CANINE DISTEMPER

This highly contagious disease of dogs and other carnivores

Etiology

Canine distemper virus (CDV) is a morbillivirus - same group as rinderpest and measles.

- Virus fairly unstable in environment and readily destroyed by most disinfectants.
- Only one serotype, so one vaccine can be used widely
- variation in clinical signs depend on immune status of the dog and the dose of virus.

Pathogenesis

- Dogs are usually infected by aerosol.

Virus replicates in the tonsils and bronchial lymph nodes leading to viraemia. Damage caused by this replication causes lymphopenia and immunosuppression.

Dogs may eliminate the virus at this stage, but if it is a very pathogenic strain, or if the dog is not able to make a good immune response, then the virus spreads to the epithelial surfaces of the respiratory, enteric and urogenital tracts, skin and CNS. The relative involvement of these tissues determines the clinical signs which develop.

Clinical Signs

In a 'typical' case, the dog becomes pyrexic about 1 week after exposure and signs of generalised disease develop after several weeks. These may include:

- serous-mucopurulent nasal and conjunctival discharges
- coughing
- dyspnoea
- pneumonia
- vomiting and diarrhea
- pyrexia
- and, later, hyperkeratosis.

- After 2-4 weeks of generalised disease, the dog may appear to recover completely.
- Alternatively, signs of CNS disease may develop. Neurological disease can be acute or chronic, and often indicates a poor prognosis.
- In dogs which recover, persistent infection of the CNS can lead to 'old dog encephalitis' years later.
- Enamel hypoplasia can often be seen in recovered puppies.

Diagnosis

1. Clinical history

- Typically:
  - young dog
  - unvaccinated
  - stray
- must be distinguished from kennel cough if only mild respiratory signs are seen.

2. Laboratory diagnosis

- isolation is rarely used in routine cases.
- Serology is generally unhelpful as so many healthy dogs have antibody (due to vaccination or previous infection)
- immunofluorescence test on acetone-fixed smears of conjunctiva, tonsil or buffy coat for diagnosis of acute cases.

3. Post mortem.

- Eosinophilic inclusions can be seen in lymphoid and epithelial tissues (especially bladder and respiratory mucosa).
- Immunostaining can be useful for identifying infected tissues.

Treatment

There is no specific treatment, except, perhaps, antiglobulin.

- Fluid therapy for dehydration, broad-spectrum antibiotics to control secondary bacterial infections.
- Good nursing will often enable dogs to recover - but euthanasia might be recommended if CNS signs are severe or persistent.

Prevention

Vaccines are modified live because killed vaccines tended not to protect very well.

- Maternal antibody has generally declined to non-interfering levels by 8-12 weeks, so puppies are generally immunised at 9 and 12 weeks or isolated and immunised at 12 weeks only.
- Following two vaccinations, boost after one year and then annually or every other year.
- Vaccinated animals can still be subclinically infected and thereby a source of disease to non-vaccinated dogs.

Measles virus is closely enough related to CDV that the immune response induced by measles vaccination may protect against distemper.

Other Hosts

Canine distemper virus can also infect cats. In domestic cats infection is usually asymptomatic. But clinical disease, mainly encephalitis, has been seen