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Canine parvovirus infection: A case report

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Abstract

Canine parvovirus is an infectious and deadly disease that commonly infects puppies at 1-6 months of age. The hemorrhagic enteritis commonly quoted as foul smelling bloody diarrhea is the main cause of death in infected dogs. Dogs which are infected, shed viruses in their faeces and non vaccinated dogs gets affected. The present case report was reported at The Animalia Veterinary Care, Rajapalayam, Tamil Nadu, India. The pups which belongs to breed Labrador Retriever (1), German Shepherd (2), Rajapalayam (1), Chippiparai (1) and Non-descript (1) between 2 to 5 months of age were reported with the history of foul smelling bloody diarrhea, loss of appetite, severe dehydration, vomiting and sub-normal temperature. Based on these clinical signs and symptoms, it was tentatively diagnosed Canine Parvovirus infection. These dogs were then immediately subjected for treatment. Treatment was carried out for approximately 5 to 7 days. All dogs were recovered uneventfully. The aim of the present case report is to frame a diagnostic and treatment protocol based on the signs and symptoms of parvovirus infection in puppies below 6 months of age.

Keywords: Canine, parvovirus infection, diagnosis, treatment

Introduction

Canine parvovirus infection is considered as one of the important enteric pathogen that affects dogs. It is a highly contagious viral disease of dogs first observed in 1978. Parvovirus is a small, non-enveloped virus with single-stranded DNA genome and recombination can occur during tissue culture (Truyen, 2006) [15]. It needs the host for replication, specifically, cell nucleus and binds itself to the host cell with double-stranded ends of the genome and it replicates only in rapidly dividing cells such as precursor cells of bone marrow (Ganaie and Qiu, 2018) [5]. Canine parvovirus has two types called minute virus (CPV1) and CPV2. Canine parvovirus type-2 second parvovirus that observed the second time in dogs, initially, it has high morbidity and mortality in the canine population, but after the introduction of the vaccine, outbreaks were less. The disease is believed to have a very rapid clinical course and can cause death in 2–3 days after onset of signs (Miranda and Thompson, 2016) [10]. It is also considered to be a dangerous and contagious viral disease with high morbidity rate (100%) and recurrent mortality which may be up to 10 per cent (Appel *et al.*, 1978) [1]. Puppies between the time of weaning and 6 months of age are considered to be most susceptible. This canine parvovirus infection is has two clinical forms namely enteritis form affecting dogs of all ages and myocarditis form in which pups of less than 3 months of age are more susceptible (Woods *et al.*, 1980) [16]. Dogs infected with enteritis form show symptoms of depression, loss of appetite, vomiting, high fever and severe diarrhea in early stage (Kramer *et al.*, 1980) [9].

The route of transmission of canine parvovirus infection is through oral contact with infected faeces or contaminated surfaces (Black *et al.*, 1979) [2]. Puppies are protected against infection through maternal antibodies and half-life of maternal antibodies has approximately 10 days for parvovirus in the first few weeks of life. Factors that cause the parvovirus infection in puppies are low protective immunity, overcrowded of dogs at kennel, stress and intestinal parasites. Some breeds are highly susceptible against CPV such as Labrador Retriever, German Shepherd and American Pit Bull Terrier. CPV-2 spreads through the fecal-oral route and virus replicates in lymphoid tissues. Initial clinical signs are non-specific such as anorexia, depression, fever and weakness (Gerlach *et al.*, 2020) [6]. Later on, typical signs such as vomiting and watery

bloody diarrhea are reported. Due to a large amount of protein(s) and fluid loss from gastrointestinal tract, dehydration and hypovolemic shock often develop quickly (Goddard and Leisewitz, 2010) [7]. This disease is usually occurring in non-vaccinated dogs due to unawareness of owner, high cost of vaccines and poor insecurity practice.

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The constant presence of the pathogen at a particular area becomes endemic. Vaccination is the best method to control canine parvo virus infection (Zhao *et al.*, 2016) [17].

History

Six dogs belongs to breed Labrador Retriever (1), German Shepherd (2), Rajapalayam (1), Chippiparai (1) and Non-descript (1) between 2 to 5 months of age were reported with the history of foul smelling bloody diarrhea, loss of appetite, severe dehydration, vomiting and sub-normal temperature was reported at The Animalia Veterinary Care, Rajapalayam, Tamil Nadu, India.

Diagnosis

Fecal examination showed no parasitic infection. Based on history, clinical signs, symptoms and hematology shows the clues for diagnosing as a canine parvovirus infection as shown in Table 1 and Figure 1.

Treatment

Symptomatic and supportive treatment were given by using 5% Ringer Lactate, Hydroxyethyl starch infusion along with Antibiotic Ceftriaxone Sodium, Pantaprazole, Metronidazole and Ondansetron intravenously daily for each puppy throughout the treatment period. Tranexamic acid was also given. Oral medications were prescribed for boosting up the immunity against the infection and also to improve the anemic condition. All the treatment protocol was carried out

as per the dosage recommended. During the treatment period, owner was advised to feed only tender coconut and electoral powder. Owner was advised to isolate the unaffected dogs from the affected ones and to keep the premises clean.

Prognosis

The prognosis of the presented cases was satisfactory because all the owners were fully cooperative throughout the treatment period.

Discussion

CPV is believed to be a highly contagious disease that commonly affects puppies of 1-6 month age groups. The infected dogs exhibit clinical signs such as loss of appetite, vomiting, dehydration, foul smelling bloody diarrhea and pale mucous membrane. Initiation of treatment protocols with intravenous fluid, antibiotic and medications showed significant improvements in first 4 days and affected dogs were recovered and back to normal life in 6-8 days (Dongre *et al.*, 2015) [4]. The results of the present case report are similar to the results of Munibullah *et al.* (2017) [11] and Singh *et al.* (2008) [14]. The highest rate of canine parvovirus incidence in young pups may be due to viral magnetism for quick multiplying intestinal crypt cells with the highest mitotic catalogue due to alternation in bacterial flora (Deka *et al.*, 2013) [3]. This infection can be controlled by providing good nutrition, hygiene environment, reduce overcrowd and vaccinating the dogs as per schedule (Odueko, 2019) [12].

Table 1: Haematological Examination

Parameter	Normal value	Case 1	Case2	Case 3	Case 4	Case 5	Case 6
Haemo globin (g/dl)	12-18	7.8	9.4	7.3	9.8	10.2	7.9
TLC (thou/mm3)	6-17	7	6	6	12	5	10
DLC – Neutrophils (%)	60-76	79	80	78	70	74	69
DLC – Lymphocytes (%)	12-30	21	25	17	24	22	14
DLC – Eosinophils (%)	2-10	5	4	4	3	3	4
DLC – Monocyte (%)	3-10	4	5	3	3	3	3
DLC – Basophils (%)	0-1	0	0	0	0	0	0
RBC (mill/mm3)	5.5-8.5	4.250	4.340	5.710	6.340	4.654	6.864
PCV (%)	37-55	21.5	30.2	26.7	31.2	29.7	28.2
MCV (fL)	60-77	50.1	50.9	50.1	50.9	50.1	52.4
MCH (pg)	19.5-24.5	15.1	17	15.1	17	15.1	16
Platelet count (thou/mm3)	211-621	288	352	367	292	324	378

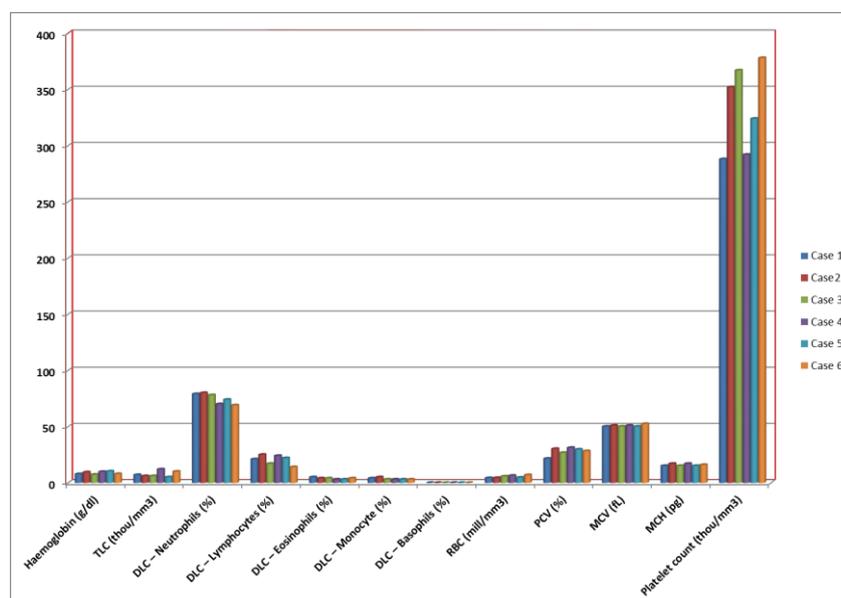


Fig 1: Case Wise Flow of Haematological Parameters

Conclusion

Survival rate of the parvovirus infected dogs depends on the type of infection, time and frequency of treatment given. Moreover the survival rate may increase if the infected dog is detected as early as possible to start the treatment protocols.

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