Aleutian Disease Virus (ADV) in Ferrets

Basics

OVERVIEW

- Aleutian disease virus (ADV) is a parvovirus that can infect mink and ferrets.
- Aleutian mink (mink bred for a grey color dilution) are exquisitely susceptible to ADV, and severe illness is seen in these animals. Ferrets are also susceptible to ADV; the extent of illness is dependent on the strain of virus and the ferret's immune system.
- ADV-F is a strain of ADV recently isolated from clinically ill ferrets. It is genetically very similar but not identical to strains of ADV isolated from mink. Other strains of ADV have not yet been characterized but likely exist.
- ADV is an immune-mediated, slowly progressing illness characterized by wasting and nervous system signs.
- Not all ferrets infected with ADV will become clinically ill.
- Ferrets may remain infected with the virus for years and pass the virus on, without showing symptoms. Ferrets can stay infected but never get sick, remain infected and develop symptoms months to years after infection, or eventually eliminate the virus.
- Virus may be spread by direct contact with urine, saliva, blood, or feces, or through contaminated food dishes, water, or toys.
- Unlike parvoviral infections in dogs and cats, disease is caused by the long-term effects of a hyperactive immune response, not by the virus itself damaging cells.
- Exposure to the virus causes some ferrets' immune systems to overreact and make excessive amounts of antibodies. These antibody-virus combinations damage blood vessels, kidneys, the intestinal lining, and nerves.
- The course of the disease is usually very long, extending over 18–24 months.
- It is presumed that ferrets that test positive (develop antibody titers) to ADV are capable of passing on the virus; however, how long the ferret will be contagious, or when he is contagious, is currently unknown.

SIGNALMENT

- All ferrets are equally susceptible to infection.
- The virus is most commonly found in breeding facilities, animal shelters, and pet stores.
- Viral studies suggest that the overall incidence in pet ferret population appears to be low (8.5%–10%).

SIGNS

- Slowly progressive weight loss
• Vague symptoms such as lethargy, decreased appetite, poor hair coat, and muscle wasting are common.
• Nervous system symptoms include rear limb weakness, which may progress to the front limbs; fecal and/or urinary incontinence; and head tremors.
• Occasionally may see dark, tarry stools or blood in the stools

**CAUSES**
• Overactive immune system response to Aleutian disease viruses (ferret or mink parvoviruses)

**RISK FACTORS**
• Contact with infected ferrets
• Crowding and poor sanitation increases the risk of infection.
• Other disease agents such as parasites, viruses, and certain bacteria may make illness worse.

**TREATMENT**

**APPROPRIATE HEALTH CARE**
• Symptomatic and supportive care only, since there is no specific treatment for ADV
• Symptomatic therapy includes attention to fluid and electrolyte derangements, reduction in environmental stressors, and ensuring that the ferret continue to eat and drink.
• Proper, strict isolation procedures are essential. Exercise care to prevent spread of ADV.

**DIET**
• Special diets may be needed to entice ferrets to resume eating. Canned chicken human baby foods, Eukanuba Maximum Calorie diet (Iams Co., Dayton, OH), Clinicare Feline liquid diet (Abbott Laboratories, North Chicago, IL), or homemade “duck soup” recipes are examples of foods accepted by sick ferrets. Warming the food or offering via syringe may increase acceptance.

**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.
• Antiviral drugs—none known to be effective in treating ADV
• Antibiotics are sometimes used to reduce secondary bacterial infections. Examples of common antibiotics used include trimethoprim/sulfonamide, quinolones such as enrofloxacin or ciprofloxacin, penicillins (amoxicillin), or cephalosporins.

**FOLLOW-UP**

**PATIENT MONITORING**
• Not all ferrets exposed to the virus will become sick. Most ferrets live normal, healthy lives.
• Monitor for progression of the disease, especially severe weakness, weight loss, and muscle wasting that deteriorate quality of life.

**PREVENTION/AVOIDANCE**
• Avoid exposure to infected ferrets. It is assumed that all ferrets that test positive for ADV are capable of passing the virus. Ferrets testing positive should not be housed in the same home as those testing negative.
• No vaccine is available for ferrets.
• The virus can survive for months, especially in the presence of organic debris. Thoroughly clean all organic debris and apply a 1:30 dilution of bleach (5% sodium hypochlorite).

**POSSIBLE COMPLICATIONS**
• Secondary bacterial, parasitic, or viral infections

**EXPECTED COURSE AND PROGNOSIS**
• The prognosis ranges from excellent to guarded in ferrets that have no symptoms but test positive. Most of these ferrets will never develop disease. If disease eventually develops, the prognosis depends on the strain of virus and the ferret’s individual immune system response.
• The prognosis is guarded in severely affected ferrets and ferrets demonstrating neurologic symptoms. Symptoms may or may not progress, and there are no predictive diagnostic tests available.
KEY POINTS

- ADV is a contagious disease of minks and ferrets.
- Many ferrets become exposed to the virus and will test positive on screening tests. Testing positive does not mean that the ferret will become ill. Most ferrets exposed to the virus and testing positive never become ill.
- Ferrets that do test positive are presumed to be capable of passing the virus to other ferrets. These ferrets should be isolated from other ferrets.
- If symptoms of the disease do develop, the course of the disease is unpredictable. Some will continue to live long, good-quality lives, while others will develop severe wasting. There are no tests available to predict if an infected ferret will become ill.