

# Feline Acromegaly

## Synonyms

Hypersomatotrophism

## Disease Description

Acromegaly is the result of an overproduction of growth hormone (GH). Excessive GH results in altered body conformation such as increased body size, large head, and enlargement of the organs in the abdomen. Other clinical signs, such as elongated lower jaw (under bite), enlarged paws, and increased spaces between the teeth, are more subtle. Acromegaly results in diabetes, often resistant to insulin, in many cats.

Growth hormone promotes excessive growth of the bones, joints and connective tissue. Thickening of the heart muscle (cardiomyopathy) can also occur. Neurologic problems can sometimes result if the causative tumor in the pituitary is large enough to compress surrounding tissues or causes increased pressure of the fluid in the brain.

Acromegaly in a diabetic cat is suspected when the patient has a stable or increasing body weight despite persistent and often severe high blood sugar, and when there is inability to improve the high blood sugar despite administration of large quantities of insulin. When the insulin dose exceeds 1 unit/pound/dose of insulin, acromegaly is suspected, along with other conditions that can result in insulin resistance.

Male cats are more often affected than females. And older cats are more commonly affected than younger cats.

## Cause

In the cat, acromegaly is most commonly the result of an overproduction of GH caused by a tumor of the pituitary gland in the brain. These tumors are usually benign rather than malignant

## Diagnosis

**Blood tests for GH** are not currently available. If we could do the test, GH should be elevated in cats with acromegaly.

**Blood test for Insulin-like growth factor I (IGF-1)** can be used to aid the diagnosis of acromegaly, as the body building effects of growth hormone are mediated by IGF-1. IGF-1 values greater than 100 nmol/L are expected in cats with acromegaly. Values between 70-100 nmol/L are considered non-diagnostic i.e. above normal, but not high enough to be diagnostic, as both non-acromegalic and acromegalic cats can have values in this range. Values less than 70 are normal. In one study, randomly-selected diabetic cats had surprisingly high IGF-1 levels, yet clinically they weren't insulin-resistant. The IGF-1 test, using a commercially available radioimmunoassay, had 84% sensitivity and 91% specificity as a diagnostic test for acromegaly in one study. That means 84% of the cat that had acromegaly had a positive test result, and 91% of the cat that did not have acromegaly had a negative test result.

**Brain imaging (MRI or CT) or necropsy findings** may identify a pituitary tumor if it is large enough (called a macrotumor, or pituitary macroadenoma). However, many pituitary tumors causing acromegaly in cats are very small, and cannot be seen on MRI or CT scan.

**ACTH Stimulation Test or Low Dose Dexamethasone Test.** In addition, Cushing's disease must be ruled out by blood test and maybe also ultrasound of the abdomen before acromegaly can be diagnosed, since Cushing's disease can also be associated with a pituitary tumor, insulin resistance, and mild enlargement of both adrenal glands on ultrasound of the abdomen. Cats with Cushing's disease often have very fragile skin that tears or is cut easily.

**General Bloodwork** done on cats with acromegaly often shows a mild anemia, elevated liver enzymes (ALT, ALKP), high cholesterol, high blood sugar, high serum proteins, low sodium, low potassium and low phosphorus. Urinalysis often shows well concentrated urine, and glucose and ketones in the urine. Fructosamine, a blood test that indicates regulation of diabetes by averaging blood sugar levels over a couple of weeks, will often be high.

**X-rays.** Enlarged heart (left atrium and ventricle) and congestive heart failure are sometimes seen on x-rays of the chest. Acromegaly also causes arthritis at various joints and in the spine, which can also be seen on x-rays. The liver, spleen, pancreas and other internal organs can appear enlarged on x-rays and ultrasound.

#### **Treatment:**

A good treatment for acromegaly in cats is not known. Surgery to remove the pituitary tumor (Hypophysectomy) is not yet practical. Radiation therapy of the pituitary tumor is expensive, requires repeated administration of anesthesia, and has slow beneficial effects. The somatostatin analog, octreotide, has been tried in cats but did not have the desired results. L-deprenyl (Anipryl®) was not effective in controlling acromegaly in one case report.

Most cases must be managed as well as possible with large doses of insulin for secondary diabetes mellitus. Hypoglycemia can occasionally develop because of the very high doses of insulin that may be required to control the clinical signs of diabetes mellitus. Death may occur also because of the lack of control of the diabetes mellitus. Diabetic coma is less likely to happen in diabetic cats with acromegaly as compared to diabetic cats that do not suffer from acromegaly.

If heart failure is present, it must be treated in the usual way with diuretics and other indicated heart medications. If the kidneys become enlarged due to acromegaly, kidney failure can result.

The slowly-enlarging pituitary mass rarely causes neurological signs, such as depression or stupor, refusal to eat and drink, poor coordination, blindness or seizures.

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