

Canine parvovirus infection in young German Shepherd dog : A Case Report

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Abstract- Canine parvovirus infection is serious life threatening infectious viral disease and major cause of death in young puppies. Due to lack of proper vaccination , mismanagement and lack of knowledge about proper vaccination schedule to pet owners are key cause of occurrence of canine parvo viral disease in Nepal. The disease occurs in two form intestinal and cardiac form in which occurrence of intestinal form is higher with hemorrhagic enteritis. The German shepherd dog of 6 months old was presented at Central Referral Veterinary Hospital (CRVH). The dog was suffering from anorexia , vomiting , bloody diarrhea , dehydration and subnormal temperature . The clinical sign and symptoms were similar to parvovirus infection and rectal swab was taken and was confirmed by Rapid Test Kit showing parvo positive. Symptomatic and supportive therapy was done as a line of treatment by using Ringers lactate @ 400ml I/V for 5 days along with Ranitidine @ 0.5mg / kg body weight BID I/M , antibiotic: Ceftiofur @2.2mg /kg body wt. I/M for 5 days , antidiarrheal :Metronidazole @ 20mg/kgb.wt. IV daily for 3days,antiemetic: Perinorm (Metoclopramide) @ 0.2mg/kg b.wt. I/V for 3 days , Vitamin K: @ 0.5 ml I/V single dose , Conciplex (Vitamin B-complex) @ 3ml I/V for 3 days and Transamic acid @ 5mg/ kg b. wt. for 3 days was given. The pet owner was instructed not to give food and water for 3 days and the prognosis of dog was satisfactory.

Index Terms- Canine parvovirus , German shepherd , Infection , Vaccination

I. INTRODUCTION

Canine parvovirus (CPV) is leading viral infection in the young and immature puppies which mainly attack young mitotic cells or rapidly dividing cells including crypt of intestinal epithelial cell , lymph nodes , thymus and bone marrow precursor cell ¹. It is the most common cause of death in young puppies and causing severe enteritis ². The virus mainly affect the young dog up to 6 months of age and some of the new genotype can also affect the cat population ^{3,4}. The disease has world wide distribution having cardinal signs and symptoms manifested by anorexia , vomiting , harsh dehydration , bloody or mucoid foul smelling diarrhea^{5, 6}. Parvovirus is a single stranded genetically-compact DNA virus consisting of 5000 bases with hairpin structure⁷. Parvovirus affect almost all age group of the dog but puppies are found to be more susceptible then adults⁸. The virus infect all breed of dogs but some breed like American pit-bull , Rottweiler , Doberman pinscher , Labrador retriever and German shepherd are at high risk of viral infection⁹. The spread of virus from one dog to another dog is by fecal-oral route¹⁰. Since , the morbidity and mortality of parvo viral infection is very high but the infection can be managed by application of proper antibiotics , appropriate fluid therapy and strict monitored for at least 2-3 days ¹¹.

II. CASE PRESENTATION

A. Case presenting site :

The case was presented at Central Referral Veterinary Hospital , Tripureshwor, Kathmandu .

B. History of dog along with clinical sign and symptoms:The presented six month old German shepherd dog has history of anorexia , vomiting and blood tinged foul smelling diarrhea from last 2 days. The dog has no history of vaccination and deworming.



Figure 1 : Thin yellowish mucoid vomiting

Figure 2: Blood tinged foul smelling diarrhea

C. Diagnosis:

The dog was examined for physical , hematological ,serum biochemical , fecal and Rapid Immunochromatographic assay for diagnosis and examination revealed following result:

1. Physical Examination

Parameter	Result	Normal Reference Range
Heart Rate	140 bpm	70-120 bpm
Respiration Rate	36 bpm	18-34 bpm
Rectal temperature	99.5 degree farenheit	100.2-103.8 degree farenheit
Dehydration	Moderate : Skin tenting time 4 sec	Normal 2 sec
Capillary Refill Time (CRT)	> 3 sec	Less than 2 sec
Mucous Membrane	Slight pale	Pink

Reference : MSD Vet Manual^{1,2}

2. Hematological Examination

Parameter	Result	Normal Reference Range
PCV %	26%	35-57
Hemoglobin	8.6%	11.9-18.9
Leucocytes	4.5%	5.0-14.1
Neutrophils	54.0	58-85
Lymphocytes	7.0	8-21
Monocytes	1.8	2-10
Thrombocytes	205	211-621

Reference : MSD Vet Manual^{1,2}

3. Serum Biochemical Examination

Parameter	Result	Normal Reference Range
Sodium	Hyponatremia : 115 mEq/L	142-152 mEq/L

Chloride	Hypochloremia :90 mEq/L	110-124 mEq/L
Potassium	Hypokalemia : 2.8 mEq/L	3.9-5.1 mEq/L
Glucose	Hypoglycemia : 66 mg/dl	76-119 mg/dl
Albumin	Hypoalbuminemia : 1.9 mg/dl	2.3-3.1 mg/dl

Reference : MSD Vet Manual¹²

4. Fecal Examination

The fecal examination of the dog was done to check parasitic infestation or not . No parasitic involvement was observed in fecal examination.

According to history of no vaccination , physical , hematological , serum biochemical examination and fecal examination , it appeared to be the case of Canine Parvo virus (CPV). For further confirmation of the diagnosis , Immunochromatographic assay (ICA) was done .

Immunochromatographic assay (ICA)

For rapid examination and detection of the pathogen ICA was done . The rapid test kit of ASAN Easy Test[®] CCV/CPV was used for ICA.

Test Procedure :

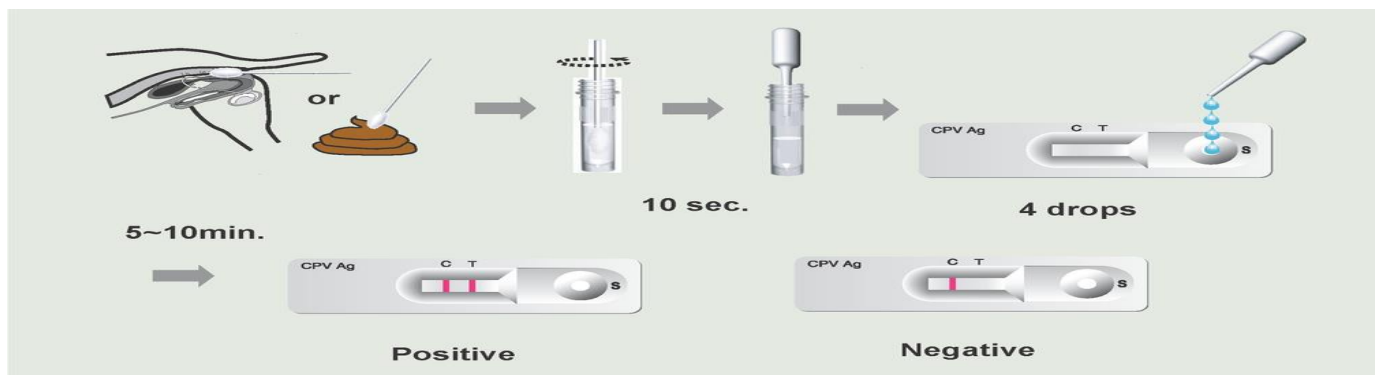


Figure 3: Test Procedure on Rapid Test Kit

Source: Dan Scott and Associates¹³

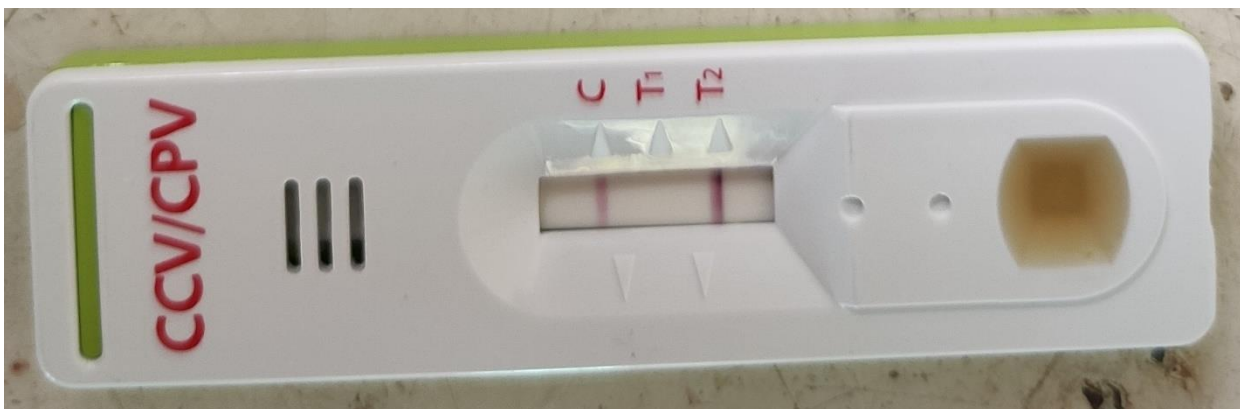


Figure 4 : CCV/ CPV Test Kit showing CPV positive

As suspected ,the dog was found CPV positive in Rapid test kit.

D. Treatment:

As there is no treatment for any viral infection , so the treatment for Canine Parvo Infection is mostly supportive and symptomatic during the course of the disease. So, symptomatic and supportive therapy was used as a line of treatment.

i. Fluid therapy: Ringer Lactate @ 400 ml I/V for 5 days to correct hydration status.

- ii. Antibiotic: Ceftiofur @ 2.2mg/Kg b.wt. I/M for 5 days
- iii. Antidiarrheal: Metronidazole @ 20mg/kg b.wt. IV daily for 3 days.
- iv. Antiemetic: Perinorm (Metoclopramide) @0.2mg/kg b.wt. I/V for 3 days.
- v. Vitamin K: @ 0.5 ml I/V single dose
- vi. Conciplex (Vitamin B-complex):@3ml I/V for 3days.
- vii. Transamic acid @ 5mg /kg b.wt. I/V for 3 days.

The pet owner was instructed strictly to monitor the dog and restrict feed and water for 3 days orally.

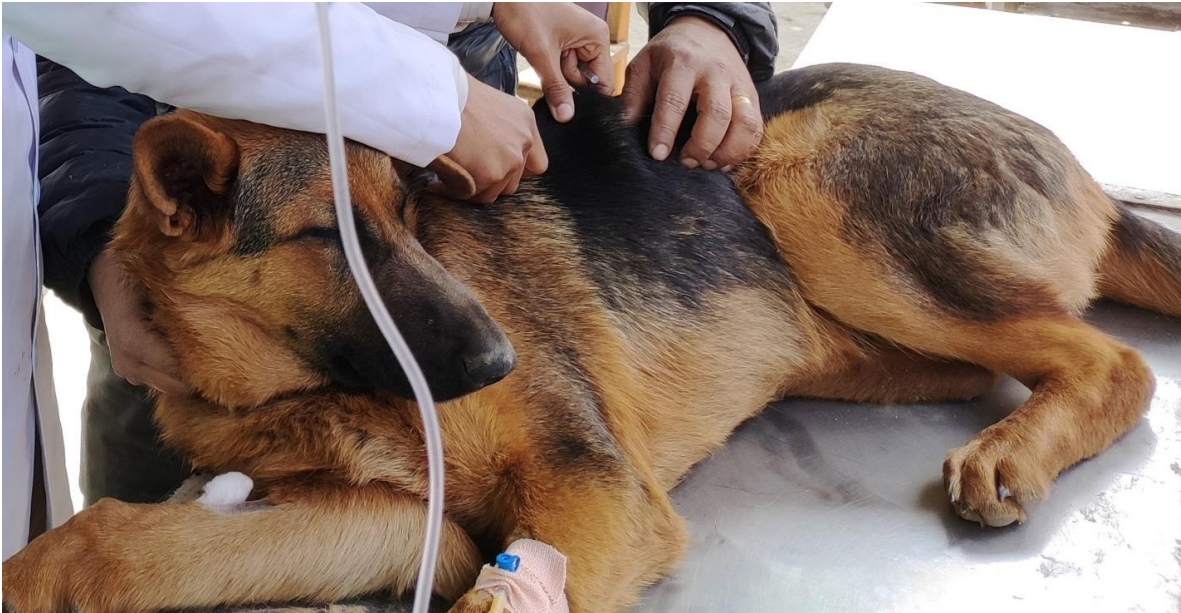


Figure 5: Dog under Treatment at CRVH

E. Prognosis of dog:

The prognosis of the dog was found satisfactory.

III. CASE DISCUSSION

Parvoviruses are small, non enveloped, single-stranded DNA viruses having incubation period of 3-7 days that are known to cause disease in a variety of mammalian species but most parvoviruses are host specific^{14, 15}. In 1967 it was first discovered and called as a minute virus of canines and named as CPV-1¹⁶. The virus is known as Canine Parvo Virus Type 2 (CPV-2) since it was second parvovirus which was discovered in dog after 1978 outbreaks in the United States where an unfamiliar contagious enteric diseases were reported and named as CPV-2. In the canine population, there is lack of preexisting immunity leading to rapid spread of virus and it was reported to be common worldwide after 1980¹⁴. The virus attack host cell for replication especially rapidly dividing cells leading to cell lysis and death¹⁷. Canine Parvovirus infection occurs in two forms; intestinal and myocardial or cardiac form but the intestinal form is more common¹⁸. Diarrhea is the most common clinical sign seen in intestinal for causing severe dehydration and imbalance and loss of electrolyte. Viral infection cause damage in intestinal wall leading to hemorrhage and loss of blood and protein causing decrease in PCV, severe anemia and hypoproteinemia and have higher risk of intussusception in young puppies¹⁹. Myocarditis by CPV-2 is very rarely observed nowadays, but can develop from infection in uterus or in puppies less than 8 weeks old which are born from unvaccinated bitches²⁰. Multifocal necrosis is seen in myocardial lesion in which lysis of myofibers with or without inflammatory response observed and myocardial cell nuclei consists intranuclear inclusion bodies²¹. The use of antibiotic and appropriate fluid therapy showed improvement in 3 days and returned towards normal pathophysiological condition requires 4-7 days²². The infected dog will die within 3 days if it is kept untreated²³. The rapid infection in young puppies below six months of age may be due to viral replication in rapidly dividing intestinal crypt cell just after weaning may cause enhance of bacterial flora leading to CPV infection in puppy²⁴. The prevention and control of CPV can be done by vaccination. The modified live vaccine are used for immunization at the age of 45 days with booster dose annually and thereafter 3 years. Inactivated vaccines are preferred in pregnant and colostrum deprived puppies. Vaccination is the key tool for prevention of disease so pet owners should be aware of vaccination and vaccination schedule to

prevent the occurrence of disease. Good hygienic practices in kennels, including proper disinfection of all exposed surfaces and personnel, is extremely important in the prevention of the spread of the disease in the puppies.

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