

Feline Chronic Kidney Disease

By Dr. Karen Becker

Hi, this is Dr. Karen Becker. Today we are going to discuss chronic kidney disease in cats. Chronic kidney disease is also called chronic renal disease and chronic renal failure. This means that the kidneys have been gradually and irreversibly deteriorating over a period of months to years. Chronic renal failure is unfortunately extremely common in older domestic cats and is a leading cause of death for kitties.

Certain breeds of cats seem predisposed to developing chronic kidney disease, including the Maine coon, Abyssinian, Persian, Siamese, Russian blue, and Burmese.

Elderly cats usually develop some degree of kidney disease, and hyperthyroidism and chronic kidney disease tend to go hand in hand in many aging kitties.

The kidneys are made up of thousands of microscopic funnel-shaped tubes called nephrons. The job of nephrons is to filter and reabsorb fluids. In young healthy animals, there are so many nephrons available that some are held in reserve. As the cat ages or in cases of kidney damage, some nephrons stop functioning and the reserve nephrons take over and start functioning for them. At some point in a kitty's life, all of the nephrons that can function are functioning.

With no nephrons left in reserve, as damage to the kidneys progresses, signs of chronic kidney disease will start to appear. Because of the system of reserve nephrons, there are no signs of kidney insufficiency until the damage is really significant. When two thirds of the nephrons are lost, the kidneys will no longer be able to conserve water, and the cat will pass larger amounts of dilute urine. By the time that the creatinine levels are elevated on a kitty's bloodwork, 75 percent of nephrons in both kidneys are gone.

Possible Causes

Causes of chronic kidney disease include malformation of the kidneys at birth, congenital polycystic kidney disease, chronic bacterial infections of the kidneys, high blood pressure, immune system disorders such as systemic lupus, exposure to toxins, an acute kidney episode that can damage the organs and lead to a chronic kidney problem, chronic urinary tract obstruction, and certain drugs especially the NSAIDs (the non-steroidal anti-inflammatories) as well as some nephrotoxic antibiotics.

There are some infectious disease like feline leukemia and FIV that can damage kidneys, also heavy metal exposure, abdominal trauma and possibly diabetes. Even with all the potential triggers for kidney disease, often the cause can't be identified.

Signs and Symptoms

As blood travels through the kidneys, they perform an intricate filtering job that removes waste materials

from the blood and keeps the good substances like serum proteins in the bloodstream. The kidneys also regulate the amount of water in the blood. Kidneys help to maintain healthy blood pressure by regulating sodium. They also regulate calcium and vitamin D. In addition to all that, the kidneys also secrete a hormone called erythropoietin that stimulates the bone marrow to produce red blood cells.

As you can see, when the kidneys aren't able to function normally, there are many organ and body systems that can be affected. Because the kidneys have so many jobs to do, there are many symptoms of kidney disease, and they can actually be quite variable amongst your kitty in terms of how they express kidney disease. They can be subtle and progress slowly, or they can be severe and appear quite suddenly.

Symptoms can include increased thirst and urination, leaking urine especially at night, vomiting, diarrhea, lack of appetite, weight loss, depression, anemia, and overall body weakness. Other less common signs of kidney disease can be fractures resulting from weakened bones, high blood pressure that can lead to sudden blindness, itchy skin, bleeding into the stomach, bruising of the skin, and even oral ulcers.

Diagnosis

Most of the symptoms of chronic kidney disease are also present in other diseases, which makes accurate diagnosis really important.

Routine blood work can detect a chronic kidney problem at an early stage (another reason that I recommend twice-annual wellness exams). For cats seven and older, tests for kidney function should be performed at least annually. At my practice, I recommend every six months. And really I never cease to be amazed at the number of cats that have notable changes in their organ function, when only six months previously, things appeared on paper to be just fine. A lot can change in six months, and catching this disease early is really critical.

Blood chemistry profiles will show if there are elevated levels of circulating waste products, which is a sign of declining kidney function. Routine blood work will also pick up anemia, which is common with this disease. And a full blood panel can also point to other diseases like diabetes and hyperthyroidism.

A urinalysis is really important in providing critical information about kidney function. It can pick up a urinary tract infection. Most importantly, it can quantify the concentration of your cat's urine and detect if microprotein is being passed. These are two of the most common, earliest recognizable signs that kidney dysfunction is beginning to occur.

Kitties with kidney disease tend to drink a lot of water, and they urinate a lot, as the body tries to work around the kidney insufficiency by flushing extra waste products out of the system. Reduced kidney function affects the kidneys' ability to concentrate urine, so very dilute urine is a very common problem. And cats really tend to appear to drink, and then pee a lot, and then drink even more and pee even more.

It is important that thyroid function be checked in all of these cats, especially if your cat's older. Hyperthyroidism often exists alone or in conjunction with kidney failure, and its presence can change the way that the conditions are treated. Blood pressure will be checked since many cats with this disease have hypertension or high blood pressure. Sometimes an additional abdominal ultrasound or other diagnostics can be done to take a more in-depth look at what's going on inside the kidneys with a three-dimensional picture.

Stages of Chronic Kidney Disease

Chronic kidney disease is staged depending on the severity. The severity is estimated based on the level of waste products in the blood and abnormalities in the urine.

The International Renal Interest Society (**iris**) developed a method to gauge **the** severity of the disease in four stages. Stage 1 is the least severe and Stage 4 is the most severe. Staging the disease is useful for treatment and monitoring **of patients**.

Stage 1 is characterized by creatinine levels in the blood that are less than 1.6 milligrams per deciliter. (Creatinine is one of the things measured by a blood test.) Presence of waste products in the blood is actually unremarkable at this stage, but there can be other kidney abnormalities. For example, inadequate urine concentration on the urinalysis, or the kidneys could palpate or feel different on exam or be visibly abnormal on X-rays.

Stage 2 is when creatinine levels are between 1.6 and 2.8 milligrams per deciliter.

In Stage 3, creatinine levels in the blood reach 2.9 to 5 milligrams per deciliter. There is moderate renal azotemia, which is a fancy term for the accumulation of waste products in the blood (a measure called BUN, or blood urea nitrogen), and probably other symptoms are visible as well.

Stage 4 is characterized by creatinine over 5 milligrams per deciliter, severe azotemia (elevated BUN), and multiple additional symptoms as well.

The amount of protein passed in urine and the presence of elevated blood pressure are also factored into the staging process.

Treatment

Treatment goals for cats with kidney disease are: to control uremia (which is the buildup of nitrogenous waste products in the blood), delay the progression of disease, and maintain the cat's quality of life for as long as possible.

Fluid therapy is usually recommended initially for these cats to deal with dehydration, anorexia, vomiting, and to flush the circulating waste products out of the system. Depending on the animal's condition, fluid therapy may be administered in the hospital intravenously, and once the cat is stable and rehydrated, most guardians like to learn how to give sub-Q fluids at home.

Subcutaneous fluids are injected under the skin usually in the scruff of the neck between the shoulder blades. Kitties actually tend to handle this pretty darn well. Most of the time it is guardians that become really nerve wracked thinking about this procedure. But really all in all, once guardians can relax and learn how to do it, kitties tend to handle sub-Q fluids pretty darn well. The frequency of injections depends on the severity of the disease.

Recommended Diet and Nutrition

Certainly, a diet that is high in excellent quality protein and lower than normal amounts of sodium and phosphorous is really recommended. Controlling phosphorous intake is proven to be very important in controlling the progression of kidney disease. Many veterinarians still insist that a renal diet should be low in protein, despite studies that show aging pets -- including those with kidney disease -- need more, not less protein. But it has to be very high quality protein.

All that to say, if your cat is addicted to a food that's rendered, meaning if your cat is eating a poor quality food that is difficult to digest and process, I do recommend that you reduce the amount of toxic protein in their diet. However, if your cat is eating human-grade protein, which is of course, excellent quality, protein restriction is often counterproductive and actually exacerbates weight loss and cachexia, which is muscle wasting that is really common with cats suffering from kidney disease.

Many veterinarians will suggest a prescription dry food diet for kidney disease, but I absolutely recommend against this as well. Unless this particular prescription dry food is the only food that your cat will consume, I don't recommend you feed prescription dry kidney diets.

Cats with renal disease do best eating high-quality human grade canned food or a fresh balanced homemade diet. Kidney failure cats still eating kibble should be transitioned to a diet that provides much more moisture to help nourish the kidneys, if at all possible.

Most importantly, cats with kidney disease, they have to continue to eat. So above all, it's important that your cat be eating. Unlimited access to fresh water should always be provided.

Helpful Therapies

There are a variety of other therapies that can be helpful depending on your pet's symptoms. High blood pressure may need to be controlled. Anemia may need to be addressed. And sometimes certain medications must be given to alleviate GI symptoms.

Vitamins and minerals can sometimes be beneficial. I oftentimes add a lot of the B-vitamins to a cat's sub-Q fluids. B vitamins can help with anemia, help improve cat's overall feeling of well-being, and also help with nausea. I use a probiotic specially formulated for kidney support called Azodyl. Standard Process Feline Renal Support can also be beneficial, as well as phosphorous binders, and sodium bicarbonate, if needed. Your veterinarian will have to look at the bloodwork and help you decide if these are indicated or not based on what your pet's specific situation is.

Making your cat's environment as stress-free as possible is also really important. There are several articles on my site about how stress affects kitties. And certainly, how to create a stress-free environment for your kitty with kidney disease is important.

Kidney Dialysis and Transplant

Kidney dialysis is sometimes available from large teaching colleges with appropriate facilities. Actually, kidney transplants are incredibly rare, but they are also available under certain conditions. They're only offered at a handful of teaching hospitals or referral veterinary centers. Transplants are thousands and thousands and thousands of dollars and medication must be given long-term to prevent rejection. These drugs obviously have a number of potentially serious side effects, so these cases have to really be carefully managed.

Donors for kidney transplants are found at shelters through compatibility testing. When a match is located, a kidney from the shelter kitty is transplanted into the cat with renal failure. The guardian of the cat with renal failure must adopt the donor kitty. In exchange for donating a kidney, the shelter kitty is provided a forever home.

Obviously, both dialysis treatment and transplantation are options of last resort and can be entirely inappropriate for many kitties.

Additional Tips from Dr. Becker

Needless to say, kidney disease, being the leading cause of death for household kitties, but not the leading cause of death for wild felids, prompts the question of why feline renal failure in domestic cats is at epidemic proportions. In my opinion, feeding high-quality protein in its natural, unadulterated form means kittens will have a moisture-dense diet over a lifetime that will take an enormous amount of stress off the kidneys and support those thousands of nephrons that are really important, which I discussed earlier.

Feeding kitties over-processed dry food for a lifetime will certainly increase kidney stress. Combined with toxins in the environment, poor water quality, inbreeding, too many vaccines, and the fact that kitties simply don't suck down water like their canine counterparts, really can make kidney disease almost feel

like it's inevitable for this particular species.

In my opinion, the very best approach to managing kidney disease is vigilant monitoring of organ systems that can identify risk and subtle changes long before kidney failure occurs. Many cats live full and very happy lives when this disease is identified early and managed very proactively.