Diseases of Geriatric Guinea Pigs and Chinchillas

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KEYWORDS

• Guinea pig • Chinchilla • Geriatric • Scurvy
• Pododermatitis • Malocclusion

In the United States over the last 10 years, interest has been increasing in small mammal pets, including guinea pigs and chinchillas. This trend has resulted in improved diet and husbandry, which in turn has led to increased longevity of many of these pets. The problems and diseases of the older guinea pig and chinchilla differ to some extent from that of the young newly obtained animal, although diet and husbandry still play important roles.

The guinea pig (*Cavia porcellus*), or cavy, is a species of rodent belonging to the family Caviidae and the genus *Cavia*. They are believed to have been domesticated by natives of the Andean region of South America over 5000 years ago. The animals are thought to be descendants of a closely related species, *Cavia aperea*, *Cavia fulgida*, or *Cavia tschudii*, and therefore do not exist naturally in the wild.[1] The guinea pig still plays an important role as a food source and in folk medicine and religious ceremonies in this part of the world.[2]

The chinchilla (*Chinchilla laniger*) was introduced to Spaniards in 1524 and named after the Chinchas Indians, a once great nation that had been absorbed into the Inca, who named the animals *Chinchillas*, meaning *little Chinchas*. The demand for chinchilla pelts that followed drove the chinchilla close to extinction and, in 1910, the hunting or exportation of chinchillas was outlawed.[3] According to an apocryphal legend, all of the chinchillas in North America originated from 11 animals—8 males and 3 females—of mixed species (*C laniger* and *Chinchilla brevicaudata*) collected from several different locations and brought to the United States by Mathias F. Chapman in 1923. True or not, the resultant animal is a marvel of physiology. Not only is it the longest living rodent of its size, but it is also remarkably healthy, with only a handful of health problems, most related to poor diet or husbandry.

The aged guinea pig suffers from a long list of diseases and problems. Most important is hypovitaminosis C. Several other problems are directly or indirectly influenced

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by low vitamin C levels, including dental disease and pododermatitis. Dental disease in guinea pigs may be associated with skull size and jaw length as this problem is more prevalent in short-faced animals. Chinchillas have very few old-age disease problems. Both species suffer from renal disease in their last years and many die of complications of kidney failure.

PROBLEMS OF DIET AND HUSBANDRY

Inappropriate diet and husbandry is a major cause of problems for the older guinea pig. Hypovitaminosis C (scurvy) is the most common cause of death in the author's practice and likely contributes to many other health problems of older guinea pigs, including malocclusion, arthritis, and tissue mineralization. Soiled or inappropriate bedding or housing surfaces contribute to pododermatitis, urinary tract infections, and vaginal and scrotal plugs.

Hypovitaminosis C (Scurvy)

Guinea pigs lack the hepatic enzyme 1-gulonolactone oxidase, which is essential for the conversion of glucose to ascorbic acid, a sugar acid with antioxidant properties. The name *ascorbic acid* is derived from *a*, meaning *no*, and *scorbutus*, the medical term for scurvy. Vitamin C is involved in many biochemical processes in the body, including the synthesis of collagen and intracellular ground substance. If vitamin C is not supplemented in the diet, or if the animal is anorexic, scorbutic lesions will rapidly develop.

Clinical signs associated with scurvy vary widely, depending on the level of vitamin C in the diet. Diets containing no vitamin C lead to a more rapidly progressing form of the disease with acutely painful joints and teeth that result in generalized immobility and prevent the consumption of food. The common presentation seen with marginal levels of vitamin C is a chronic form of disease. Signs include frequent vocalizations, weakness, decreased mobility, anorexia, diarrhea, flaky to ulcerative skin lesions, stiffness, petechia of the mucous membranes, subcutaneous hemorrhages, and death due to starvation or secondary infection. Other nonspecific but suspicious signs may include rough hair coat, delayed wound healing, worsening or recurrence of unapparent dermatophyte or scabies infections, changes in patterns of teeth grinding, inactivity, stillbirths, urine scald, and recurrent or chronic disease, including pneumonia and urinary tract infections.[4]

A tentative diagnosis is made based on symptoms and dietary history, while a more definitive diagnosis can be made by analysis of diet, gross and microscopic pathology, and serum ascorbate levels.

Scurvy can be prevented in the guinea pig by supplementing the diet with vitamin C. The daily requirement of ascorbic acid is 15 to 30 mg per guinea pig per day. Pregnant females should receive 30 to 45 mg/d. The author prefers vitamin C supplements added to the drinking water (the author recommends Liquid C [Twin Lab, American Fork, Utah, UT, USA]). Because of instability of vitamin C in the presence of light and chlorine, a solution at a concentration of 200 to 400 mg/L drinking water should be mixed fresh daily. Supplemental feeding of a cup of cabbage, kale, a whole green pepper, or similar foods may be sufficient. However, results are unreliable.

Commercial guinea pig diets are formulated with supplementary vitamin C. The typical feed pellets contain 800 mg/kg at the time of milling. Such factors as dampness, heat, and light can reduce the vitamin C content during storage. Even pellet diets stored under optimal conditions lose their potency within 90 days of milling.[5]