Infectious Diseases of Ferrets

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The Ones We All Know About

- Canine Distemper (Morbillivirus)
- Aleutian Disease (Parvovirus)
- Rabies (Rhabdovirus)
- ECE (Coronavirus)
- Ringworm (Trichophyton or Microsporum)
- Conjunctivitis (various)

The Odd Ones

- Acute Hemorrhagic Syndrome
- Chronic Wasting Disease
- Toxoplasma
- Tuberculosis (Mycobacterium species)
- Ferret kit disease (Rotovirus)
- Infectious Bovine Rhinotracheitis (Herpes)

Ferret Acute Hemorrhagic Syndrome

- From a report at the AAV Conference 2008
- First reported in 2006
- Sig: kits 8-24 weeks recently shipped
- Clinical signs:
  - acute hemorrhage (epistaxis)
  - oral ulceration
  - Petechiation/ecchymosis
Acute Hemorrhagic Syndrome (cont)

- Clinical pathology findings
  - Prolonged PT and PTT
  - Unknown effect on fibrinogen and platelets due to a lack of normal and abnormal data

Pathology Results

- Non-suppurative cholangitis
- Mild vacuolar hepatopathy
- Mild interstitial pneumonia
- Hemorrhage into the mucosa and wall of the bladder
- Hemorrhage in the thymus

Treatment

- Supportive care
  - Fluid replacement therapy
    - Crystalloids
    - Colloids
    - Transfusion if necessary
  - Vitamin K
  - Analgesics
  - Antibiotics

No Causative Agents Were Found
If anyone sees this syndrome:
- Please contact Cathy A. Johnson-Delaney or Drury R. Reavill for data collection instructions
- This could be a viral outbreak or an autoimmune reaction to a vaccine, more research is needed.

Chronic Wasting Disease
- Prion disease of cervids in North America
- Experimental infection only
- Prion transmission intracranially required for active disease
- Established viability of using ferrets for prion research
- Not a concern in the pet or wild Mustelid population at this time

Toxoplasma
- Toxoplasma is a protozoal parasite that is passed in the feces of infected mammals
- It has been reported as a congenital disease in kits
- An outbreak occurred in quarantined Black Footed Ferrets exposed to infected uncooked rabbit

Toxoplasma (cont)
- Bottom line
  - Don’t eat uncooked meat
  - Don’t garden barehanded
  - Don’t feed ferrets uncooked meat of unknown origin (roadkill)
  - Keep ferret and cat litter areas separate if cats are allowed outdoors
Mycobacteria
- Chronic disease in wild ferrets and stoats in New Zealand
  - Known exposure to contaminated beef
- Isolated case reports worldwide of various Mycobacterial species found in ferrets
  - No known source of disease
- Public health issue

Rotavirus
- Rotaviruses are a common cause of diarrhea in mammalian neonates
- Sig: 2-6 week old ferrets in farm situations
- Clinical signs:
  - yellow to green diarrhea
  - Erythema of anus, perineum

Rotavirus (cont)
- Treatment:
  - supportive care
  - antibiotic therapy against secondary bacterial infections
- No vaccine available to date

Infectious Bovine Rhinotracheitis (IBR)
- One reported case of spontaneous disease in a ferret (1975)
  - diet was NOT tested to determine source of the disease
  - highly unlikely
Client Concerns

- Severe Acute Respiratory Syndrome (SARS) - Coronavirus
- Avian Influenza H5N1

SARS

- Ferrets are used as experimental animal for this disease
- Not a common reservoir in nature

Avian Influenza

- Ferrets currently being used to develop vaccines for humans and other mammals
- Successful vaccination of ferrets in a laboratory setting has been done
- Ferrets have not proven to be a good source of virus transmission experimentally

Feline Infectious Peritonitis (FIP)

- Coronavirus in combination with immune suppression
- Common in catteries and high density populations
- Supportive treatment only
- Usually fatal
Ferret Infectious Peritonitis (FIP)

- Presumptive mutation of Corona virus associated with epizootic catarrhal enteritis (ECE)
- Reported in 23 ferrets in Europe and the United States from 2002-2007 (Mike Garner, Northwest Zoopath)
- Reported in 9 ferrets in Europe, New Zealand 2005-2006

Signalment

- Young ferrets (< 1 year of age on average)
- No gender predilection
- Indoor environment

Clinical signs

- Brown or yellow-green diarrhea
  - Progressing to green or hemorrhagic
  - Non-responsive to treatment
- Lethargy
- Weight loss
- Anorexia
- Palpable abdominal masses

Clinical signs (cont)

- Other signs noted but not consistent:
  - Coughing
  - Vomiting
  - Jaundice
  - Tremors
  - Convulsions
Additional Clinical signs

- Splenomegaly
- Decreased water consumption
- Dehydration
- Bruxism
- Nasal discharge
- Sneezing
- Heart murmur
- Fever

CNS signs

- Acute or progressive hindlimb paresis
- Ataxia
- Wide hind-end stance
- Opistothonus
- Abnormal gait
- Proprioceptive deficits

Changes in Blood Values

- Neutrophilic leukocytosis
- Anemia
- Hyperproteinemia
- Hyperglobulinemia (> 6 mg/dl)
- Increased lipase
- Increased ALT
- Increased BUN

Differential Diagnoses

- Aleutian Disease
- Lymphoma
- Chronic Inflammatory Bowel Disease
Prognosis
- Guarded to grave

Treatment
- Based on treatment for cats with FIP
  - 2-4mg/kg/day prednisolone
  - Broad spectrum antibiotics
    - Doxycycline
  - Pentoxifylline 25mg/kg BID for vasculitis
  - Supportive care

Pathology Results
- Severe pyogranulomatous inflammation
  - Varied from diffuse to microgranulomas
  - Blood vessels involved
  - Predominantly neutrophils and macrophages
  - Necrosis occasionally

Definitive Diagnosis
- Immunochemistry
- Send samples to Mike Garner at Northwest Zoopath
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