

UROLITHIASIS IN RUMINANTS

Water belly, urinary calculus, urinary tract obstruction.

Uroliths are calculi (stones) in the kidney, bladder or urinary tract. Obstructive urolithiasis is the retention of urine caused by calculi becoming lodged in the urethra. This urine retention causes abdominal pain, possibly urethral perforation or bladder rupture leading to death.

The complaint can affect both small and large ruminants. Females can also produce stones, however as their urethras are shorter and wider, they can usually pass the stone without a blockage being caused. Bulls/rams are also less affected as their urethra is more developed and wider than those of steers/wethers.

Small ruminants and feedlot steers typically present with multiple calculi, whereas steers and bulls on range typically have one large calculus. The disease results in heavy economic losses to the livestock industry as it is attributed the fifth most prevalent cause of death in feedlot animals. Many surgical approaches and techniques for the diagnosis and treatment of the disease have been described with their relative merits and demerits in literature.

Urinary calculi formation usually results from a combination of various physical, nutritional and management factors. It may occur due to excessive or imbalanced intake of minerals either from artesian water or in feedlots where cattle receive rations high in cereal grain and oil meals. These feedstuffs have high levels of phosphorus and magnesium but relatively low levels of calcium and potassium.

In rangeland animals, calculi tend to result from high levels of silicates (siliceous plants) and water high in silicates.

Additional factors that may favour stone formation include; concentrated urine resulting from water deprivation, consumption of excessive minerals causing increased urine concentration (particularly phosphates), vitamin A deficiency and administration of growth stimulants such as estrogens.

Symptoms

- Anorexia
- Lying down with the rear legs extended to the side instead of tucked up underneath the body
- Straining by the animal to urinate
- Blood-tinged dribbling urine
- Hunched back and distended back
- Tail twitching
- Shifting weight on the rear legs; this shuffling behaviour is an attempt to relieve the pressure of the distended bladder



- Rarely seen urinating
- Dried urine on the preputial hairs leaving mineral deposits. In wethers, this can be seen from a distance as staining around the pizzle area.

Treatment & Control

Routine observation is necessary to detect the earlier signs of the disease. If the disease is detected early, salvage through processing may be the most cost effective method of handling urinary calculi. If processing is not feasible, it may be of value to surgically redirect the penis. The penis and urethra are dissected down and redirected depending on where the blockage is (generally at the distal sigmoid flexure). Surgery to reroute the urethra will get the animal past the crisis of blockage and may last about six months until the animal can be finished for processing.

Prevention of urinary calculus includes insuring that stocks rations are adequately balanced and they have a plentiful supply of fresh water available at all times. Any feeding program that incorporates concentrate feeding should include appropriate calcium supplementation. A ration with a 2:1, calcium:phosphorous ratio greatly reduces the incidence of urinary calculus in feeder animals. Adding sodium chloride to the ration will also promote water intake and hence urine dilution and will decrease the urine concentration of crystals that may produce calculi.

Additional information

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