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VET TALK

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Canine Addison's Disease

Addison's disease, or hypoadrenocorticism, is a disease that not only affects humans, but can also befall our canine best friends. Addison's disease affects more female dogs than males, and is more prominent in Nova Scotia Duck Tolling Retrievers, Poodles, Portuguese Water Dogs, Bearded Collies, Golden Retrievers, and Great Danes among others. This disease is autoimmune, destroying all layers of both adrenal glands, and results in cortisol and aldosterone deficiencies. Other causes of Addison's may include neoplasia, infarction, hemorrhage due to trauma, or iatrogenic causes.

In dogs, cortisol is vital for stress control, immune system function, blood volume and pressure, erythrocytosis, and much more. Aldosterone regulates water and electrolyte levels. When 85-90% of the adrenal cortex is destroyed, signs and symptoms such as exercise-induced seizures, severe muscle weakness, lethargy, lack of appetite, weight loss, GI signs like vomiting or diarrhea, or hair loss will arise. Addisonian crisis is also possible, which is indicated by sudden collapse with shock, weakness, weak pulses, and hypothermia. This is caused by a combination of sudden low blood sugar, low blood pressure, and high potassium levels.

Addison's is often called "the great pretender" because of its vague symptoms that mimic other diseases. Therefore, lab testing is critical to determine if Addison's is present. Suspicion for the disease should be raised if the dog has lymphocytosis, mild normocytic normochromic anemia, an absent stress leukogram, hyperkalemia, hyponatremia, a sodium-potassium ratio <27, or hypoglycemia. Actual diagnosis can be done with two different methods. The first is to measure cortisol levels, because it has been found that most dogs with Addison's have cortisol levels <2 mcg/dL. If the dog has a high resting cortisol level but symptoms of Addison's, then the second method should be performed. This method is the ACTH stimulation test, and should always be done to definitively confirm hypoadrenocorticism. Adrenocorticotropic hormone stimulates the secretion of cortisol, so the test measures cortisol levels before and after the administration of ACTH. Addison's can be confirmed in dogs having flat-line cortisol levels in pre- and post- ACTH samples.

Addisonian crisis is the most pressing treatment issue. The top priority for treatment is IV fluid resuscitation. This is commonly done using IV NS for one hour, and then changing to a different isotonic fluid like lactated ringers or Normosol-R, along with IV dexamethasone or similar glucocorticoid. IV insulin and dextrose should be added if hyperkalemia or hypoglycemia are severe. Continue infusion for 48-72 hours until BP, HR, hydration, electrolytes, and renal values return to normal, and until the dog regains consciousness.

Chronic Addison's treatment for dogs consists of oral mineralocorticoid and glucocorticoid supplementation. The glucocorticoid is almost always prednisone or prednisolone at the lowest dose that prevents symptoms, to avoid side effects. If side effects are severe, methylprednisolone or dexamethasone can be used. In stressful situations, glucocorticoid dose should be increased 2-10 times to avoid Addisonian crisis. The mineralocorticoid can be desoxycorticosterone pivalate (DOCP) or fludrocortisone. First line treatment is prednisone with fludrocortisone, but each drug in the drug classes are similarly efficacious, so preference could lie in price or dosing regimen.

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