

Prime Cuts: Urinary Calculi

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Spring 2017

Urinary calculi refer to mineral deposits in the urinary tract that can eventually block the passing of urine. These stones are common in cattle, sheep and goats. Obstruction by urinary calculi can cause urine retention, bladder distention, abdominal pain, and ultimately bladder rupture leading to death. Urinary calculi most often affect castrated males as their urethras are often more narrow than intact males.

Symptoms

Animals suffering from urinary calculi will appear restless while often straining to urinate (unsuccessfully). Incomplete blockage of the urethra will still allow some urine to pass but it will slowly dribble from the sheath instead of being a steady stream. Animals experiencing extreme pain from the blockage of urine will often wring their tails, stamp their feet, and kick at their abdomen and sides.

If the blockage is complete and urine cannot pass the bladder and/or urethra will rupture releasing the volume of urine into the body cavity. The urine accumulates causing the belly to swell. Animals will show a loss of appetite, become very quiet, and may lie down with a reluctance to stand again, eventually dying.

Causes

Urinary calculi are most often caused by an imbalance of calcium to phosphorus in the diet of feedlot cattle, sheep, and goats. High grain diets, like those seen in feedlot conditions, provide high levels of phosphorus and low levels of calcium. This results in high urinary phosphorus excretion and the eventual development of mineral deposits within the urethra.

Treatment

Treatments aimed at promoting passing or dissolving of the calculi have had limited success. Currently, surgery is the most effective treatment. Surgery must be done by a skilled veterinarian and, due to cost, is often not an economical option for small ruminants.

Prevention

Urinary calculi can be prevented by:

Maintaining at least a 1.5:1 calcium/phosphorus ratio

Increasing urine volume

Acidifying the urine

Ideally, the calcium to phosphorus ratio should not fall below 1.5:1. To maintain proper calcium to phosphorus ratios, utilize a mineral designed for use in high grain feeding situations as breeding herd minerals will be higher in phosphorus.

Increasing urine volume can be done by increasing the amount of salt provided by the diet. The salt will drive water intake, diluting out the urine and flushing the urinary tract more regularly. Remember that the increase in urine volume is dependent on an adequate water supply. Make sure water is readily available if choosing this course of action.

Urine can be acidified by supplementing ammonium chloride. This method should be utilized primarily in goat and sheep operations as it tends to be less effective in feedlot steers. Growing and finishing rations for sheep and goats should be supplemented with ammonium chloride as the best means to prevent urinary calculi in these animals. Ammonium chloride is not palatable so supplementation works best when it is incorporated into a pellet.