

Canine Parvovirus

Canine parvovirus is an acute, highly contagious disease of dogs .

- Although its exact origin is unknown, it is believed to have arisen from feline panleukopenia virus or a related parvovirus of nondomestic animals.
- The virus has a tendency to attack rapidly reproducing cells, such as those lining the gastrointestinal tract.

EPidemiology

Stress (, from weaning, overcrowding, malnutrition), concurrent intestinal parasitism, or enteric pathogen infection (Clostridium spp, Campylobacter spp, Salmonella spp, Giardia spp, coronavirus) have been associated with more severe clinical illness.

-Among dogs >6 mo old, intact male dogs are more likely than intact female dogs to develop CPV enteritis.

-Virus is shed in the feces of infected dogs within 4–5 days of exposure (often before clinical signs develop), throughout the period of illness, and for ~10 days after clinical recovery.

infection is acquired through direct oral or nasal contact with virus-containing feces or indirectly through contact with virus-contaminated fomites (environment, personnel, equipment).

- pathogenesis

Viral replication occurs initially in the lymphoid tissue of the oropharynx, with systemic illness resulting for subsequent hematogenous dissemination.

CPV preferentially infects and destroys rapidly dividing cells of the small-intestinal crypt epithelium, lymphopoietic tissue, and bone marrow.

Destruction of the intestinal crypt epithelium results in epithelial necrosis, villous atrophy, impaired absorptive capacity, and disrupted gut barrier function, with the potential for bacterial translocation and bacteremia.

- Infection in utero or in pups <8 wk old or born to unvaccinated dams without naturally occurring antibodies can result in myocardial infection, necrosis, and myocarditis. Myocarditis, presenting as acute cardiopulmonary failure.

Clinical Findings

Clinical signs of parvoviral enteritis generally develop within 5–7 days of infection but can range from

2–14 days.

-Initial clinical signs may be nonspecific (eg, lethargy, anorexia, fever) with progression to vomiting and hemorrhagic small-bowel diarrhea within 24–48 hr.

-Physical examination findings can include depression, fever, dehydration, and intestinal loops that are dilated and fluid filled.

-Abdominal pain warrants further investigation to exclude the potential complication of intussusception.

-Severely affected animals may present collapsed with prolonged capillary refill time, poor pulse quality, tachycardia, and hypothermia signs potentially consistent with septic shock.

Although CPV-associated leukoencephalomalacia has been reported, CNS signs are more commonly attributable to hypoglycemia, sepsis, or acid-base and electrolyte abnormalities. Inapparent or subclinical infection is common.

Lesions:

Gross necropsy lesions can include a thickened and discolored intestinal wall; watery, mucoid, or hemorrhagic intestinal contents;

-edema and congestion of abdominal and thoracic lymph nodes; thymic atrophy; and

- in the case of CPV myocarditis, pale streaks in the myocardium. –

Diagnosis

CPV enteritis should be suspected in any young, unvaccinated, or incompletely vaccinated dog with relevant clinical signs, especially those living in or newly acquired from a shelter or breeding kennel.

-During the course of the illness, most dogs develop a moderate to severe leukopenia characterized by lymphopenia and neutropenia.

Prerenal azotemia, hypoalbuminemia (GI protein loss), hyponatremia, hypokalemia, hypochloremia, and hypoglycemia

increased liver enzyme activities.

-Commercial ELISAs for detection of antigen in feces are widely available

Treatment and Prognosis

The main goals of treatment for CPV enteritis include restoration of fluid, electrolyte, and metabolic abnormalities and prevention of secondary bacterial infection.

- In the absence of vomiting, oral electrolyte solutions can be offered.
- Administration SC of an isotonic balanced electrolyte solution may be sufficient to correct mild fluid deficits (<5%) but is insufficient for dogs with moderate to severe dehydration.
- Most dogs will benefit from IV fluid therapy with a balanced electrolyte solution.
- Dogs must be monitored for development of hypokalemia and hypoglycemia. If electrolytes and serum blood glucose concentration cannot be routinely monitored, empirical supplementation of IV fluids with potassium (potassium chloride 20–40 mEq/L) and dextrose (2.5%–5%) is appropriate.
- If GI protein loss is severe (albumin <20 g/L, total protein <40 g/L, evidence of peripheral edema, ascites, pleural effusion, etc), colloid therapy should be considered.
- Nonprotein colloids (eg, pentastarch, hetastarch) can be administered in boluses (5 mL/kg, maximum of 20 mL/kg) throughout at least 15 min
- transfusion of fresh frozen plasma may partially replace serum albumin .

Antibiotics are indicated because of the risk of bacterial translocation across the disrupted intestinal epithelium (β -lactam antibiotic) (eg, ampicillin or cefazolin [22 mg/kg, IV, tid]) .

-Antiemetic therapy is indicated if vomiting is protracted

-Antidiarrheals are not recommended, because retention of intestinal contents within a compromised gut increases the risk of bacterial translocation and systemic complications.

To limit environmental contamination and spread to other susceptible animals, dogs with confirmed or suspected CPV enteritis must be handled with strict isolation procedures.

- All surfaces should be cleaned of gross organic matter and then disinfected with a solution of dilute bleach (1:30) or a peroxygen, potassium peroxymonosulfate,

-To prevent and control CPV, vaccination with a modified-live vaccine is recommended at 6–8, 10–12, and 14–16 wk of age, followed by a booster administered 1 yr later and then every 3 yr.

-Because of potential damage by CPV to myocardial or cerebellar cells, inactivated rather than modified-live vaccines are indicated in pregnant dogs or colostrum-deprived puppies vaccinated before 6–8 wk of age.

However, current modified-live CPV vaccines are -In a home situation, only fully vaccinated puppies (at 6, 8, and 12 wk)

-or fully vaccinated adult dogs should be introduced into the home of a dog recently diagnosed with CPV enteritis.

