

Meningioma

This factsheet provides information about meningioma and its treatment. If you would like further information, please ask a nurse, doctor, or other healthcare professional involved in your care.

What is a meningioma?

A meningioma is a tumour of the meninges which is the lining of the brain and spinal cord. It can occur in any part of the brain or spinal cord but the most common sites are the cerebral hemispheres (the two halves that make up the main parts of the brain). Meningiomas are most common in adults over the age of 40 and are more common in women than in men. They make up 15-20% (15-20 in 100) of all primary brain tumours.

Grading

The World Health Organisation (WHO) grades meningiomas as follows:

- Grade I – benign
- Grade II- atypical (between benign and malignant)
- Grade III – malignant

Benign meningiomas are non-cancerous and do not spread. They are the most common type of meningiomas (approximately 80 – 90% of cases).

Atypical meningiomas (which account for 7-8% of meningioma cases) have increased tissue and cell abnormalities than grade I when seen under the microscope. These tumours grow at a faster rate than benign meningiomas and can invade the brain. Atypical meningiomas have a higher likelihood of recurrence (the cancer coming back) than benign meningiomas.

Malignant meningiomas have more abnormal cells and grow at a faster rate than benign and atypical meningiomas. Malignant meningiomas are the most likely to invade the brain, spread to other organs in the body and recur.

What causes meningioma?

The cause of meningioma is unknown in most cases, A few cases may occur years after receiving high dose radiotherapy to the head. Research is being carried out into other possible causes.

What problems do meningiomas cause?

Meningiomas are slow growing tumours and symptoms may have been present for some time. They can grow in different parts of the brain and symptoms are usually caused by pressure on other structures and these will vary depending on the position of the tumour. For example, meningiomas may cause headaches or those close to the eyes may cause problems with vision or cause hearing loss or ringing in the ears if close to the ears.



Epilepsy (seizures) can also occur in people with a meningioma. The precise risk of having a seizure is likely to vary with the position of the meningioma. Studies to assess the rate of seizures and identify which positions are more likely to cause seizures have not yet been carried out, but estimates suggest that between 10-30% of people may experience a seizure.

What tests and investigations will be needed?

To plan the treatment, it is important to find out as much as possible about the type, position and size of the tumour. You will have a number of tests and investigations including a CT (computed tomography) scan or MRI (magnetic resonance imaging) scan to see the size and position of the tumour. If the meningioma is close to the nerves of the eyes, a simple test is done to check visual fields and visual acuity (how well you see).

What is the treatment for meningioma?

The treatment for meningioma depends mainly on the size and position of the tumour and on your general fitness and health. Your doctor will discuss the best form of treatment with you after receiving your test results.

Surgery

The best treatment for meningioma is complete removal (by operation), providing the tumour is accessible and the surgery is considered safe. Some sites, such as the skull base, may be difficult for the surgeon to access safely, and therefore other treatments may be more appropriate. Surgery will be discussed in more detail with you by the neuro-surgical team if appropriate.

Radiotherapy

Radiotherapy is generally recommended for people with a meningioma which has not been completely removed by an operation, where surgery is not recommended or when the meningioma has been removed but is classified as a malignant meningioma (WHO Grade II or III). If the tumour removed is an atypical tumour (WHO Grade II), radiotherapy may also be discussed.

There are two different ways of giving radiotherapy for meningiomas:

1. **Fractionated stereotactic radiotherapy** is given in small doses over six weeks and is given daily, Monday to Friday. A specially fitted face mask is used which is necessary for accurate planning of treatment and to keep the head still during the delivery of each treatment.
2. **Stereotactic radiosurgery** is delivered using the cyberknife (a radiotherapy machine mounted on a robotic arm) and is usually given in a single dose on a single day or as a course of doses over 3 or 5 consecutive days. A specially fitted face mask is used which is necessary for accurate planning of treatment and to keep the head still during the delivery of treatment.

Your doctor will discuss with you the method most suitable for you.

How effective is radiotherapy/radiosurgery?

The aim of radiotherapy is to stop the tumour from growing. The success of radiotherapy treatment is described in terms of tumour control. A tumour is controlled if it remains the **same size** or smaller and does not need further treatment. Following radiotherapy for Grade I meningiomas, tumour control is in the region of 80-90% (80-90 people in 100) 10 years after treatment i.e. tumour recurrence or growth occurs in 10-20% of people. However, the recurrence rate is higher for those with Grade II tumours at 40-60%, and higher for those with Grade III tumours.



What are the possible effects of radiotherapy/radiosurgery?

Short term side effects (during and for a few weeks after treatment)

Having daily treatment usually makes people feel tired. With some people, radiotherapy to the brain may cause somnolence, which is described as excessive sleepiness, drowsiness, lethargy and loss of appetite. This can occur halfway into the radiotherapy course and for up to six to eight weeks after completion of the treatment. The effects vary in intensity from person to person. Please see The Royal Marsden factsheet *Having radiotherapy to your whole or partial brain* for further information.

Towards the end of the treatment there may be some hair loss, which is usually temporary; the hair should grow back normally. There are usually no expected immediate side effects.

Long term side effects (appearing months or years later)

Radiation carries a small risk of damage to parts of the brain surrounding the meningioma, particularly if the base of the skull is involved.

- **Vision** – If the meningioma lies very close to the nerves of the eyes (the optic nerves) there is a very small risk that these nerves may be affected. 1-2% of patients (one to two people in 100) may experience some worsening of vision months to years after treatment.
- **Hormones** – Radiation for skull base meningiomas close to the pituitary gland may cause damage to the pituitary gland and the hypothalamus (the parts of the brain involved in the production of hormones). The risk of becoming deficient in some hormones is relatively high (up to 20-60%) and increases with time. Your hormone levels will be monitored by an endocrinologist (a doctor who specialises in hormone-related conditions) once or twice a year. Any deficiency can easily be corrected by hormone replacement medication, which will need to continue indefinitely.
- **Other tumours** - There is general concern that radiation may cause cancer. There is a small risk of developing another tumour in the brain and this is approximately 1% (one in 100) at 10 years and 2% (two in 100) at 20 years.
- **Other possible side effects** - Based on research in other conditions where similar radiotherapy is given, it is estimated that there may be a slightly higher risk of having a stroke. There is ongoing research to investigate how much radiotherapy may contribute to this risk.
- Radiotherapy may cause mild long-term cognitive problems relating to decision making and short term memory but these are usually manageable.

The advice to have radiotherapy is based on the balance of risk and benefit. Radiotherapy is considered relatively safe compared to the risks involved with not having treatment and the meningioma growing.

Systemic treatments

To date, systemic treatment such as chemotherapy (drug treatment) has not been found to be particularly effective. Research continues into developing this form of treatment and there may be clinical trials available - if so, these will be discussed with you.



Contact details

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The Royal Marsden Macmillan Hotline
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