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Hyperestrogenism (Estrogen Toxicity) in Ferrets

Basics

OVERVIEW

- “Hyperestrogenism” refers to a condition in which excessive estrogen is present in the body.
- Estrogens are hormones that are produced by the ovaries in intact females (not spayed), or by diseased adrenal glands in both sexes.
- Severe hyperestrogenism is seen in intact females. Ferrets come into heat in the breeding season (March–August). Ovulation, followed by a pregnancy or pseudopregnancy (false pregnancy) lasting 41–43 days is induced by stimulation of the cervix by mating or breeding with male ferrets. If not bred or mated with a male, approximately one-half of unbred females will remain in heat. Blood estrogen concentration will remain high for the remainder of the breeding season (6 months or more) in females that are not bred.
- Estrogen causes severe bone marrow suppression. The bone marrow is responsible for making red and white blood cells and platelets (a specialized cell that controls bleeding). Females are at risk of developing life-threatening anemia and blood loss due to lack of platelets if allowed to remain in heat for more than 1 month. Death usually occurs after 2 months of heat if untreated.
- Hyperestrogenism is also occasionally seen in neutered ferrets of either sex with ferret adrenal disease. Adrenal disease causes increased production of sex steroids, including estrogen, and is one of the most common diseases of ferrets. The bone marrow suppressive effects of hyperestrogenism in ferrets with adrenal disease is usually mild.
- Other organs affected include the skin and reproductive tract.

SIGNALMENT

- Sexually mature females (>8–12 months of age) that are intact (not spayed)
- Occasionally seen in neutered (spayed) females or neutered (castrated) male ferrets due to estrogen-secreting diseased adrenal glands. Symptoms of hyperestrogenism are usually mild in animals with adrenal disease.



SIGNS

- Attractive to male ferrets
- Prolonged heat cycle, characterized by enlarged, swollen red vulva
- Clear or thick white vaginal discharge
- Blood-tinged urine or fresh blood in the urine
- Dark, tarry stools or fresh blood in the stools
- Lack of appetite, depression and lethargy
- Rear limb weakness, incoordination, or dragging the rear limbs
- Pale gums
- Bruising on the skin, most often seen on the skin of the abdomen
- Fever and depression due to pneumonia or other infections are common.
- Clear or thick vaginal discharge
- Symmetric thinning of the hair or hair loss, beginning at the tail base

CAUSES

- Failure to breed intact females
- Ferret adrenal disease—estrogen-secreting adrenal tumors in males or females (symptoms are usually mild)

TREATMENT

APPROPRIATE HEALTH CARE

- Hospitalization is required in ferrets with symptoms of anemia or hemorrhage.
- Female ferrets in heat less than 1 month that otherwise appear to be healthy may be treated on an outpatient basis.
- Blood transfusions—sometimes multiple transfusions—may be needed in very anemic females.
- Supportive care, such as IV fluids, warmth, and adequate nutrition, are required for recovery.

ACTIVITY

Limited if anemic

DIET

If normal diet is refused, most ferrets will accept high-calorie diets such as Eukanuba Maximum Calorie diet (Iams Co., Dayton, OH), Feline a/d (Hills Products, Topeka, KS), chicken-based baby foods, or Clinicare Feline liquid diet (Abbott Laboratories, North Chicago, IL); may also add dietary supplement such as Nutri-Cal (EVSCO Pharmaceuticals) to increase caloric content to these foods. Warming the food to body temperature or offering via syringe may increase acceptance.

SURGICAL CONSIDERATIONS

- Surgical removal of the ovaries and uterus (known as spay or ovariohysterectomy) is the treatment of choice for excessive levels of estrogen (hyperestrogenism) in the intact female.
- Some ferrets may not be stable enough to tolerate surgery, and may require one or more blood transfusions, or other medical treatment for hyperestrogenism prior to surgery.
- Surgical removal of diseased adrenal gland is one option for treatment of hyperestrogenism caused by ferret adrenal disease.

MEDICATIONS

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered all-inclusive.

- Human Chorionic Gonadotropin (hCG) may be administered by injection to stimulate ovulation and end the heat cycle. Signs of heat (particularly red, swollen vulva) should diminish within 3-4 days. If signs are still apparent 1 week posttreatment, repeat the injection. Treatment by this injection is only effective if given at least 10 days after the first signs of heat (swollen vulva) are noted.
- Antibiotics are often needed to treat secondary infections.
- Administration of iron dextran by injection is often necessary to support red-blood cell regeneration by the bone marrow.

FOLLOW-UP

PATIENT MONITORING

- Monitor response to treatment by remission of symptoms—reduction in vulvar swelling is good initial indicator of response to treatment.
- Repeat serial complete blood count (CBC) analyses to evaluate response to therapy and progression of disease

POSSIBLE COMPLICATIONS

- Death due to blood loss and anemia during or following surgery. This is particularly a risk in severely anemic ferrets.
- Death due to pneumonia or other severe infections
- Permanent suppression of bone marrow (rare)

EXPECTED COURSE AND PROGNOSIS

- Heat will be terminated within 1 week after injections of hCG in 95% of ferrets.
- Signs of estrus will usually resolve within 1 week of surgery for ovariectomy or removal of diseased adrenal glands.
- Ferrets that are severely anemic carry a fair to guarded prognosis, depending on the severity of symptoms and other factors such as age and concurrent diseases. Intensive medical treatment and, in some cases, multiple transfusions are required prior to or following surgery.

KEY POINTS

- Excessive levels of estrogen in the body (hyperestrogenism) may cause severe anemia and blood loss in intact (not spayed) female ferrets that are not bred or mated with a male.
- Seek medical attention for any ferret remaining in heat for over 2 weeks.
- Ferrets with complications such as severe anemia and bacterial infections are poor surgical risks, and often do not respond well to medical treatment.
- Nonbreeding females should be neutered (spayed).

Notes

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