

Bladder Stones in Dogs

Bladder stones, or uroliths, are rock-like collections of minerals that form in the urinary bladder. Uroliths may occur as a large, single stone or as dozens of smaller stones.

Kidney stones (nephroliths) do not have to be present for bladder stones to form. In fact, kidney stones are relatively uncommon in the dog. Both stones are unrelated to development of gallstones (stones in the gall bladder).

Contributing Factors

Predisposing factors for development of stones are unique for the type of stone but can include the following:

1. Presence of a urinary tract infection
2. Excessive loss of urate or calcium into the urine
3. Inability of the kidney to re-absorb certain amino acids

The factor that can be eliminated with appropriate treatment is a urinary tract infection. For the others, a metabolic disturbance is responsible for stone formation and may not be preventable.

Prevalence

Bladder stones are a relatively common problem in the dog and occur in about 1-2% of all dogs. Bladder stones are more common in middle-aged dogs. Struvite, the most common stone, is seen with higher frequency in female dogs; the other types of stones are more common to male dogs.

Breeds commonly affected with bladder stones include the following: Dalmatian, Pekingese, miniature Schnauzer, Yorkshire Terrier, Scottish Terrier, Dachshund, Bulldog, miniature Poodle, Pug, Basset Hound, Shih Tzu, and Cocker Spaniel. Certain types of stones are more commonly found in certain breeds.

Causes/Transmission

Often, one or more stone-forming crystalline compounds are present in elevated levels in the urine. This may be due to abnormalities in *diet* or due to some previous disease in the bladder, especially *infection* with bacteria. At a certain point, the high level of the compound precipitates and forms tiny crystals. These crystals stick together, and stones gradually form. As time passes, the stones enlarge and may increase in number.

Clinical Signs

The two most common signs of bladder stones are blood in the urine (hematuria) and straining to urinate (dysuria). Hematuria occurs because the stones mechanically irritate the bladder lining, causing bleeding from its surface. Dysuria occurs when stones obstruct the passage of urine out of the bladder.

Bladder stones may also pass into the urethra but be too large to get completely out of the body, resulting in complete obstruction of the urethra. When this occurs, urine cannot pass out of the body and the dog becomes very painful in the abdomen. It may cry in pain, especially if pressure is applied to the abdominal wall.

Diagnosis

Most dogs that have bladder infections do not have bladder stones. These dogs will often have blood in the urine and will strain to urinate, the same symptoms as a dog with bladder stones.

Some bladder stones can be palpated (felt with the fingers) by the veterinarian through the abdominal wall. Most bladder stones are visible on radiographs (x-rays) or an ultrasound examination. These procedures are performed if stones are suspected. This includes dogs that show unusual pain when the bladder is palpated, dogs that have recurrent hematuria and dysuria, or dogs that have recurrent bacterial infections in the bladder.

Some bladder stones are not visible on radiographs. These stones may be found with an ultrasound examination (if available) or with special radiographs that are made after placing a dye (contrast material) into the bladder.

Treatment

There are two options for treatment. Quick results can be achieved with surgical removal of the stones. This requires major surgery in which the abdomen and bladder are opened. Following two to four days of recovery, the dog is relieved of pain and dysuria. The hematuria will often persist for a few more days, and then it stops. Surgery is not the best option for all patients; however, those with urethral obstruction and those with bacterial infections associated with the stones should be operated unless there are other health conditions that prohibit surgery.

The second option is to dissolve the stone with a special diet. This avoids surgery and can be a very good choice for some dogs. However, it is not successful for all types of stones, it takes many months to dissolve stones (and they can potentially get stuck at any time)

Prognosis

Prognosis depends upon whether the underlying cause can be eliminated (urinary tract infection) or it is rooted in a metabolic disturbance.

Prevention

In some cases, stones can be prevented from recurring a second time. If stones are removed surgically or if some small ones pass in the urine, they should be analyzed for their chemical composition. This will permit us to determine if a special diet will be helpful in preventing recurrence. If a bacterial infection causes stone formation, it is recommended that periodic urinalyses and urine cultures be performed to determine when antibiotics should be given.