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Granulomatous Meningoencephalitis

Issue Description

Granulomatous meningoencephalitis (GME) is an inflammatory disease of the central nervous system (CNS) of dogs and, rarely, cats. It is a form of meningoencephalitis. GME is likely second only to encephalitis caused by canine distemper virus as the most common cause of inflammatory disease of the canine central nervous system.

Other Names

GME

Types of GME

- Disseminated - This is a diffuse disease throughout the CNS. It was previously known as inflammatory reticulosis. There is an accumulation of mononuclear cells and neutrophils around the blood vessels (perivascular) of the CNS. Meningitis is seen with this form of GME and causes fever and neck pain. It has an acute progression over a few weeks. Symptoms include incoordination, nystagmus, head tilt, seizures, and depression.
- Focal - The disease presents as a granuloma, which mimics a tumor. It usually is found in the cerebrum or cerebellopontine angle. Symptoms may be acute or develop slowly over several months and depend on the location of the lesion.
- Ocular - This is an uncommon form of GME and is characterized by sudden blindness caused by optic neuritis. The disease is bilateral. Ocular GME is considered to be an extension of CNS disease. The blood vessels of the posterior segment of the eye and anterior uvea have the same infiltrates of inflammatory cells as the intracranial vessels. Uveitis, retinal detachment, and secondary glaucoma may be seen.

Diagnosis and Treatment

Cerebrospinal fluid (CSF) analysis shows a large number of white blood cells. Typically small mature lymphocytes are the majority of cells seen, with monocytes and neutrophils making up the rest.

A CT scan or MRI will show patchy, diffuse, or multifocal lesions. Treatment is with immunosuppressive drugs such as corticosteroids, azathioprine, and cyclophosphamide. Procarbazine, cyclosporine, and cytosine arabinoside have also been used successfully. Treatment with radiation therapy for focal GME gives the longest periods of remission. The condition is rarely cured. The animal usually dies within a few months.

Other Types of Noninfectious Meningoencephalitis

- Steroid-responsive meningoencephalitis is any noninfectious meningoencephalitis that responds well to corticosteroids and usually has an excellent prognosis. This could represent mild forms of GME or PDE, but there are two separate conditions recognized also.
- Steroid-responsive meningitis/arteritis, also known as necrotizing vasculitis, is seen most commonly in Beagles, Boxers, Bernese Mountain Dogs, and German Shorthaired Pointers younger than two years of age. Many cases have fever, loss of appetite, and severe neck pain without other neurologic symptoms, although longterm cases may have incoordination and limb weakness or paralysis. CSF analysis shows predominantly neutrophils. In Beagles this condition is also known as Beagle pain syndrome.
- Eosinophilic meningoencephalomyelitis is seen mainly in Golden Retrievers. CSF analysis shows predominantly eosinophils.
- An acute progressive pyogranulomatous meningoencephalomyelitis is seen in mature Pointer dogs. There is monocytic and neutrophilic infiltration of the leptomeninges. Symptoms include incoordination, reluctance to move, and neck rigidity.

Pug Dog encephalitis

Pug Dog encephalitis (PDE) is an idiopathic inflammatory disease primarily affecting the prosencephalon (forebrain and thalamus). It is also known as necrotizing meningoencephalitis. The disease may be inherited in Pugs and Maltese.[6] It differs in pathology from GME by more tissue breakdown and increased eosinophils. CSF analysis is also unique among inflammatory CNS diseases in dogs in that the cells are predominately lymphocytes instead of a mixed population of mononuclear cells. In Maltese and Pugs there is extensive necrosis and inflammation of the gray matter of the cerebrum and subcortical white matter. The most common early symptoms are related to forebrain disease and include seizures and dementia, and later circling, head tilt, and blindness with normal pupillary light reflexes may be seen. Corticosteroids may improve symptoms, but the dog almost always dies from the disease.

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