

Meningiomas become symptomatic in several ways. During their slow growth, they may irritate the brain causing epileptic seizures. Alternately, these tumors may compress adjacent brain producing progressive neurological symptoms, such as progressive weakness, or visual loss. Often these symptoms can be very subtle: progressive dementia or apathy may mimic depression in some patients with frontal meningiomas. Tumors, which begin near less critical brain regions (so-called "silent brain"), may become quite large, producing symptoms of increased intracranial pressure such as headache and visual loss. On rare occasions, these tumor may spontaneously bleed, producing an abrupt neurological deficit: a stroke. Spinal meningiomas produce progressive weakness and numbness. Interestingly, these spinal tumors are much most frequently seen in elderly females.

Fortunately, meningiomas are relatively easy to diagnose as they have characteristic appearances on CT or MR images. Sometimes cerebral angiograms and MR spectroscopy can clinch the diagnosis in difficult cases.

The treatment of meningiomas include watchful waiting, open surgery, radiosurgery and radiation therapy. Chemotherapy and hormonal manipulation have minor roles in the management of these tumors.

A number of meningiomas, especially those tumors found to be calcified on CT or MR imaging do not grow. Hence, one option for those harboring a small and asymptomatic tumor is to obtain serial scans over months to years to avoid further treatment.

Open surgery has been the gold standard of meningioma therapy. The aim of surgery is to completely remove the tumor. Tumors which arise over the convexity of the head are the easiest to operate and cure. Those tumors at the skull base present a greater risk of surgery and greater recurrence rates. Other factors which influence

surgical cure rates include the size of the tumor and involvement of critical brain structures which may lead to subtotal removal and the finding of malignancy. Malignant meningiomas

can spread to other regions of the body, especially the lungs and regional lymph nodes.

Navigation with optical tracking systems greatly aids surgery, as does the use of the operative microscope and ultrasonic aspiration.

Endovascular embolization

of these tumors may reduce blood loss during surgery.

Gamma Knife radiosurgery

is becoming an important means of treating these tumors, either as primary treatment to avoid the risk of surgery, or to treat recurrent or residual tumors following surgery. A 95% control rate is expected after Gamma Knife radiosurgery

Radiosurgery

avoids surgical complications of pain, bleeding, infection and neurological deficits. The technique can be performed in a few hours, on an outpatient basis, allowing individuals to return to work in a matter of days. Because the radiation is confined to the tumor, the surrounding, normal brain receives little radiation. The procedure is safe.

Radiation therapy can control the growth of meningiomas

. Probably 80 to 90% of tumors undergoing fractionated radiation therapy to a total dose of 54 Gy

do not re-grow.

XRT

has the disadvantage that a considerable volume of normal brain tissue may be radiated with long-range deleterious effects.

Some meningiomas

contain estrogen and progesterone receptors. However there appears to be little value in treating these tumors with

tamoxifen

, an estrogen antagonist. Selected patients have responded to RU 38486. Few tumors respond to

hydroxyurea

and chemotherapeutic agents in common use for various malignant tumors.