

Canine Distemper Virus

VMC 321

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Canine Distemper



Classification

Family *Paramyxoviridae*

Subfamily *Paramyxovirinae*

Genus *Morbillivirus*

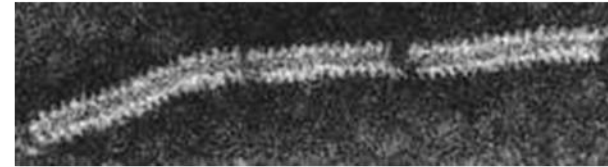
Species **Canine distemper virus**

Paramyxoviridae

Nucleocapsid extruded
from ruptured envelope



Nucleocapsid with
helical symmetry
("Herringbone" pattern)



Intact virion



All animal viruses with
helical nucleocapsids
are enveloped

Canine Distemper



Canine distemper virus

Terrestrial carnivores

Canidae

- Dog
- Fox
- Coyote
- Wolf
- Jackal
- Dingo



Canine distemper virus

Terrestrial carnivores

Procyonidae

- Raccoon
- Kinkajou
- Coati
- Panda



Felidae

- Lion
- Leopard
- (Cat)
- (Tiger)



Canine distemper virus

Terrestrial carnivores

Mustelidae

- Mink
- Ferret
- Weasel
- Skunk
- Badger
- Stoat
- Marten
- Otter



Canine distemper in ferrets and mink



Ferret with distemper

Transmission

- Transmission occurs via
- An aerosol-droplet
- Direct contact,
- By contact with contaminated objects

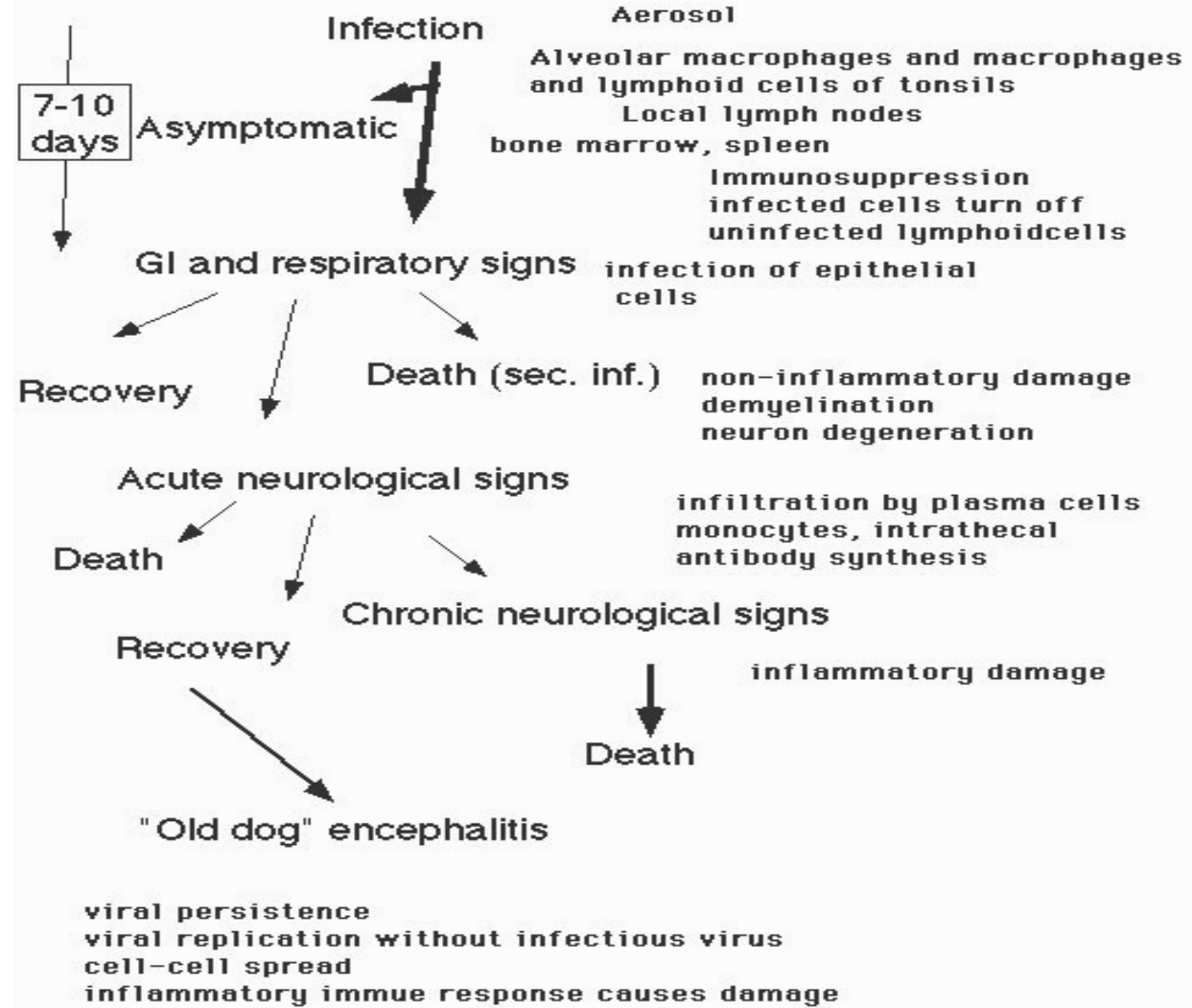
Canine distemper

Pathogenesis

- Replication in lymphoid tissue: 7-10 days
- Tonsils, lymph nodes, spleen, bone marrow
- Replication in alveolar macrophages
- Immune suppression

Inclusion bodies - especially in Lung, Urinary bladder, Stomach, Intestine

Pathogenesis of CDV



Canine distemper

Pathogenicity

- Epitheliotropic and neurotropic
- Replicate in cytoplasm
 - Eosinophilic inclusion bodies in cytoplasm and nucleus

Multisystem affected

- Respiratory system
- Neurological system
- Alimentary tract system
- Persistent infection (e.g. old dog encephalitis)
- immunosuppression

Inclusion bodies especially
in
Lung, Urinary bladder,
Stomach, Intestine

Canine distemper in dogs

Acute disease

- Encephalitis
- Pneumonia, Rhinotracheitis, Conjunctivitis
- Gastroenteritis

Chronic disease

- “Old dog” encephalitis
- “Hardpad”

Canine distemper

Histopathology

- Inclusion bodies
 - Eosinophilic
 - Intranuclear and cytoplasmic
- Formation of Syncytia
 - Multinucleate cells
 - Macrophages, Epithelial cells
 - Lungs, lymph nodes

Pathogenicity

- The pathological lesions of canine distemper include
- pulmonary congestion and consolidation leading to focal pneumonitis.
- Eosinophilic rounded or ovoid bodies with refractile particles are found in the epithelial cells of skin, bronchi, intestinal tract, urinary tract, bile duct, salivary glands, adrenal glands, central nervous system, lymph nodes and spleen.
- Splenomegaly

Canine distemper

Nervous tissue

- Brain
 - Neuronal degeneration
 - Demyelination
 - Nonsuppurative encephalomyelitis
 - Viral persistence in central nervous system
 - Reactivation → cell-cell spread
 - Immune response → “Old dog encephalitis”

Signs and Symptoms of Distemper

- i. **Fever - BIPHASIC FEVER**
- ii. **(often one episode a few days after infection that may not be noticed, followed by a second episode a few days later when the other symptoms begin to show up)**
- iii. **Discharge from the eyes and nose**
- iv. **Loss of appetite**
- v. **Lethargy**
- vi. **Vomiting and diarrhea**
- vii. **Coughing**
- viii. **Labored breathing**
- ix. **Hardening of footpads and nose (distemper has sometimes been called hard pad disease)**
- x. **Inflammation of various parts of the eye**
- xi. **Secondary bacterial infections**

Clinical Signs

- Anorexia;
- Depression;
- Listlessness;
- Fever;
- Upper respiratory tract infections;
- Thick, yellow discharge from the nose and eyes; coughing; dyspnea;
- Vomiting; and diarrhea.
- Hyperkeratosis of the nose and pads of the paws can occur.
- In young dogs, enamel hypoplasia of the teeth is seen in neonatal infections.

Neurological symptoms includes :

- Seizures,
- Paraparesis or tetraparesis,
- Hyperesthesia,
- Myoclonus,
- Death

Canine distemper

Conjunctivitis, nasal discharge



Canine distemper

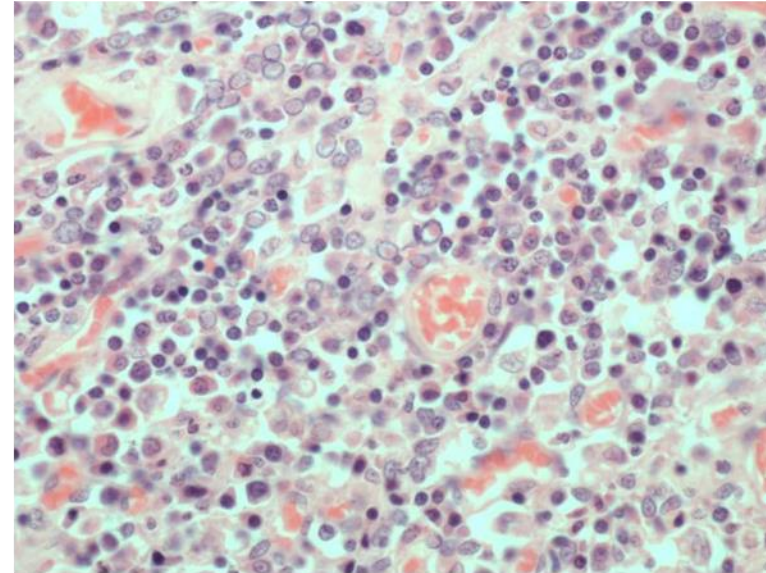
Skin

- Footpads: Hyperkeratosis: “Hardpad”

Canine distemper virus

Diagnosis

- Virus isolation
- Serology:
 - Virus neutralisation test
 - Acute and convalescent serum
- Histopathology
- Polymerase chain reaction



Prevention

- Vaccination of puppies between 6 and 16 weeks old
- CDV vaccines provide prolonged immunity
- Efficacy of CDV vaccines approaches 99% and dogs develop protective immunity .

Acknowledgement

- Part of content has been taken from www.google.com
- The contributors are duly acknowledged.

Any questions???

Thanks for listening