Disease of Mustelids

Unique Features of Mustelids

- The family Mustelidae, comprising the stoats, polecats, mink, fishers, wolverines, weasels, martens, badgers, and otters, is the largest family within the order Carnivora.

Unique Features of Mustelids

- Mustelidae is “familiar” to most pathologists, with the exception of reniculate kidneys, seen in sea and river otters.
- Male mustelids have a baculum (os penis). The tip of the baculum is curled and the urethra is relatively small in some species, making passage of a catheter difficult.

Unique Features of Mustelids

- Placentation in mustelids is zonary, similar to dogs and cats.
- Implantation sites in the ferret are presymplasmic, with extremely pleomorphic decidual cells that may be confused with an endometrial carcinoma.
- Ectopic adrenocortical tissue is a common finding in the abdomen of ferrets and sea otters.

Thiamine deficiency

- Thiamine, better known as vitamin B1, is critical for living organisms.
- B1 vitamin is needed for animals because of it role of a cofactor for several life sustaining enzymes.
- It is important for a healthy function of animal nervous, immune and reproductive systems.

Thiamine deficiency

- Seen Especially in mink fed diets containing high levels of thiaminase containing fish.

- Lethargy, loss of appetite.
- In advanced cases, gasping, prostration, convulsions
- In the brain cortex, laminar necrosis

Aujeszky Disease (Pseudorabies)

- It is a severe neurological disorder caused by suid herpesvirus type 1, usually named pseudorabies virus (PRV).PRV can infect a broad range of domestic and wild animals with the exception of higher-order primates.

Aujeszky Disease (Pseudorabies)

- It has been identified as a causative agent of neurologic disease in mink.
- The incubation period is generally is 3–4 days, and clinical signs include hypersalivation, vomiting, depression, and coma.

Aujeszky Disease (Pseudorabies)

- Microscopically, pseudorabies infection in mink is characterized by **fibrinoid degeneration** of vessels in the central nervous system (CNS), myocardium, and oropharynx. This differs from the nonsuppurative encephalitis typical of other species.

Mustelid herpesvirus Type 1

- MusHV-1 is a novel member of the Rhadinovirus genus within the Gammaherpesvirinae closely related to equine herpesvirus-2 and -5.

Mustelid herpesvirus Type 1

- **Mustelid herpesvirus-1** in a male fisher caused dermal ulcers on the muzzle and plantar pads.
- Histologically, the border of the ulcers contained clusters of cells with basophilic to amphophilic nuclear inclusions

Influenza Viruses (H1N1)

- **Influenza** viruses are *zoonotic pathogens* with a broad host range that **includes canids, horses, marine mammals, and mustelids.**
- Ferrets are susceptible to *both Type A and B* influenza stains.
- **Free-ranging striped skunks** and **ranched mink** have been implicated as potential channels for influenza viral amplification and spread **from infected humans and other animals.**

Influenza Viruses (H1N1)

- Clinical signs of influenza in mustelids are similar to humans:
- malaise,
- serous nasal discharge, and
- lower respiratory tract disease due to viral infection and/or secondary, opportunistic bacterial infections.

Influenza Viruses (H1N1)

- In free-ranging skunks infected with highly pathogenic H1N1 influenza virus, lesions and clinical signs included
- purulent nasal exudate,
- splenomegaly and
- *severe pneumonia* characterized by heavy, dark red to purple lungs.

Influenza Viruses (H1N1)

- Microscopic examination revealed
- moderate rhinitis
- severe bronchointerstitial pneumonia.

- Influenza A encephalitis has also been reported in a stone martin that had *diffuse nonsuppsurative panencephalitis* with *perivascular cuffing, multifocal gliosis, neuronal necrosis,* and *focal necrosis of pancreatic islet cells.*

Aleutian Mink Disease (AMD)

- A naturally occurring persistent virus infection of mink caused by the **Aleutian mink disease parvovirus** (ADV).
- The classical form of AD, which occurs in adult mink, is notable for high titers of antiviral antibodies, hypergammaglobulinemia, plasmacytosis, and *immune complex disease*.
- In addition, there is a progressive renal disease characterized by mesangial proliferative glomerulonephritis and severe interstitial nephritis.

- In newborn mink kits, ADV causes a fatal, acute interstitial pneumonitis associated with permissive viral replication in alveolar type 2 cells, but treatment of newborn kits with anti-viral antibody aborts the acute disease and converts into one resembling the persistent infection observed in adults.