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The Two Types of Bladder Stones in Dogs and Cats

Urolithiasis is a medical term referring to the presence of stones or crystals in the urinary tract. Struvite is a material that is comprised of magnesium, ammonium and phosphate. These type of stones can be found in the urinary bladder, the urethra or in the kidneys. Calcium Oxallates are the other types of stones. While some forms of the stones can be flushed out or dissolved, others must be removed surgically.

Many animals do not display any signs or symptoms of the disease. However, some will have:

Abnormal urine patterns

- Difficulty urinating (*dysuria*)
- Frequent urination
- Bloody urine (hematuria)
- Cloudy urine
- Increased thirst
- Enlarged belly

The most common urinary tract stones (uroliths) are Struvite and Oxalate. Struvite stones are crystal-like formations that are small in size and primarily made up of magnesium, ammonium and phosphate. When cats have Struvite plugs in their urethra (the tube that extends from the bladder to the outside of the body to discharge urine), they are typically comprised of larger stones and are often mixed with crystals.

Causes

The median age for urolithiasis is around seven years old and it is more common in female animals than in males. Animals that have small urethral outlets are also more prone to develop these type of obstructions. It is thought that the stones are developed following urinary tract infections, as well as when large quantities of minerals are bound to other foreign materials such as tissue, blood and other inflammatory reactants.

<u>Diagnosis</u>

Sometimes a thicker bladder wall will be felt by the veterinarian; difficulty urinating and an abnormal outflow may also be diagnosed. Urine samples will be obtained by the veterinarian to examine for abnormalities. X rays or ultrasounds are used to determine the size, shape and location of the stones for treatment options; other imaging tests may also be performed to deter-











mine if there are any other underlying medical conditions.

Treatment and Prevention

The treatment of struvite and calcium oxalate stones may include surgical removal, urohydropropulsion, dietary changes, or a combination of techniques.

Surgery

If there are urethral plugs or any other type of urinary obstruction, we cannot wait for special diets to dissolve the stones, but must quickly surgically remove the stones or use urohydropropulsion (detailed below) to eliminate the stones.

Diet Modification

When struvite is a problem, special diets are available to make the urine more dilute and more acidic. Too much acidification of the urine can result in serious health problems, so urinary acidifiers should never be used in conjunction with diets that are formulated to produce an acidic urine. Those diets that are designed to actually dissolve urinary stones include Hill's s/d, Royal Canin Dissolution, and Royal Canin Urinary SO. Hill's s/d should only used on a short-term basis, however, since it is not balanced for long-term use. Those diets that are available to help prevent stones and crystal formation in cats and dogs that are susceptible to them include Royal Canin Urinary SO, Royal Canin Control, and Hill's c/d, w/d, and r/d. All of these diets have a balanced level of the minerals that make up the crystals such as magnesium and phosphorous. In addition to being formulated to produce an acid urine, they are also formulated to produce more dilute urine, so crystals are less likely to form. The diets are available through your veterinarian.

When calcium oxalate is the issue, the prescription diets cannot dissolve them but can prevent more calcium oxalates from forming. If a urinary blockage occurs due to calcium oxalates surgical removal may be the only option.

Prior to the development of specialized diets, urinary acidifiers such as vitamin C or dlmethionine were sometimes used to lower the pH of the urine in cases of Struvite stones, for example. Specialty diets are now preferred since they alter not only the pH, but the concentration of stone-forming constituents.