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Vitamin C Deficiency (“Scurvy”) in Guinea Pigs

Basics

OVERVIEW

- Scurvy is a disease caused by a deficiency of vitamin C.
- Guinea pigs (and primates, including humans) are unable to synthesize or store vitamin C and therefore require oral or dietary supplementation.
- Vitamin C is required for making collagen. Collagen is required for maintaining blood vessel integrity, formation of bone, and wound healing. Deficiency results in fragile blood vessels, leading to hemorrhage of the gums and tissues in the mouth, skin, muscles, and internal organ surfaces.
- Vitamin C deficiency may cause abnormal cartilage and bone formation, commonly at joints of leg bones and ribs, leading to painful swelling of joints.
- The anchoring of teeth in their bony sockets may also be affected, leading to malocclusion of teeth and difficulty eating.
- Symptoms can occur within 2 weeks of receiving a deficient diet.



SIGNALMENT

- No breed or sex predilections
- Young animals are more susceptible because of a combination of rapid growth and an increased use of vitamin C in guinea pigs under 4 months of age.

SIGNS

- Lameness; stiff “bunny-hop” gait
- Lethargy, weakness
- Decreased appetite or inability to eat if teeth are involved
- Joint pain and swelling in legs and ribs
- Bruising or bleeding of the gums or skin
- Diarrhea
- Rough hair coat
- Weight loss

CAUSES

Dietary deficiency of vitamin C

RISK FACTORS

- Young animals are at greater risk because of rapidly developing bone and increased use of vitamin C.
- Although guinea pig pelleted diets are fortified with vitamin C, the content is reduced by storage, light, heat, and moisture. As much as 50% of vitamin C activity may be lost within 6 weeks of storage; therefore, it is recommended to feed product within 90 days of milling.
- Vitamin C activity is diminished by water, so supplementation of drinking water may be ineffective; 50% of activity is lost within 24 hours.
- Some small mammal vitamin supplements do not contain adequate vitamin C levels for guinea pigs
- Vitamin C content of vegetables varies; it may appear that the diet is providing adequate amounts from fruit and vegetable sources, while these may actually be deficient in vitamin C.

TREATMENT

APPROPRIATE HEALTH CARE

- It is essential to correct the underlying cause by providing adequate vitamin C and addressing dietary insufficiency.
- Hospitalization may be needed to provide daily injections of vitamin C, fluid therapy, pain medications, and nutritional support until patient is eating and improving.
- Mildly affected pets can be treated on an outpatient basis.

ACTIVITY

Restrict activity during short-term recovery to prevent trauma and bruising or other injury; avoid high surfaces or potential falls; gradually encourage activity once clinical signs are improving (usually within 1 week of initiating treatment).

DIET

- If the guinea pig is not eating, it is essential to provide adequate nutritional support. Syringe-feed a formulated diet such as Critical Care for Herbivores (Oxbow Pet Products, Murdock, NE). An alternative product, Emeraid Herbivore (Lafeber Company, Cornell, IL), is available, but additional vitamin C supplementation is required when using this product. If neither product is available, a slurry can be made with blended leafy green vegetables that are high in vitamin C, or guinea pig pellets crushed and mixed with water and vegetable baby food.
- Long term, provide a diet with appropriate vitamin C content. Most commercial guinea pig pellets are produced with supplemental vitamin C (minimum of 6 mg/kg/day) but must be consumed within 90 days of milling to ensure potency.

MEDICATIONS

- Daily requirement for vitamin C lifelong is 25–30 mg per animal per day; provide 50–100 mg daily in deficiency. Several companies provide vitamin C chewable tablets for guinea pigs, which many pets will readily consume as treats; children's vitamin C supplements can also be administered, but be certain that these contain no other vitamins (Vitamin C only).
- Water supplementation can be used but must be provided in adequate amounts (200–400 mg per liter of water) and must be changed daily. This method is less reliable than direct oral supplementation or dietary supplementation.
- Pain medications such as meloxicam, buprenorphine, butorphanol, or tramadol are commonly used for painful joint, bone, or mouth disorders caused by scurvy.

FOLLOW-UP

PATIENT MONITORING

- Monitor for return of normal activity.
- X-rays can be performed at monthly intervals until no further change is evident.

PREVENTION/AVOIDANCE

- Feed commercial guinea pig pellets within 90 days of milling.
- Provide a variety of vitamin C–rich vegetables daily.
- If water supplementation is provided, replace daily.

POSSIBLE COMPLICATIONS

- Arthritis that can be permanent and cause debility
- Malocclusion of the teeth, requiring regular molar trimming by a veterinarian

EXPECTED COURSE AND PROGNOSIS

- Initial response to treatment may be evident within 1 week of initiating treatment, but resolution is incomplete at this time.
- Supplementation of vitamin C should be provided for life.
- Prognosis for recovery is good, although sequelae including lameness, arthritis, and dental malocclusion may occur.

KEY POINTS

- Vitamin C deficiency can cause painful abnormalities in joints, gums, and teeth. These changes can be permanent if not diagnosed and treated early.
- Vitamin C deficiency is easy to prevent by supplementing vitamin C in the diet and with vitamin C daily treats. However, Vitamin C degrades very quickly in water and pelleted food. Deficiencies often occur accidentally when feeding guinea pig food that is old, or if vitamin C supplements are given in the water.

Notes

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