



MeningiomaUK
Brain Tumour Support

Patient Information Sheet 1

Your Meningioma Information

A meningioma is a tumour of the meninges. This is the name given to the protective lining of the brain and spinal cord. It can occur in any part of the brain or spinal cord, but the commonest sites are at the surface of the brain, either over the top or at the skull base. Meningiomas do not spread. Ninety percent of meningiomas are 'benign', 6% are atypical, and 2% are malignant.

The word benign is misleading in this case as, when benign tumours grow and constrict the brain, they can cause disability and even be life-threatening. A meningioma described as **atypical** is likelier to re-grow. Malignant (cancerous) meningiomas are extremely rare. It is also possible, but rare, to have more than one meningioma.

NB Primary tumours classified as 'benign' include the following tumour types: meningioma, epidermoid, dermoid, hemangioblastoma, colloid cyst, sub-ependymal giant cell astrocytoma, pleomorphic xanthoastrocytoma, craniopharyngioma, and vestibular schwannoma (acoustic neuroma).

How often do meningiomas occur?

Meningioma tumours, generally, do not occur often, they affect around 1 per 38,000 people. However, it is the most common primary brain tumour, making up more than 25% of all primary brain tumours. About 1 in 4 primary brain tumours in adults is a meningioma. They are more common in older people and in women. They are most commonly found in middle-aged or elderly people, but they also affect younger people and teenagers.

The majority of meningioma tumours (over 90%) are benign, but occasionally they recur or re-grow after apparently complete surgical resection. Atypical and malignant meningiomas are more likely to recur.

What causes meningioma?

Like most brain tumours, the cause of meningioma is unknown. In some people there may be an underlying genetic abnormality such as a mutation in a specific gene. Recent research has also shown a possible link between meningioma and hormone levels, and between meningiomas and breast cancer, but this has not been proven. Like other tumours, meningioma tumours frequently possess progesterone receptors and, less commonly, oestrogen receptors, which may explain their higher incidence in women.

What are the symptoms?

These can vary greatly, dependent on where the tumour is. Symptoms are caused by brain displacement or compression, not by invasion. However, these tumours can be so slow growing that they may go undetected for years.

They can grow in and around cranial nerves that control function so that eyesight, taste, smell, sensation (numbness), swallowing or other movement may be affected. They may cause fatigue (extreme tiredness), fits or muscle weakness. Sometimes, sudden unexplained and/or recurrent severe headaches (which may be accompanied by nausea and/or vomiting) are the first symptom. Occasionally, an eye examination may reveal abnormalities which lead on to further investigation and diagnosis.

Tests and Investigations

In order to plan the correct treatment doctors need to get as much information as possible about the type, position and size of the tumour. Initially, a neurological examination will take place to assess any effect the tumour has had on the nervous system.

A CT scan or MRI scan will then be done to find the exact position and size of the tumour. MRI scans are the most widely used diagnostic tests since they are very effective in identifying even small meningiomas. The MRI scan usually includes injection of a contrast (a short-acting dye) in order to determine the exact position and size of the tumour. Occasionally, an angiogram will be done, where dye is used to show up the blood vessels in the brain and their relationship with the meningioma.

To confirm the exact type of tumour, a biopsy or sample of cells is taken from the tumour and examined under a microscope, but this is typically done at the time of surgical removal.

Treatment of Meningioma

The treatment for meningioma depends on a number of factors including your general health, the size and position of the tumour, and the rate of progression of the symptoms.

Neuro-surgery

Where possible, surgery is the first form of treatment for meningioma and in many cases the tumour can be removed completely. So far this has been the principal form of treatment for meningioma and it is still so in many circumstances. Surgical resection of meningiomas always has some risk, and the growth or size of the meningioma or the progression of the symptoms should justify the risk.

For meningiomas located near the surface of the brain, surgery is regarded as the best option. For tumours that are deep (cavernous sinus, medial sphenoid wing, parasellar, skull base and clivus), complete surgical removal may not be possible or may involve too much risk to the cranial nerves or blood vessels.

In addition, tumours sometimes recur, especially those that are atypical (on the borderline between benign and malignant). Radiation therapy may be used to control regrowth. Also radio therapy is increasingly used to treat small, inaccessible meningiomas.

Radiation Therapies

Conventional radiotherapy may be used after surgery if the meningioma cannot be totally removed in order to destroy any remaining tumour cells. It is also used in the treatment of surgically inaccessible meningiomas.

In FSR (fractionated stereotactic radiotherapy) a highly-focused radiation is given which precisely targets the tumour with little impact on healthy brain tissue. Radiation is administered in multiple daily doses or 'fractions'.

This allows the overall total dose to be higher than in Gamma Knife or standard radiation, because it allows normal brain tissue to recover better. It stops tumour growth in the vast majority of cases and in some cases it may even cause the tumour to shrink.

Patient studies show good results in checking tumour growth. Each treatment is called a "fraction" therefore this type of therapy is sometimes called "fractionated" therapy. Fractionated stereotactic radiosurgery is sometimes called FSR.

NB Radiotherapy Notes are available on request

Recent advances include Intensity Modulated Radiation Therapy (IMRT) which is a specialised form of radiotherapy which allows the dose to be 'shaped' to the tumour. This is particularly good for tumours close to critical organs such as the spinal cord or very sensitive areas of the brain.

Radiosurgery can be given either with a gamma knife or a modified linear accelerator. Gamma knife (GK) radiosurgery is generally a single treatment planned and delivered all in one day. However, fractionated radiotherapy using a linear accelerator has overtaken it. This is because it is considered safer for most tumours, (although not all). Image Guided Radio Therapy (IGRT) is being introduced into the UK and has the advantage that larger tumours can be treated.

Hormonal therapy and chemotherapy – These options have been tried in a very small number of patients when meningiomas recurred despite surgery and/or radiotherapy. Unfortunately, the results have been disappointing. Both chemo and hormonal treatments have shown little promise in treating meningiomas. They are seldom used for meningiomas, especially when other more effective treatment options are available.

Watch and Wait Small, asymptomatic meningioma tumours (with no symptoms or signs) can be carefully monitored by regular MRI scans. This is an option for meningioma patients because meningiomas are slow- growing tumours. Also it may be preferable, particularly in elderly patients, when there are no clinical signs (symptoms or impairments) requiring urgent treatment.