

Brain tumours in dogs and cats

What are brain tumours and what causes them?

A tumour (or cancer) is a growth of abnormal cells within a body tissue. Brain tumours can develop from brain cells (primary brain tumour) or the tumour may be the result of spread of a tumour elsewhere in the body such as the lungs, liver or skin (secondary or metastatic tumours). Common primary brain tumours include those arising from cells forming the lining of the surface of the brain (meningioma), the lining of the fluid filled cavities of the brain (ependymoma), the choroid plexus (choroid plexus tumour) or the brain tissue itself (glioma). There is no single definitive cause for primary brain tumours. Some risk factors have been identified but these will depend on the patient and their environment. Mutations in the DNA of a cell leads to abnormal growth (uncontrolled division), and as further mutations accumulate the tumour cells can invade surrounding brain. What causes these mutations is likely to vary between different species and individuals.

Which pets typically get brain tumours?

Dogs of any age and breed can develop brain tumours, however we typically consider older and larger breeds as more likely to get this condition. The Boxer, Boston Terrier, Golden Retriever and French Bulldog are known to be at a higher risk of primary intracranial neoplasms. In cats, patients are also often older, tend to be male and domestic short haired breeds.

What are the signs of brain tumours?

Brain tumours in dogs and cats can cause a wide variety of clinical signs that are dependent on the part of the brain affected. In many cases the first sign to develop is seizures (fits). Other signs commonly seen are blindness, changes in the animal's personality and understanding of the world, profound lethargy, circling and disorientation. Some pets can also appear to have a 'headache'. Some of these signs, such as seizures, may be permanent whatever the treatment course.

How are brain tumours diagnosed?

The diagnosis of a brain tumour cannot be based solely on the clinical and neurological signs as other neurological conditions such as inflammations and infections can potentially cause similar signs. Diagnosis is usually based on a combination of history, neurological examination and advanced imaging such as MRI. MRI will only allow an approximate diagnosis to be made based on the imaging characteristics. As in humans, a precise diagnosis will require a biopsy of the tumour and investigation of the cells involved, but this is rarely carried out in veterinary patients.

What treatment options are available?

Treatments are available for brain tumours in dogs and cats, but they are rarely curative. Treatment is usually aimed at providing your pet with the best possible quality of life for as long as possible. The treatment and prognosis for brain tumours in dogs and cats varies with the type and location of the tumour. The most appropriate treatment for your pet depends on a number of factors, including the type and location of the tumour, the general health of the patient and the wishes of the owner. The three basic options for tumour treatments are:

1: Medication alone

There are limited chemotherapy options for brain tumours in dogs and cats because the brain is a very protected site and many drugs cannot penetrate it. Some drugs can help to reduce the neurological signs seen in brain tumour patients. These include corticosteroids which can reduce the swelling and pressure caused by the tumour, and anti-seizure medications to reduce the severity and frequency of seizures. These drugs can cause side effects such as drinking, eating and urinating more. Some pets can seem a little more wobbly or sleepy in the early days of treatment. Treating with medication can often have good initial results, however, there may only be relief from symptoms for a weeks to months.

2: Medication and radiation therapy

Some tumours can be treated with surgery (see below); however, others are deep within the brain and cannot be approached surgically. Radiation therapy targeted at the tumour can result in dramatic and rapid improvement of signs in some cases. Cancer cells generally multiply and grow very rapidly. Ionising radiation works primarily by disrupting the process of cell division causing cancerous cells to die. Radiotherapy is a focused treatment and the goal is to provide local or regional control of cancer. Radiation treatments are individualised for each patient and are sometimes incorporated into a treatment plan involving other types of cancer therapy, such as surgery or chemotherapy.

3: Medication, radiation therapy and surgery

The ultimate goal of cancer surgery is to try and remove the tumour completely. Unfortunately, this is rarely possible with brain tumours and there are nearly always tumour cells left behind which can cause the tumour to regrow. However, by removing as much of the tumour as possible during surgery, the remaining cells may become more 'sensitive' to radiation and the tumour will be smaller giving other therapies (medication, radiotherapy) a better chance of success. Surgery also allows vets to take a sample of the tumour which will provide a precise diagnosis and allow us to provide more information on treatment and prognosis. The feasibility of surgery to remove the tumour is dependent on tumour location and type. Tumours that are on the brain surface are more likely to be amenable to surgery. Although most dogs recover well and without complication, brain surgery can occasionally cause irreversible damage to the brain.

What is the prognosis?

The prognosis for brain tumours in dogs and cats is highly variable and dependent on tumour type and location. Many dogs can have a good quality of life following diagnosis and during treatment. As a rough guide, average remission time ranges from 1 to 6 months with corticosteroids alone, from 8 to 14 months with radiotherapy alone, and 12 to 20 months with surgery followed by radiotherapy. It must be noted that these figures are guidelines, and every pet is different.