

## Granulomatous Meningoencephalomyelitis (GME)

### ***What is GME?***

*Inflammatory diseases of the central nervous system (brain and spinal cord), **encephalomyelitis**, can be due to infectious or non-infectious causes. Granulomatous meningoencephalomyelitis (GME), **inflammation of the brain, spinal cord, and its covering meninges**, is one of the most common inflammatory diseases that can affect the central nervous system of dogs and rarely cats. This is a disease that affects dogs of all ages and breeds, with an increase incidence in 3-6-year-old female Terriers. The onset of clinical signs is often sudden with rapid progression being noted. The area(s) of the nervous system that are affected by this inflammation will result in the neurological dysfunction that is recognized.*

### ***How does it affect my pet?***

GME occurs in three clinical forms in the dog: (1) **Focal** (one site of involvement), (2) **Multifocal** (multiple sites of involvement) and (3) **Optic nerve** (nerves for sight). GME has a predilection for the blood vessels and their surrounding area, of the white matter of the brain, spinal cord and optic nerves. Inflammatory cells infiltrate (move in) in a peri-vascular (around the blood vessel) pattern, with gradual expansion into the surrounding brain and spinal cord tissue, like expanding rings of an onion. This results in an enlarging mass effect. Displacement of normal brain tissue, release of the mediators of inflammation by the responding white blood cells (defense cells) with resulting weakening of the blood vessel wall, leads to leakage of fluid, nervous system damage and further mass effect. The end result is damage and dysfunction of brain, spinal cord and, or optic nerves. ***Seizures, visual dysfunction and blindness, a drunken appearance, weakness, and pain may be noted. A change in behavior characterized by dullness, circling, agitation and compulsive walking, often in circles, can be noted if the forebrain or balance centers are involved. Your pet may withdraw from normal family activities or actions such as failure to greet you at the door when you come home, wander through the house in a continuous and stereotypic fashion and exhibit changes in sleeping pattern.***

### ***What is the cause of GME?***

GME does not appear to be due to an infection. Current understanding of GME suggests that this is an immune-mediated disease process. This means that the immune (defense) system of the body is mediating the attack on the nervous system. This immune reaction is limited to the nervous system only. Attempts to isolate infectious agents or markers within the bloodstream to identify carrier or affected dogs have been unsuccessful. Correlation with B-cell lymphoma (lymphatic cancer) has been made in comparison to similar, but not an identical, human syndrome.

### ***How do we diagnose GME?***

The diagnosis of granulomatous meningoencephalitis is dependent upon the assessment of the cerebrospinal fluid that bathes the brain and spinal cord, analysis of magnetic resonance images (MRI), and occasionally on assessment of biopsied nervous system tissue. A granulomatous spinal fluid assessment without infectious agents identified coupled with a white matter distribution of lesions on magnetic resonance imaging is diagnostic. Biopsy is necessary for 100% confirmation, although is rarely necessary.

### ***What are the treatments? Is there a cure for my pet?***

Much has been learned in the treatment of GME during the last decade. ***Despite advances, current treatment of GME does not result in a cure.*** Medical management is oriented at obtaining and maintaining remission of this disease. Successful management entails the use of aggressive immunomodulant therapy (modulating and suppressing the immune system). Current treatment consists of glucocorticoids such as ***Dexamethasone or Prednisone***, coupled with one of the immunomodulants, ***Cytosine arabinoside, Lomustine (CeeNu)*** and most recently, ***Cyclosporine***. ***Radiation therapy*** has also received attention, but is not felt to be a viable therapeutic treatment at this time. Your neurologist will discuss all options so your family may make the proper decisions.

### ***The positive side!***

While your pet has been diagnosed with a progressive inflammatory disease of the central nervous system, current therapy has resulted in long-term survival with excellent neurologic function and a pain free life style. Quality of life can be attained in most cases despite daily medications, recheck appointments and appropriate laboratory testing to assess response to treatment.