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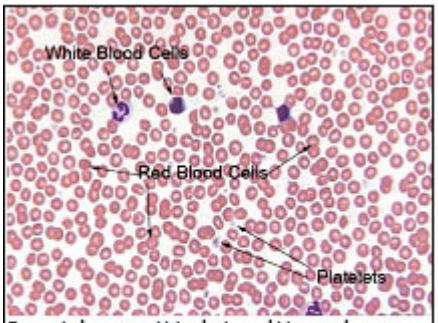
Autoimmune Hemolytic Anemia in Dogs

What is anemia?

Anemia is not a specific disease but rather is a symptom of some other disease process or condition. Anemia is a medical term referring to a reduced number of circulating red blood cells (RBC's), hemoglobin (Hb), or both. Hemoglobin delivers oxygen to the cells and tissues of the body, and a patient who is anemic will suffer from symptoms related to a lack of oxygen.



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Normally, red blood cells are produced in the bone marrow and then released into the circulation. As the red blood cells age or become damaged, they are removed from the circulation and recycled to form new red blood cells. The number of circulating red blood cells may become reduced if their production in the bone marrow is decreased, or if there is an increased loss of them from the circulation.

What is Autoimmune Hemolytic Anemia?

"Autoimmune hemolytic anemia (AIHA) is an immune system disease in which the body attacks and destroys its own red blood cells."

Autoimmune means an immune reaction directed against the self, while hemolysis comes from the Greek words 'hemo' meaning blood and 'lysis' meaning to break open. Autoimmune hemolytic anemia (AIHA) is an immune system disorder in which the body attacks and destroys its own red blood cells. In dogs with AIHA, red blood cells have a life span that is shorter than normal, as the immune system destroys them. This disease may also be called **Immune-Mediated Hemolytic Anemia** or **IMHA**.

What causes Autoimmune Hemolytic Anemia?

AIHA may be ***primary*** or idiopathic, or it may be ***secondary***.

With **primary AIHA,** the dog's immune system is not working properly and it incorrectly makes antibodies that target its own red blood cells. In dogs, it is estimated that about three-quarters of cases of AIHA are primary.

With **secondary AIHA,** the surface of the red blood cells becomes altered by an underlying disease process or a toxin. The dog's immune system then recognizes the altered red blood cells as 'foreign' invaders that must be destroyed. Secondary AIHA may be triggered by cancer, infection, blood parasites such as *Babesia*, drug reactions, snake bites, chemicals, toxins, or bee stings. In dogs, neoplasia (cancer) appears to be the most common cause of secondary AIHA.

Once targeted, the red blood cells are either destroyed within the blood vessels by a process called *intravascular hemolysis* or destroyed when they circulate through the liver or spleen by a process called *extravascular hemolysis.* In both situations, hemoglobin will be released; the liver will attempt to break down the excess levels of hemoglobin, increasing the workload of this organ.

What are the symptoms of AIHA?

Most dogs with AIHA have severe anemia, and their gums will be very pale rather than the normal pink to red color. Dogs with anemia will be listless and will tire more easily; these symptoms occur because there are not enough red blood cells to carry oxygen to the tissues. The dog may faint or appear disoriented due to low oxygen levels in the brain. To compensate for the lack of oxygen to the tissues, the heart will beat more rapidly and the patient will breathe more rapidly.

"Excessive levels of bilirubin cause the skin, gums and other mucous membranes to appear yellow or *jaundiced*."

As the disease progresses, excessive levels of bilirubin, a breakdown product of red blood cell hemolysis, build up within the body. Some of this excess bilirubin spills over into the urine, causing it to appear dark. Excessive levels of bilirubin cause the skin, gums and other mucous membranes to appear yellow or *jaundiced*. The dog may vomit or may have a poor appetite.

How is AIHA diagnosed?

Anemia is diagnosed by performing a blood test called a Complete Blood Count (CBC). The CBC measures a number of different values in a sample of whole blood. To test for anemia, the **packed cell volume (PCV)** will be measured to determine the percent of red blood cells in the sample, the **number** of red blood cells will be counted, and the cells will be examined under a microscope to determine their size and shape. With AIHA, both the number and percent of red blood cells will be lower than normal and the size and shape of the cells will be abnormal. In many cases of AIHA, there will also be evidence of autoagglutination (abnormal clumping of red blood cells).

If AIHA is suspected, your veterinarian will also recommend additional diagnostic tests to determine whether the disease is primary or secondary. Tests may include a **reticulocyte test** to detect the number of reticulocytes (immature red blood cells) that are present in the bloodstream, antibody tests such as a **Coombs test**, and serologic blood tests to detect certain parasitic diseases.

What other tests are important with this disease?

Your veterinarian will recommend additional tests to evaluate the overall health of your dog and to detect if there is any underlying cause for a secondary AIHA. Recommended tests will usually include a biochemical profile, a urinalysis, x-rays of the chest and abdomen, and an abdominal ultrasound examination. Depending on your pet's individual

results, other tests may also be recommended. In some cases a bone marrow evaluation will be suggested.

The biochemical profile will evaluate organ function and electrolyte levels, while the urinalysis will provide a baseline measure of kidney function and indicate whether there is evidence of an infection in the urinary tract. Chest x-rays help detect or exclude the presence of cancer in the lungs, while abdominal x-rays and ultrasound help detect or exclude the presence of cancer within the abdomen.

How is AIHA treated?

If your dog's anemia is so severe that it is life-threatening, a blood transfusion will be needed. Before giving a transfusion, blood samples will be taken for diagnostic testing and blood typing. The main purpose of a blood transfusion is to stabilize your pet while the underlying cause of the anemia is determined and gives your pet time to allow the recommended treatments to take effect.

"If your dog's anemia is so severe that it is life-threatening, a blood transfusion will be needed."

If the AIHA is secondary, the treatment will be directed at the underlying cause. If no underlying cause can be detected, or if the disease is determined to be primary or idiopathic AIHA, immunosuppressive therapy will be used. In some cases of idiopathic AIHA, the dog will respond rapidly to treatment with immunosuppressive doses of corticosteroids. In other cases, the patient may require a combination of corticosteroids and other immunosuppressive medication to get the condition under control.

Your veterinarian will outline a treatment plan specific for your dog's needs, based on diagnostic test results. With complex cases, your veterinarian may recommend a referral to an internal medicine specialist.

What is the prognosis for AIHA?

The prognosis for dogs with AIHA is based on the specific diagnosis, as well as the patient's general condition at the time of diagnosis. In many cases, the patient's condition can be managed with the appropriate drug treatments. Once the patient's condition improves and the anemia resolves or stabilizes, your veterinarian will recommend gradual tapering of the immunosuppressive medications over a period of several months to lessen any side effects associated with therapy. Since relapses are not uncommon with this disease, your pet will need to be closely monitored when medications are decreased or discontinued.

Reviewed and edited March 2014 by Vlad Stojanovic, DVM, MVSc, DACVIM, Internal Medicine Specialist at the Toronto Veterinary Emergency Hospital

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