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Chronic Kidney Disease in Dogs and Cats- Treat the Treatable!

Etiologies of Chronic Kidney Disease in Dogs and Cats:

The most common cause of acquired kidney disease in pets is age-associated change to the kidneys resulting in progressive damage to the functional units of the kidneys. This leads to decreased ability to concentrate the urine followed by azotemia (elevation of kidney values). This is particularly common in cats but is also seen in dogs. Other causes of kidney disease are congenital abnormalities, toxic insults, proteinuria (excessive protein loss through the kidneys that is caused by the diseases glomerulonephritis or amyloidosis), infectious disease(s), and cancer.

Congenital kidney disease is often times recognized on initial lab work prior to neutering or at wellness checks. Toxic etiologies include exposure to things such as ethylene glycol (antifreeze), non-steroidal anti-inflammatory drugs (acetaminophen and ibuprofen are examples), grapes or raisins, certain plant types (including those in the Lily family), and specific classes of prescription and chemotherapy drugs. These toxins generally result in a syndrome referred to as acute renal failure, which is addressed differently than chronic renal failure, but exposure to smaller amounts of these drugs can lead to kidney injury and result in chronic disease later in life.

Glomerulonephritis is a disease characterized by excessive loss of protein through the functional units of the kidneys, the glomeruli. This is oftentimes associated with inflammation of the kidney and complete work-up is indicated for this disease.

Amyloidosis is an extreme form of protein loss through the kidney caused by accumulation of the protein amyloid in the kidney's glomeruli. This can be seen in certain breeds including the Shar pei dog and Abyssinian cat.

Infectious causes of kidney disease include pyelonephritis (bacterial infections of the kidney), Leptospirosis, and Lyme disease. Any infectious disease can also lead to glomerulonephritis by causing systemic inflammation and deposition of immune complexes in the glomeruli of the kidneys. Infectious diseases may result in acute or chronic renal failure.

Diagnostic Work-Up of Kidney Disease:

A thorough diagnostic work-up is indicated once kidney disease is initially identified. This is important in order to identify any treatable conditions that will allow the veterinarian and pet's family to slow progression of the disease. This may also lead to specific treatment for identified causes of kidney injury and allow for reversal of some of that damage. Indicated tests include full lab work which consists of a chemistry panel, complete blood count and urinalysis, urine protein levels, urine culture and sensitivity, blood pressure determination, abdominal ultrasound, and, possibly, infectious disease titers.

Treatment of Kidney Disease:

Once a work-up has been completed, recommendations can be made to help slow the progression of kidney disease. The most important therapy is institution of a renal diet (kidney-appropriate diet). These diets are low quantity, high quality protein diets and are available by prescription only. Based upon the initial diagnostics, urinary tract infections can be addressed based upon culture and sensitivity, electrolyte abnormalities, elevations in phosphorous levels, and acid-base derangements are identified and treated, and prognosis can be determined. In late stages of chronic renal failure, anemia (low red blood cell count) can develop and certain drugs may be recommended to stimulate the bone marrow to produce more red blood cells.

Hypertension (high blood pressure) is a common sequela of kidney disease and is addressed by prescription drugs and careful monitoring of kidney values and blood pressure. Hypertension is oftentimes seen in conjunction with proteinuria and a drug in the ACE inhibitor class is initially used to treat both conditions. Kidney diets and adjunct therapies such as ultra low-dose aspirin and fatty acid supplementation also aid in the therapy of glomerulonephritis. Research has indicated that addressing proteinuria and blood pressure are as important as dietary therapy in management of long-term chronic renal failure patients.

Acute on chronic renal failure is a crisis situation when the kidney values rise and result in a patient feeling sick, becoming dehydrated, not eating or drinking, and possibly vomiting. Since the kidneys are unable to retain enough fluid and the patient is not able to intake adequate amounts of fluids for these losses, severe dehydration ensues, which furthers the crisis. This is managed by hospitalization for diuresis (aggressive intravenous fluid therapy), anti-nausea medication, and other therapy based upon diagnostics. Once discharged from the hospital, it is frequently recommended that these patients receive subcutaneous fluids (fluids administered under the skin) at home.

Prognosis for Kidney Disease in Pets:

Prognosis for kidney disease is variable and depends on what stage medical intervention is initiated. With any disease, early intervention is ideal, however, not always possible. It is recommended that pets have at least yearly lab work performed to identify kidney disease as well as other endocrine and metabolic conditions as early as possible. With careful monitoring and by addressing the treatable conditions, many patients can live happily for years with kidney disease.