

# Viral Gastro Enteritis in Dogs

Dr. K. Padmaja, Dr. K. Usha Sree, Dr. K. Lakshmi

Department of Veterinary Medicine

College of Veterinary Science

Rajendranagar , Hyderabad-500030.

[DOI:10.5281/Vettoday.15481565](https://doi.org/10.5281/Vettoday.15481565)

## Abstract

Haemorrhagic gastroenteritis is characterised by acute onset of vomiting, anorexia, lethargy progressing to severe haemorrhagic diarrhoea in dogs. Viral gastroenteritis is mostly caused by Canine Parvo virus, Canine Corona virus followed by Canine rota virus , other virus like Astro virus, Herpes virus, Reo virus are less prominent cause of the disease.

**Key Words:** Haemorrhagic gastroenteritis, viral gastroenteritis, Canine Parvo virus.

## Introduction:

Haemorrhagic gastroenteritis of viral origin in dogs is one of the major causes of the death in pups that are unvaccinated or not vaccinated at an appropriate age . Canine parvo virus is one of the main causes of death in pups due to haemorrhagic gastroenteritis if it is not diagnosed at the early stages and treated.

## Canine Parvo Virus :

It is caused by Canine Parvo virus -1 (CPV-1) , Canine Parvo virus-2 (CPV-2) , CPV-2 is the most common virus that is again divided into 2 sub types CPV-2a, CPV-2b, CPV-2c, CPV-2c is the most common strain found worldwide.

## Epidemiology :

Acute CPV enteritis can be seen in dogs of any age, breed and sex , pups between 6 weeks and 6 months of age, Rottweilers, Doberman Pinschers, Labrador Retrievers, American Staffordshire terriers, German shepherds have an increased risk.

## Mode of Transmission :

It is transmitted by oro nasal exposure to contaminated faeces, CPV virus is quite stable , resistant to many detergents and disinfectants, inactivated by bleach solution (1 part bleach to 29 parts water), formalin and sun light.

## Pathogenesis:

Virus replication begins in lymphoid tissue of the oro-pharynx, mesenteric lymph nodes and thymus and is disseminated to the intestinal crypts of the small intestine by means of viremia. Marked viremia occurs for 1-5 days, after viremia CPV localises in the gastrointestinal epithelium of tongue, oral and esophageal mucosae and small intestine and lymphoid tissue like thymus, lymph nodes and bone marrow. Myocardial cells are also affected . Parvo virus affects the germinal epithelium of the intestinal crypts, CPV also affects the mitotically active precursors of circulating leukocytes and lymphoid cells, leading to lymphopenia and neutropenia. Virus excretion typically occurs for 1-2 weeks . in the intestinal tract ,necrosis of infected crypt cells leads to villus collapse and loss of intestinal epithelial integrity . The hemorrhagic diarrhoea that is characteristic of the clinical disease results from a combination of increased intestinal permeability and malassimilation from abnormal mucosal function. Breakdown in the intestinal bacteria and absorption of bacterial endotoxins into the systemic circulation. Translocation of bacteria and the systemic inflammatory response syndrome , Disseminated intravascular coagulopathy (DIC) and death . Activation of systemic immune

responses increases the risk of thrombo embolic complications of CPV infection.

### **Clinical Findings:**

Asymptomatic infection to fulminant disease and rapid death. Dullness is observed on 1<sup>st</sup> day, vomiting on 2<sup>nd</sup> day , can be severe and persistent, vomitus is clear and mucoid, diarrhoea on 3<sup>rd</sup> day , faeces are profuse and fluid with flecks or streaks of blood . The faeces vary from simply soft or pasty to grossly dysentric , from fourth day onwards there may be recovery or in severe cases death may occur. Severity of clinical signs vary from peracute dysentric animal which collapses and dies within 24 hr to the protracted case which with treatment may linger on for weeks.

### **CPV Myocarditis:**

It is a litter problem and 70% of the pups will die in heart failure by 8 weeks of age. Cause of sudden death in pups. Pups of 4 weeks of age following a period of stress or play or feeding , apparently healthy pups collapse and die within minutes. Pale mucosae, cold extremities and terminal convulsions have been noted. At 8-12 weeks some show tachypnoea, dyspnoea and tachycardia with ascites and hepatomegaly

### **Diagnosis:**

Rapid diagnostic kits are available for diagnosis at the field level where as for the diagnosis in lab tests like ELISA, slide agglutination test, HI and PCR are used for the detection of the CPV virus, slide agglutination test is used for the detection of CPV-2 in fecal and intestinal samples. Nucleic acid amplification methods like PCR is a sensitive method for detection of viral DNA . As parvo virus in general causes haemagglutination of erythrocytes, inhibition of porcine erythrocyte haemagglutination by CPV, by adding test sera can be used to demonstrate the presence of CPV specific serum antibody. Presence of high Haemagglutination inhibition (HI) titer in previously un vaccinated dog and ill for 3-5 days is diagnostic for CPV.

### **Treatment:**

The primary goal of CPV enteritis is restoration of fluid and electrolyte balance and to prevent secondary bacterial infections.

Symptomatic treatment like Anti emetic agents like metaclopramide, ondansetron , anti-microbial drugs like Ampicillin, Cefazolin, Cefotiofur, gastric protectants like Cimetidine and Ranitidine.

### **Prevention:**

Vaccination at 6 -8 weeks of age , booster is given at 10 -12 weeks of age, followed by annual vaccination. Recovered pups are considered immune to reinfection.

## **CANINE CORONA VIRAL ENTERITIS:**

Caused by Canine Corona virus (CCoV) , it is a single stranded RNA virus, divided into Type-I (CCoV-I) and Type-II (CCoV-II), belongs to Alpha corona virus genus. It is an enveloped virus, so it is susceptible to commercial detergents, disinfectants.

### **Mode of transmission:**

It is highly contagious and spreads rapidly through groups of susceptible dogs, CCoV is shed in the feces of infected dogs , fecal contamination is the primary source of its transmission.

### **Pathogenesis:**

After ingestion, CCoV goes to the mature epithelial cells of the villi of the small intestine, infected cells become lost from the villi, replaced by the immature cells of the villi , leads to villous atrophy . leading to the loss of normal digestive and absorptive function leading to diarrhoea and dehydration.

### **Clinical findings:**

Dogs of any breed, age and sex may get affected, dogs have sudden onset of diarrhea, preceded sometimes by vomiting, faeces are orange in colour, very malodourous and infrequently contain blood. In severe cases the diarrhoea becomes watery , dehydration , followed by electrolyte imbalance , most dogs recover spontaneously.

### **Diagnosis:**

PCR assay to detect CCoV, and in some cases by serum, VN and ELISA for CCoV antibodies have been developed.

### **Treatment:**

supportive treatment to maintain fluid and electrolyte balance, broad spectrum antibiotic

treatments for the treatment of secondary bacterial infections.

## **CANINE ROTA VIRUS:**

### **Etiology :**

Rota virus, RNA virus, affects avian and mammalian species including domestic carnivores like dog and cat,

### **Epidemiology:**

Rota virus is transmitted by feco - oral contamination.

### **Pathogenesis:**

Affects the most mature epithelial cells on the luminal tips of the small intestinal villi , leading to mild and moderate villous atrophy, leads to the clinical signs of mild to moderate maldigestion and mal absorption and osmotic diarrhoea.

### **Clinical findings:**

A watery to mucoid diarrhoea, that lasts for 8-10 days, severity is much less compared to the other enteric virus.

### **Diagnosis:**

Commercial Faecal ELISA kits, electron microscopy of faecal samples. Reverse PCR assays can be used for the detection of the virus.

### **Treatment:**

Symptomatic therapy and supportive therapy by maintaining the fluid and electrolyte balance, antimicrobial drugs to control secondary bacterial infection.

## **CANINE DISTEMPER:**

### **Etiology:**

It is caused by Morbilli virus of the family Paramyxoviridae, single stranded negative RNA virus.

### **Epidemiology:**

Canine Distemper virus is commonly spread by aerosol or droplet exposure, also found in other body tissue secretions. It is common in dogs of 3-6 months of age due to the loss of maternal antibodies in pups after weaning.

### **Pathogenesis:**

CD virus spreads by aerosol droplets and contacts upper respiratory tract, from there multiplies in tissue macrophages and spreads in these cells and from there to tonsils and bronchial lymph nodes , by 4-6 days of infection virus infection occurs in spleen, gut associated

lymphoid tissue of the lamina propria of the stomach and small intestine, mesenteric lymph nodes and Kupffer cells in the liver, further virus spreads to other organs like epithelial and CNS tissues, from there spreading of the virus from all body excretions occur.

### **Clinical signs:**

Depends on many factors like virulence, host immune response, in most of the cases the CD virus infections are subclinical, in some cases the clinical signs are listlessness, decreased appetite, fever and upper respiratory tract infection, bilateral serous oculonasal discharge can lead to pneumonia, in some cases severe generalised form of distemper is most common in which the clinical signs are mild to serous – mucopurulent conjunctivitis, followed by dry to moist cough, increases respiratory sounds from thorax can be heard on auscultation , later leads to vomiting and diarrhoea that is fluid consistency to frank blood and mucus , tenesmus and intussusceptions can occur.

### **Diagnosis:**

At the field level rapid diagnostic kits are available for the testing of the canine distemper , at the laboratory level diagnosis is done by various tests like , reverse transcriptase PCR used for the detection of the virus in whole blood, serum and CSF.

### **Treatment:**

Symptomatic treatment should be done on the dogs like antimicrobial drugs , Anti convulsive drugs, anti-inflammatory drugs like are given.

### **Prevention :**

Vaccination at 6 -8 weeks of age , booster is given at 10 -12 weeks of age, followed by annual vaccination.

### **References:**

BSAVA Manual of Canine and Feline Gastroenterology, 3<sup>rd</sup> edition.

Infectious diseases of the dog and cat by Greene, fourth edition

Mercks veterinary manual, [www.msdivetmanual.com](http://www.msdivetmanual.com)

Trotman, T. K. (2015). Gastroenteritis. *Small animal critical care medicine*, 622.626