Summary of case and background information

Urolithiasis commonly affects middle-aged to older guinea pigs, and the calculi (stones) can be found anywhere along the urinary tract. Urinary calculi are formed from minerals that precipitate out from the urine and join together. The alkaline pH of the urine, and the high mineral content, especially calcium, are thought to favour crystal formation and precipitation. Husbandry factors that can contribute include decreased water intake (eg being offered water in a vessel they are not familiar with, sudden reduction in amount of fruit/veg fed), obesity, lack of exercise, and a diet high in calcium and oxalate. Common things fed which are high in calcium and/or oxalates include alfafa pellets or hay, spinach, kale, celery, parsley, and strawberries (and guinea pigs love all of these!). The most commonly reported uroliths are calcium oxalate and calcium carbonate. Urinary tract infections are less common in guinea pigs, however when present, infection can redispose to urolith formation.

Although these cases can present acutely, it is not uncommon for signs to progress over days or weeks. Signs include haematuria, stranguria and dysuria, as well as signs of abdominal pain (hunched posture, teeth grinding), and non-specific signs of disease (anorexia, lethargy and weight loss). These milder and more subtle signs are often missed as guinea pigs are prey animals, and so hide their pain well.

A detailed dietary history is crucial, along with physical examination. Because uroliths in guinea pigs are generally radiopaque (being calcium based), plain radiography is very useful diagnostic tool, and as in this case, can often be performed conscious. Urinalysis should ideally be performed, especially sediment examination – the most common finding will be haematuria. Calcium oxalate, calcium carbonate, and struvite crystals may also be seen but as in other small animals, the crystal type does not always predict the mineral composition of the calculi. If bacteria are seen on sediment examination, culture should be performed.

Surgical removal of the urinary calculi is the treatment of choice, as medical treatment (dietary modification to dissolve the stone) is rarely effective. However, post-operatively, dietary modification to prevent recurrence is very important. The main thing is that water intake should be increased (try offering in a bowl as well as bottle), and foods high in calcium and oxalate should be reduced. In particular, the calcium:phosphorous ratio should be looked at. However, severe dietary calcium restriction should be avoided as this can lead to metabolic bone disease.

Diets containing a high percentage of timothy, oat, or grass hays, a lower overall percentage of pellets, and a wide variety of vegetables and fruits have been shown to decrease the risk of urolith development in guinea pigs.

References –

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