Always consult with a veterinarian that you feel comfortable with before diagnosing or treating any disease on your own. This information is for reference only.

www.furrycritter.com

Kidney Failure

Issue Description

Renal failure or kidney failure occurs when the kidneys aren't able to function properly. They are made up of hundreds of thousands of nephrons, which filter out wastes from the blood stream in the form of urine. In addition to this, the kidneys are also responsible for maintaining water and electrolyte balances, and producing some hormones such as erythropoietin, which stimulates red blood cell production.

Other Names

Renal Failure

Causes

Presumably, the term "chronic renal failure" suggests that the kidneys have quit working and are, therefore, not making urine. However, by definition, renal failure is the inability of the kidneys to remove waste products from the blood. This definition can occasionally create confusion because some will equate renal failure with failure to make urine. Renal failure is NOT the inability to make urine. Ironically, most dogs in kidney failure are actually producing large quantities of urine, but the body's wastes are not being effectively eliminated.

There are two types of renal failure: acute and chronic.

Acute renal failure occurs very quickly as a result of lost function. It can be caused by toxins such as antifreeze, or many poisonous plants. It can also be caused by low blood pressure, a decrease in blood volume, a lack of blood supply to the kidneys, or a urinary blockage. Acute renal failure is potentially reversible, but can become chronic if left untreated.

Chronic renal failure is most commonly seen in older cats, but does also occur in dogs. Because signs of renal failure don't usually become apparent until 65-70% of kidney function is lost, chronic renal failure has been going on for months or even years. There is no cure for chronic renal failure, and the goal is to slow progression and improve the pet's quality of life.

Symptoms

Report any changes in your dog's eating, drinking, and elimination habits to your veterinarian. Such changes may alert your veterinarian to the possibility of kidney disease - or help your practitioner adjust treatment if therapy has already begun.

With kidney disease, your dog becomes less alert, loses its appetite, and may vomit. Take your dog to your veterinarian if it shows any of the following signs that sometimes (but not always) point to kidney disease:

Chronic Failure

1. Increased thirst and urine volume
2. Weight loss
3. Weakness and exercise intolerance
4. Tendency to bleed or bruise easily

Acute Failure

1. Dehydration (To test for this, gently pull the skin away from your dog's middle. If the skin does not immediately spring back, the dog may be dehydrated.)

2. Stiff-legged gait and arched back (a sign of painful kidneys)
3. Little or no urine production

Diagnosis

Renal failure is diagnosed by symptoms and laboratory testing. Measuring urine's specific gravity helps the doctor determine if the kidneys are properly concentrating urine. Blood tests are also run looking at BUN and Creatnine levels, which are two products excreted by the kidneys. Elevated levels in the blood, also called azotemia indicate kidneys aren't functioning properly. A low packed red cell volume indicates anemia.

Treatment

Treatment of kidney failure in dogs occurs in two phases. The first phase is to "restart" the kidneys. Large quantities of intravenous fluids are given to "flush out" the kidneys. This flushing process, called diuresis, helps to stimulate the kidney cells to function again. If enough functional kidney cells remain, they may be able to adequately meet the body's needs for waste removal. Fluid therapy includes replacement of various electrolytes, especially potassium. Other important aspects of initial treatment include proper nutrition and drugs to control vomiting and diarrhea.

There are three possible outcomes from the first phase of treatment of kidney failure in dogs:
1. The kidneys will resume functioning and continue to function for a few weeks to a few years.
2. The kidneys will resume functioning during treatment but fail again as soon as treatment stops.
3. Kidney function will not return. Unfortunately, there are no reliable tests that will predict the outcome.

The second phase of treatment in dogs is to keep the kidneys functioning as long as possible. This is accomplished with one or more of the following, depending on the situation:

- A special diet. The ideal diet is low in protein, low in phosphorus, and not acidified. This type of diet helps to keep the blood tests as close to normal as possible, which usually makes your dog feel better. Also, once kidney disease is advanced, a decreased protein diet will decrease the workload on the kidneys.
- A phosphate binder. Phosphorous is removed from the body by filtering through the kidneys. Once the filtration process is impaired, phosphorous begins to accumulate in the blood. This also contributes to lethargy and poor appetite. Certain drugs will bind excess phosphates in the intestinal tract so they are not absorbed, resulting in lower blood levels of phosphorus.
- Fluids given at home. Once your dog is stabilized, fluids can be given under the skin (subcutaneously). This serves to continually "restart" the kidneys as their function begins to fail again. This is done once daily to once weekly, depending on the degree of kidney failure. Although this might not sound like something you can do, you will be surprised at how easily the technique can be learned and how well most dogs will tolerate it.
- A drug to regulate the parathyroid gland and calcium levels. Calcium and phosphorus must remain at about a 2:1 ratio in the blood. The increase in blood phosphorus level, as mentioned above, stimulates the parathyroid gland to increase the blood calcium level by removing it from bones. This can be helpful for the sake of the normalizing calcium:phosphorus ratio, but it can make the bones brittle and easily broken. Calcitriol can be used to reduce the function of the parathyroid gland and to increase calcium absorption from the intestinal tract. This is recommended if there is evidence of abnormal function of the parathyroid gland.
- A drug to stimulate the bone marrow to produce new red blood cells. The kidneys produce erythropoietin, a hormone that stimulates the bone marrow to make red blood cells. Therefore, many dogs in kidney failure have a low red blood cell count, anemia. Epogen (or Procrit), synthetic forms of erythropoietin, will correct the anemia in most dogs. Unfortunately for some dogs, the drug cannot be used long term because the immune system recognizes the drug as "foreign" and will make antibodies (immune proteins) against it. This is recommended if there is persistent anemia present.

Prognosis

To determine the prognosis of kidney disease, blood and urine tests are performed frequently during treatment to evaluate how well the kidneys are responding. It's a good sign if test results swing back toward normal within the first 48 to 72 hours of therapy.

Initial test results can be remarkably similar for both forms of kidney failure. The diagnostic challenge is to determine whether the dog has acute or chronic kidney failure. Making the distinction between chronic and acute failure is

crucial because the prognosis and duration of treatment for the two types of kidney disease are different (although some treatment procedures may be similar).

The material and information on this website, including any merchandise, information or service provided through this website, is provided "as is" with all faults and without warranty of any kind from the Furry Critter Network, expressed or implied. In no event shall the Furry Critter Network be liable for any direct damages, special, incidental or consequential damages, lost profits, or any indirect damages arising from the use or inability to use this website, even if the Furry Critter Network has been informed of the possibility thereof.