

# Inflammatory Brain Disease

Inflammatory brain disease typically refers to meningoencephalitis of unknown etiology (MUE). These comprehensive terms include three distinct diseases in different parts of the brain: granulomatous meningoencephalomyelitis (GME), necrotizing meningoencephalitis (NME), and necrotizing leukoencephalitis (NLE or NE).

## Signs

Inflammation of the brain (encephalitis) and the meninges (meningitis) causes brain damage and neurological signs in pets. Inflammation can also occur in the spinal cord (myelitis). The type and severity of clinical signs we see with MUE depend on the part of your pet's nervous system that is being affected. If multiple parts of the nervous system are affected, multiple clinical signs will be present.

Signs may include:

- Seizures
- Walking in circles
- Changes in behavior
- Seeming off balance
- Stumbling
- Blindness
- Pain

While it is possible for any pet to be affected by MUE, cats are rarely affected. The patient is usually a young adult, small breed dog, and certain breeds are more likely to be affected, like:

- Yorkies
- Maltese
- Chihuahuas
- Terriers
- Pugs

## Causes

Brain inflammation can be due to either infectious or autoimmune causes. Infectious causes are more common in cats, though autoimmune disease is possible. Autoimmune causes are much more common in dogs and what we are referring to when we say, “inflammatory brain disease” or “MUE.”

Normally, the immune system acts to protect the body from infections such as bacteria and viruses. The body relies on the immune system to recognize infections as threats, but also to recognize itself as safe. In pets with MUE, the immune system loses the ability to distinguish between the self and non-self and mounts an inflammatory attack against normal, healthy brain tissue.

No reason has been found to explain why certain pets are affected by MUE, but the fact that some breeds appear to be more predisposed than others suggests a genetic factor.

## Diagnosis

Definitive diagnosis of MUE is made by analyzing a sample of diseased brain or spinal cord, which is not possible in live animals. Therefore, MUE is diagnosed by MRI (magnetic resonance imaging) of the brain in conjunction with cerebrospinal fluid (CSF) analysis.

Generally, these are the steps taken:

1. A neurological exam determines what part of the brain is affected.
2. Blood tests screen for general health and look for any signs of disease or infection elsewhere in the body.
3. Magnetic resonance imaging (MRI) reveals any characteristic changes consistent with inflammation, as well as ruling out other diseases.
4. Cerebrospinal fluid (CSF) analysis will show an elevated number of inflammatory cells and increased protein levels, as well as rule out infection.

If findings are consistent with MUE, and infectious disease has been ruled out, a probable diagnosis of MUE is made.

## Treatment

Since inflammatory brain disease or MUE in dogs is thought to be autoimmune, treatment is targeted at decreasing the inflammation and suppressing the overactive immune system.

Corticosteroids are often used as the initial therapy. These types of steroids are used as anti-inflammatories at lower doses and immunosuppressives at higher doses. Common side effects include panting, increased thirst, increased urination, and acting hungrier than usual. However, pets on corticosteroids do not need more calories and should continue to be fed their usual diet.

Depending on the response to treatment, secondary immunosuppressive medications may be added. These drugs are often helpful in increasing response to treatment, allowing us to reduce the steroid and its side effects. In some cases, patients may require more than two medications.

## Prognosis

The prognosis for MUE is variable. Many pets will respond to medications and have prolonged survival with an excellent quality of life, whereas others can suffer relapses. Sadly, there are some patients that do not respond to treatment and ultimately succumb to the disease.

Typically, MUE is a lifelong diagnosis. Treatment is aimed at controlling the clinical signs, but there is no cure. The goal is to find the lowest possible dose of medications to control your pet's clinical signs. However, some pets may retain permanent neurological deficits.

Although most pets will require lifelong therapy, some patients will be able to eventually be taken off of all medications.

## Frequently asked questions

### ***Can I give my pet parasite preventative (flea, tick, heartworm, etc.)?***

Yes, please! However, if your pet has a history of seizures, please be sure to consult your neurologist about which preventatives are recommended for patients with seizures.

### ***Can my pet get vaccinated?***

Because we are suppressing your pet's immune system, we do not recommend vaccinations, as vaccines work by stimulating the immune system. Therefore, it is recommended that your pet only socializes with vaccinated pets and avoids other potential sources of infection such as rivers, streams, and ponds. Once your pet is on a lower dosage of medications, vaccination may be possible. Every pet is an individual, so please consult your neurologist about the best plan for your pet.

Learn more about  
Inflammatory  
Brain Disease

