Canine Distemper
&
PPR

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Canine Distemper

- Synonyms

  Hard pad Disease

  Canine influenza

- Caused by

Family - Paramyxoviridae

Subfamily – Orthopramyxovirinae,

Genus - Morbilli virus,

- Distributed all over the world
- Most prevalent in urban population than rural population

Cont…

- Most susceptable – Dog (3-6 months of age), however old dogs are also susceptible
- Wild animals like cheetah are also susceptible

- Structure – Similar to paramyxovirus

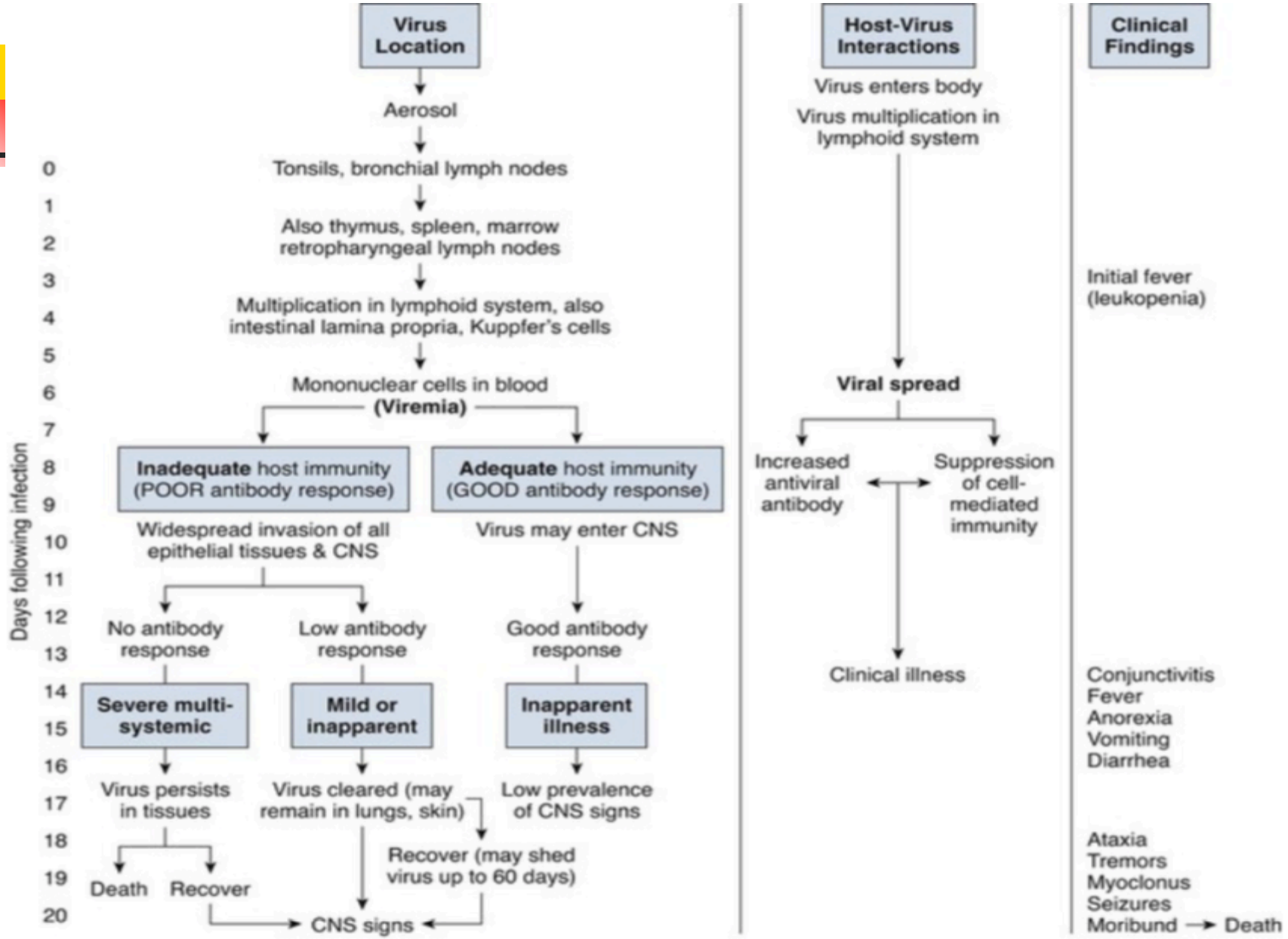
Transmission

- By aerosol route
- Virus can also enters in the susceptible dog through conjunctiva and causing conjunctivitis
- Incubation period – 3-6 days (1 week)

Pathogenesis

- Local replication of the virus for 2 to 4 days in cells of the upper respiratory tract or in conjunctival epithelium.
- After multiplication in regional lymph nodes, the virus enters the bloodstream, carried within lymphocytes, to produce a primary viremia that spreads the virus to the reticuloendothelial system, manifested by hyperplasia and by the presence of multinucleated giant cells in lymphoid organs.
- Virions formed are carried by lymphocytes and monocytes to produce a secondary viremia, coincident with the second peak of fever.
- Intracytoplasmic and intranuclear inclusion bodies found in brain of infected dog.

Pathogenesis



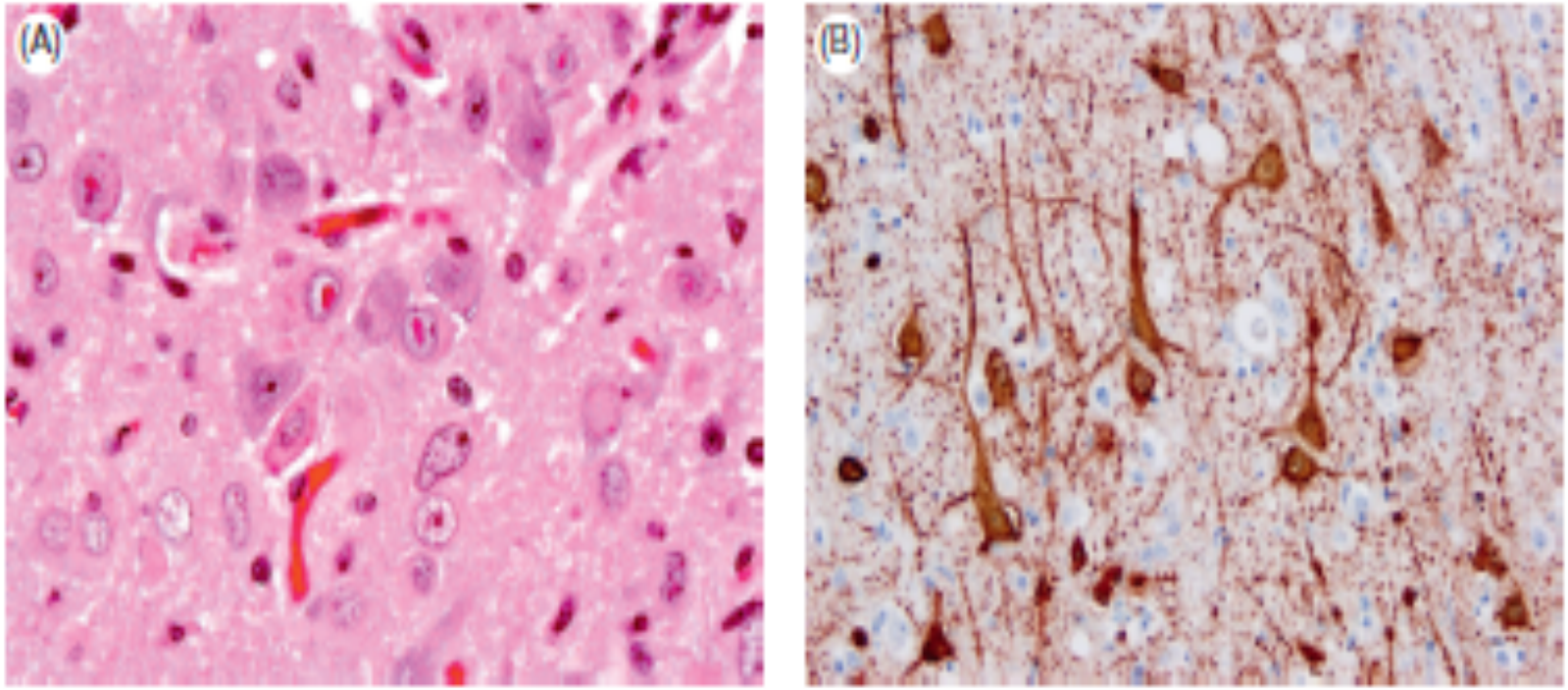


FIGURE 17.7 Canine distemper. (A) Intranuclear and intracytoplasmic inclusion bodies in the brain of an infected badger. (B) Immunohistochemical staining of canine distemper virus in the brain of a dog. *(Courtesy of R. J. Higgins, University of California, Davis.)*

Clinical signs

- Susceptible animals show high fever
- Bi-phasic fever
- Severe respiratory distress causing bronchitis and tracheitis
- In acute case animal dies without showing any symptom
- Sever encephalitis, hyperkerotosis of foot pad and nostrils that's why called old dog encephalitis/ hard pad disease
- Virus excreted in ocular and nasal secretion as well as in urine.
- Encephalitis – also leads to inco-ordination of gait
- Neurological signs such as paresis, myoclonus, epileptiform seizures and death

Diagnosis

- Clinical signs may be suggestive.
- Viral antigen may be demonstrated by immunofluorescence in tissue, conjunctival or vaginal impression smears or in smears of cells from the buffy coat
- ELISA, HI test, FAT test
- Virus can be cultivated in MDCK cells as well as in vero cells.

Prevention and control

- Strict sanitation and hygienic measured reduces incidence of canine distemper.
- Modified live vaccines are available commercially and it provides adequate protection when administered to puppies after the decline of maternally derived antibody.
- In endemic areas, pregnant bitches may be vaccinated to offer passive protection to their puppies for the first few weeks of life.
- Pups can be vaccinated with modified livevirus vaccine at 6 weeks of age and then at 2 to 4 week intervals until 16 weeks of age.

Pestis-des-petitis ruminants (PPR)

Introduction

- Highly contagious disease characterized by high fever, conjunctivitis, bronchopneumonia, enteritis, stomatitis.
- Also known as

  KATA,

  Stomatitis pneumoenteritis complex

  Pseudo rinderpest of sheep and goat

  Contagious pustular stomatitis

  Goat palgue

Etiology

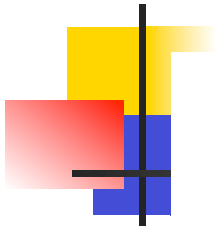
- FAMILY :- *Paramyxoviridae*
- Sub family - *Orthoparamyxovirinae*
- GENUS :- Morbillivirus

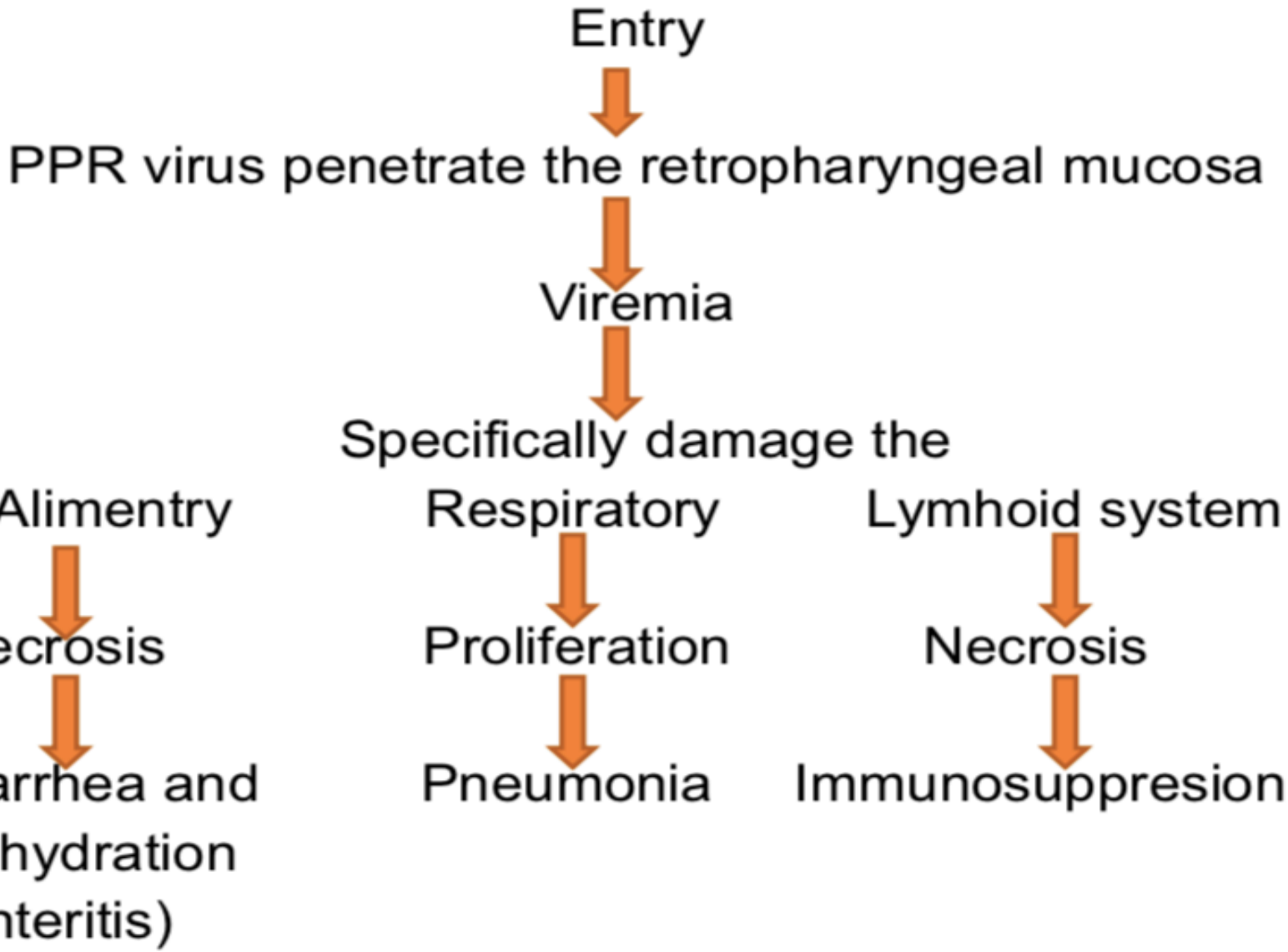
  Pest des Petits Ruminants Virus
- SS RNA, enveloped
- It is Antigenically related to:- Rinderpest virus, Canine distemper virus, ′ Measles in humans
- First outbreak occur in 1989 in Tamilnadu
- Destroyed at 50^{o}C in 1 hr
- Stable at pH 5-10
- Sensitive to usual disinfectant like ether phenol, alcohol

Epidemiology

- Disease occurs in sub-saharan Africa, Middle East, India and Pakistan.
- Transmission occur via Direct contact, aerosol and fomites (bedding, feed and water)
- No carrier state
- Outbreak mainly occur during rainy season/ cold climate
- Virus present in all secretion and excretion of infected animals (occular, nasal, saliva, urine).
- Host – sheep and goat but goats are more susceptible than sheeps
- Inapparent infection in cattle and pigs and show seroconversion

Pathogenesis





Clinical signs

- Incubation period:- The incubation period is typically 4–6 days but may range from 3–10 days. In most cases, clinical signs appear in 3-6 days.
- Disease can be Sub acute or Acute.
- Acute form is seen commonly in goats —
  - High fever (above 40°C). dullness, sneezing, serous nasal, ocular discharge becomes mucopurulent, hyperemic gums, necrotic oral lesions:- diptheric plaques.
  - Animal is unable to eat because of sore mouth and swollen lips.
  - Profuse Diarrhea and feces may be mucoid and blood tinged. (3-4 day after the onset of fever).
  - Dyspnea and coughing occur later and respiratory signs aggrevate in secondary bacterial infection.

Cont…

Discharge from the nose and eye

Inflammed eye membrane

Cont…

- **Sub Acute:-**
  - More common in sheep.
  - Asymptomatic.
  - Sign and lesion less marked
  - Most animal recover and few animal may die within 2 week.

Post mortem lesions

- Hemorrhagic ulceration is marked in the ileocecal region, colon and rectum produce typical “Zebra stripes”.
- Regional lymph node and spleen enlarged.
- Interstitial pneumonia.
- Hyperemic bronchi contain froth due to pulmonary congestion and edema.
- Mucopurulent exudate from nasal opening to larynx.

Diagnosis

Sampling For Diagnosis:-

- Scrapping of buccal mucosa.
- Ocular discharge.
- Nasal swab.
- Buffy coat from whole blood.
- Whole blood with anticoagulant for virus isolation

Cont...

- Isolation of virus in primary lamb culture and vero cell lines.
- Serological test
  - AGID
  - cELISA
  - CIEP
  - VNT

RT-PCR

Prevention and control

- Not introducing new animal brought from market to others, keep it in quarantine for some day for observation.
- Tissue culture rinderpest vaccine(attenuated) is effective but not in enzootic areas.
- Kid, lamb should be vaccinated at 3-4 months of age by which time maternal antibodies would have waned.

Cont...

- Most recently a homologous PPRV tissue culture vaccine was produced by serial passage in Vero cells.
- Recombinant Vaccine.
- Dose :- 1ml s/c at neck region (one year protection)


Thank
You....