BRAIN DISORDERS

Seizures, circling, a head turn or tilt, a change in personality and/or level of awareness, sensation deficits, visual problems, weakness and in coordination are the most common clinical signs resulting from problems affecting your pet’s brain. Before we can determine the exact cause of the signs (ie the diagnosis), we must perform a neurological exam in order to establish what is referred to as the “neurological localization”. On the basis of the neurological examination your dog or cat brain disorder may “localize” to one of three major areas: the “forebrain” comprised of the cerebrum and thalamus, the “brainstem” comprised of the midbrain, pons, and Medulla, and the cerebellum.

Based on where the problem localizes in the brain, a list of diseases (the so-called "differential diagnosis") is then generated which includes the most likely disease conditions that could be affecting your pet’s brain.

The “differential diagnoses” for any given brain problem can be narrowed down based on some specific information: the patient’s age and breed, whether the condition has come on suddenly or slowly, whether the condition is progressing or static, where the problem localizes. Below, the three primary brain localizations are considered individually because specific diseases will affect each region.

“Forebrain” Disorders

The most common clinical signs seen in pets with forebrain problems include seizures, visual problems, facial sensation abnormalities, circling, and changes in personality or level of consciousness. And mature dogs, epilepsy (seizures due to spontaneous, chaotic electrical activity in
the brain), autoimmune inflammation, tumors and strokes are the most common conditions affecting the forebrain. And dogs less than two years of age, congenital problems such as hydrocephalus, infectious and autoimmune inflammations, epilepsy, and occasionally had trauma are suspected. Tumors of the forebrain can occur and dogs of any age. The most common tumors affecting the forebrain are meningiomas and glial cell tumors (a.k.a. “gliomas”); both are more common in older dogs. Abnormal liver function can also affect the brain by not removing toxins properly; the most severe form is called a liver “shunt.” And cats, the most common causes of forebrain dysfunction include tumors such as meningiomas and lymphoma and inflammatory diseases, particularly cause by feline infectious peritonitis (FIP).

**“Brainstem” Disorders**

The most common clinical signs seen in pets with brainstem disease include a head tilt, rapid eye jerking known as nystagmus, loss of balance, weakness and incoordination of the lambs, weakness or atrophy of the muscles of the face or head, difficulty chewing or swallowing, and changes in awareness such as disorientation.

In mature dogs, tumors, autoimmune inflammation and strokes are the most common conditions affecting the brainstem. And dogs less than two years of age, congenital malformations, infectious and autoimmune inflammations, and trauma are coming. Tumors (benign or malignant) of the brainstem can occur in dog of any age. The most common tumors affecting the brainstem are called MRI of the forebrain of a 12-year-old American Eskimo dog with right-sided weakness and blindness. MRI showed brain inflammation (arrows) that has been controlled with immune system suppression.
meningiomas, choroid plexus tumors, international nerve sheath tumors; these are more common in older adults. And cats, the common causes of brainstem dysfunction include tumors such as meningiomas and lymphoma and inflammatory diseases, particularly Infectious peritonitis.

MRI of the brainstem and cerebral hemispheres of a 12-year-old Pug with severe atrophy of the jaw and head muscles. The diagnosis was a trigeminal nerve sheath tumor (arrows surround the bright tumor) that was shrunken with radiation.

"Cerebellar" Disorders

The most common clinical signs affecting dogs with cerebellar problems include loss of balance, jerky or hypermetric movements of the limbs, and the head tremors is most evident when the text focuses its attention (known as “intention tremors”). Immature dogs, strokes, degenerations such a cerebellar abiotrophies, tumors, and inflammation of both infectious and autoimmune ideologies are the most common conditions affecting the cerebellum. In dogs less than two years of age, congenital malformations such as a malformed or incompletely developed cerebellum, heredity “storage disorders” caused by deficient enzyme function in the body, and infectious and autoimmune inflammations are most common. Tumors of the cerebellum can occur and dogs of any age. The most common tumors affecting the cerebellum are meningiomas and choroid plexus tumors; those are more common in older dogs. And cats, the most common cause of cerebellar dysfunction include cerebellar hypoplasia secondary to viral infection, “storage disorders” as described for dogs, tumors such as meningiomas and lymphoma, and inflammatory diseases, particularly feline Infectious peritonitis (FIP).
Typically patients are presented to the neurologist with a brain problem that could be explained by any one of several different disease processes. Taking your pet's breed, age, and brain "neurological localization" into account allows us to narrow the differential diagnosis. Once the differential diagnoses have been generated, we strive to keep an open-mind as we try to rule out each potential diagnosis and a stat wise fashion to ultimately reach a definitive diagnosis. For the majority of pets, and MRI and/or cerebrospinal fluid collection and analysis are required for us to make a definitive diagnosis. For example, MRI may clearly demonstrate a brain tumor or a stroke. Once the definitive diagnosis has been made, we can develop treatment options that may include medical, radiation or surgical therapies, or combinations thereof. The definitive diagnosis also allows us to provide you with our best estimate of your pet's prognosis, which is generally based on how patients typically respond when treated with palliative or more aggressive treatment protocols.

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