O A K B A Y A N I M A L H O S P I T A L

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CHRONIC KIDNEY FAILURE IN DOGS

What is meant by the term "Chronic Kidney Failure"?

Presumably, the term "chronic kidney failure" suggests that the kidneys have quit working and are, therefore, not making urine. However, by definition, kidney failure is the inability of the kidneys to remove waste products from the blood. This definition can occasionally create confusion because some will equate kidney failure with failure to make urine. Kidney 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.

When is this likely to happen in my dog?

The typical form of chronic kidney failure is the result of aging; it is simply a "wearing out" process. The age of onset is related to the size of the dog. For most small dogs, the early signs occur at about 10-14 years of age. However, large dogs have a shorter age span and may go into kidney failure as early as seven years of age.

What changes are likely to occur in my dog?

The kidneys are nothing more than filters. When aging causes the filtration process to become inefficient and ineffective, blood flow to the kidneys is increased in an attempt to increase filtration. This results in the production of more urine. To keep the dog from becoming dehydrated due to increased fluid loss in the urine, thirst is increased; this results in more water consumption. Thus, the early clinical signs of kidney failure are increased water consumption and increased urine production. The clinical signs of more advanced kidney failure include loss of appetite, depression, vomiting, diarrhea, and very bad breath. Occasionally, ulcers will be found in the mouth. When kidney failure is accompanied by these clinical signs, it is called uremia.

How is chronic kidney failure diagnosed?

The diagnosis of kidney failure is made by determining the level of two waste products in the blood: blood urea nitrogen (BUN) and blood creatinine. The urinalysis is also needed to complete the study of kidney function.

Although BUN and creatinine levels reflect kidney failure, they do not predict it. A dog with marginal kidney function may have normal blood tests. If that dog is stressed with major illness or surgery, the kidneys may fail, sending the blood test values up quickly.

Since this is basically just a wearing out process, can it be treated with anything other than a kidney transplant?

In some cases, the kidneys are worn out so that they cannot be revived. However, with aggressive treatment many dogs will live for several more months or years.

Treatment 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.

What can I expect from this phase of treatment?

There are three possible outcomes from the first phase of treatment: 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.

If the first phase of treatment is successful, what happens next?

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

1. **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. We can recommend a commercially prepared food that has the quantity and quality of nutrients needed by your dog.

2. **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.

3. **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.

4. **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.

5. **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.

How long can I expect my dog to live?

The prognosis is quite variable depending on response to the initial stage of treatment and your ability to perform the follow-up care. However, we encourage treatment in most situations because many dogs will respond and maintain a good quality of life for up to four years.