anxiety, depression, or mood changes. Support from a mental health professional such as a psychologist or counsellor can be helpful for dealing with these emotional and psychological challenges.

Medication and follow-up

After brain tumour treatment, you may need to take medications such as pain relievers, antibiotics, or anti-seizure medications. You'll have regular follow-up appointments with your healthcare team to monitor your recovery, manage any complications, and adjust your treatment as needed.

Importantly, recovery after treatment for a brain tumour is a gradual process that typically takes several weeks to a year or more. Your healthcare team will work with you and your loved ones to create a tailored recovery plan. Following your team's instructions and letting them know about any concerns or symptom changes can help ensure a smooth recovery process.

Sources

Information provided and reviewed by A/Prof Andrew Davidson, Neurosurgeon at Melbourne Private Hospital.

https://www.healthdirect.gov.au/brain-cancer

https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/brain-tumours-cancer#types-of-brain-tumours

https://www.cancerresearchuk.org/about-cancer/brain-tumours

https://www.cancer.org.au/cancer-information/types-of-cancer/brain-cancer

https://www.cancerresearchuk.org/about-cancer/brain-tumours/risks-causes

https://www.cancer.net/cancer-types/brain-tumor/types-treatment

https://www.abta.org/about-brain-tumors/brain-tumor-diagnosis/brain-tumor-signs-symptoms/

https://brainfoundation.org.au/healthy-brain/