

## Hypervitaminosis A & Chronic Hepatic Injury

An 8-year-old neutered domestic short-haired cat presented for tetraparalysis 12 hours after a fall. The cat had been experiencing difficulty in ambulation for 3 months prior, was indoor only, and was exclusively fed a home-made diet based on raw beef liver and giblets.

Physical examination confirmed tetraparalysis; no reflexes or deep pain sensation were present in the limbs, and there was osseous crepitation with severe pain evident on manipulation of the cervical and thoracic spine. Radiographic evaluation of the cervical and thoracic vertebrae revealed exostosis and fusion of all vertebrae from C1-T7, with fracture and deviation of the spinal axis at the level of C1 and C2. The animal was euthanized and gross pathology confirmed radiographic

findings. High levels of vitamin A in the liver were measured, and histopathology revealed severe hepatic fibrosis and stellate cell lipidosis. Liver injury in cases of vitamin A toxicity is likely caused by excessive accumulation of vitamin A in the liver, leading to fatty accumulation and liposomal storage disease. Although the exact mechanism of injury in cats is unknown, these changes ultimately can lead to varying degrees of fibrosis and, ultimately, cirrhosis.

### ■ Commentary

This report is the first to show that hypervitaminosis A can lead to chronic hepatic injury in the cat, which in turn can lead to fibrosis and, ultimately, cirrhosis. Although the cat in this report died secondary to osteopathology, hepatic

metabolic storage disease would likely have contributed to its overall health. Cases like this are extreme examples of the importance of balancing a home-cooked diet. Although major metabolic complications of nutritional imbalance are rare, it is important to emphasize that not all foods provide bioavailable nutrients in the dog or cat; each species has unique metabolic or dietary needs. A veterinary nutritionist is the best resource for the practitioner and client to formulate home-made diets that are balanced and safe.

—Heather Troyer, DVM, DABVP, CVA

### ■ ■ Source

Hypervitaminosis A-induced hepatic fibrosis in a cat. Guerra JM, Daniel AGT, Aloia TP, et al. *J FELINE MED SURG* 16:243-248, 2014.



## Hyperthyroidism in Guinea Pigs

This report described the diagnosis and treatment of hyperthyroidism in 4 (3 females and 1 male, 3–6 years of age) guinea pigs, representing 1.3% of guinea pigs presented to the university clinic over a 2.5-year period.

Clinical signs included weight loss despite normal appetite and behavioral changes (eg, hyperactivity, prolonged sleep, unusual resting positions, separation from other animals). Polydipsia was reported in 2 cases. Physical examination revealed mild-to-moderate decreased nutritional status and a spherical, solid, well-defined ventral cervical mass. Additional findings in individual cases included scruffy hair coat, tachycardia (400 bpm), intensified arterial pulses, and tachypnea (140 breaths/min).

Serum analysis showed elevated total thyroxine (T<sub>4</sub>) concentrations based on recently published reference intervals of 14.2–64.4 nmol/L for females and 14.2–57.9 nmol/L for males. ALT was also elevated above the upper reference limit of 61 U/L.

Surgical resection was attempted in 1 case, but the patient died during anesthetic initiation. Histopathology showed papillary-cystic thyroid gland adenoma. The other 3 cases were treated with oral methimazole; clinical signs and T<sub>4</sub> measurements were monitored. Starting methimazole doses were 1–1.4 mg/kg/day, with final dosages ranging from 2–3 mg/kg q24h and 1 case requiring 2.5 mg/kg q8h. This case was then successfully treated with radioactive iodine. All patients showed progressive weight gain and normalization of T<sub>4</sub> levels. The patients died of unknown causes 18–28 months following initial treatment.

### ■ Commentary

Hyperthyroidism in guinea pigs, a relatively new addition to a list of diagnostic differentials, is becoming increasingly more relevant. This case series reaffirmed the One Health philosophy that presentation of hyperthyroidism in cavies is similar to presentation in other species, including similar treatment options and correlative outcomes. In addition, the authors included a good review of current literature on this condition. Practitioners who see and treat this species would benefit from including hyperthyroidism on their differentials list and pursuing appropriate testing.—Adolf K. Maas, DVM, DABVP (*Reptile & Amphibian*)

### ■ ■ Source

Hyperthyroidism in four guinea pigs: Clinical manifestations, diagnosis, and treatment. Künzel F, Hierlmeier B, Christian M, Reifinger M. *J SMALL ANIM PRACT* 54:667-671, 2013.