

## Immune Mediated Hemolytic Anemia (IMHA)

Immune-Mediated Hemolytic Anemia (IMHA) is a serious and sometimes life-threatening auto-immune condition in which the immune system attacks and destroys a patient's red blood cells, causing anemia.

### Cause

IMHA is caused by an abnormal immune response in which the patient's body targets red blood cells for destruction. Primary IMHA has no known cause, meaning the immune system was not triggered to attack the red blood cells for any identifiable reason. Secondary IMHA is suspected when an anemic patient is diagnosed with a new infection, cancer, or has recently been started on medication or received a vaccination that stimulated the immune system. Primary IMHA is more common than secondary IMHA, but because of differences in therapy and prognosis, a search for an immune trigger is generally recommended.

The immune system has both pro-inflammatory and anti-inflammatory chemical triggers as well as recognition of its own cells; an auto-immune or immune-mediated condition is one in which these mechanisms are deranged. In autoimmune conditions, the full force of the immune response is activated against the body's own cells. The immune chemicals damage red blood cell walls, causing them to rupture. Damaged cells are removed from circulation by the filtering function of the liver and spleen.

### Clinical Signs

Because red blood cells function to carry oxygen to the tissues of the body, patients with anemia are weak, pale, and out of breath. Sometimes the excess red blood cell breakdown causes a patient's urine to be dark red in color. The liver can become overwhelmed with the number of broken red cells it is filtering causing the patient to become icteric or jaundiced (yellow color to the skin and eyes). Some patients collapse and are unable to rise or have a high fever. It is important that patients in this condition be evaluated quickly.

### Diagnosis

Patients suspected of having IMHA are usually diagnosed with a combination of blood tests and imaging studies (radiographs/X-RAYS and ultrasound). Blood tests generally show anemia and red cells that appear ragged from the immune system attack (called spherocytes). Patients often have elevated white cell counts from the immune stimulation and may also have abnormal organ function tests from the stress of the anemia on other organs.

In order to look for causes of secondary IMHA, patients that are severely anemic generally have blood tests to look for infectious causes of anemia. In dogs, these are usually diseases that are carried by ticks; in cats, screening tests for bacterial and viral causes of anemia are generally done. Because cancer can trigger an aberrant immune response, radiographs (X-RAYS) and ultrasound are recommended as well.

### Treatment

Depending on the severity of your pet's condition, hospitalization for fluids, supportive care, and transfusions may be necessary.

IMHA is treated with medications that attenuate or calm the immune system. Steroids are frequently used in addition to other immunomodulating drugs. It is common for more than one immunomodulatory medication to be necessary to gain control of the disease. Additionally, medications to reduce the likelihood of clot formation (anticoagulants) are often recommended for patients with severe inflammation associated with IMHA. Patients with IMHA associated with an infection may need medication to treat the infection. Patients that develop IMHA secondary to cancer may be treated with chemotherapy, surgery, or other disease-directed therapy. Splenectomy is sometimes recommended as a therapeutic option.

Plasma exchange or plasmapheresis is a newer therapy available to treat the most severe cases of immune-mediated disease. Therapeutic plasma exchange (TPE) involves exchanging the plasma component of the patient's blood with that of a healthy plasma donor. The patient's blood is circulated through a filter (similar to kidney dialysis) to allow the sick patient's plasma to be cleaned of the destructive circulating immune chemicals while preserving as many red blood cells as possible. Because

some of the patient's plasma is removed in the process, a donor's plasma must be returned to the patient during the exchange process. This therapy is available at Veterinary Specialty Center.

### **Prognosis**

IMHA is a life-threatening disease, but many patients respond to immunosuppressive medications. Patients that require transfusions in the first few days of therapy have a more aggressive form and are likely to need more hospitalization for several days.

The first few days after IMHA diagnosis are most dangerous and some patients do not respond to aggressive therapy. A patient that survives the first several days of therapy and is discharged from the hospital generally has a good long-term prognosis, although close monitoring is necessary.

Patients with secondary IMHA, associated with infection or cancer, can have a variable prognosis, depending on the inciting cause. Some patients have a mild form of IMHA, respond well to single-agent therapy (prednisone alone), and are able to be tapered off medications rapidly.

### **Long Term Follow-Up**

Patients with severe IMHA are followed by the internal medicine specialists at Veterinary Specialty Center. Our doctors always keep primary care veterinarians informed about each patient's medical condition and therapeutic plan. Close monitoring, especially in the early phase of the disease, is critical. Discontinuing medications too soon can result in a relapse of inflammation, and relapses tend to be more severe than the initial onset of disease. Medication dosages should never be reduced unless recommended by the veterinarian who has managed the disease. Additionally, patients must be monitored for medication side effects. In general, the goal is to reduce medication to the lowest effective dose. It may take months and many visits to achieve long term control of a patient with severe or relapsing IMHA.

Because decisions about changes in medication are based on observations made during the physical exam in addition to other testing, our recommendation is that follow-up for this disease is done at Veterinary Specialty Center. All routine preventive care should continue with your primary care veterinarian.

Remember that Veterinary Specialty Center never closes, do not hesitate to come in or call if you are concerned about your pet.