

Clinical Management of a Case of Parvovirus Enteritis in a Ten - Week- old Alsatian Puppy

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Abstract

Canine parvovirus enteritis is a highly contagious viral disease of dogs. The disease causes high rate of morbidity and mortality especially in unvaccinated puppies. The case report was a ten (10 weeks) old fully vaccinated puppy. Primary complaint includes; frequent vomiting, bloody diarrhea and anorexia.

Clinical examination revealed initial temperature of 38.8oc, pulse rate of 120b/m, heart rate 120b/m, respiratory rate 25 cycles/min and slight dehydration.

Tentative diagnosis was a case of parvovirus enteritis. The disease was confirmed by fecal examination using Parvoviral test kit bablo biotech®. Treatment was done using infusion broad spectrum antibiotics, Ceftriaxone 1g and metronidazole. Sulphurdimidine 33.3% given subcutaneously, tablet omeprazole 20mg, ivermectin 0.2 ml given subcutaneously, vitamin C and B complex administered intramuscularly. Infusion 0.9% dextrose saline and lactated Ringer's solution. Improvement was recorded on the 3rd day of treatment. By day 5, the appetite was fully recovered and dog was bright and stronger. The treatment lasted for a duration of one week only.

There are possibilities of finding cases of parvoviral enteritis even in fully vaccinated dogs especially in young puppies however, it is best to maintain strict vaccination of dogs using vaccines from standard source in order to stimulate immunity which enhances recovery under field infection.

Keywords: CD19; CAR-T; blinatumomab; systemic sclerosis; autoimmunity; lymphoma; leukemia

Introduction

Canine parvovirus enteritis is one of the viral diseases of canine that causes moderate to severe condition in domestic dogs (Kanae Sato-Takada *et al.*, 2022). The virus CPV-1 described as the minute virus of canines, was earlier discovered in the late 1960 as the leading cause of gastrointestinal and respiratory infection in dogs (Lamm *et al.*, 2008). Thereafter as a result of viral mutation, CPV-1 evolved into a distinctly new variant, CPV-2 which resulted in the first pandemic outbreak in naïve canine population (Mazzaferro, 2020). CPV-2 is a single stranded, non-enveloped DNA virus which is highly contagious among canines (Kanae Sato-Takada *et al.*, 2022). In 1980, newer variants of CPV-2 have merged into (CPV-2a and CPV-2b) and later run in early 2000, the third variant CPV-2c (Lamm *et al.*, 2008). Following the isolation of CPV-2c first in Italy, the isolate has spread world wide (Decaro *et al.*, 2007a). Clinical signs of infection in dogs include; foal smelly diarrhea, dehydration, vomiting, anorexia, slight elevation in body temperature except in cases of bacterial complication, lethargy, weakness, hypoglycemia and leucopenia (Kanae Sato-Takada *et al.*, 2022; Gberindyer *et al.*, 2017). Parvovirus enteritis has remained a big challenge in small animal medicine due to the level of morbidity and mortality rate often

encountered even in vaccinated dogs. This case report therefore describes current effective regime in management of CPV-2 in a ten (10 week) -old Alsatian puppy.

Case Report

A ten (10week) old Alsatian breed of dog with a history of completing the recommended initial 3 doses vaccination of polyvalent vaccine comprising of distemper, hepatitis, leptospirosis, parvovirus enteritis, pasteurella organism (DHLPP) vaccine was presented on Thursday 28th March, 2025 at the Animal Palace Veterinary Clinic, Umuahia Abia State. History revealed, the puppy was recently obtained from a reliable source; however, the client had earlier lost a matured dog to parvovirus enteritis couple of months ago. The puppy was housed in the same room with the adult dog prior to its death.

Primary complaint; the puppy was presented with anorexia and twice vomiting a day prior to visit to the clinic. There was no report of diarrhea by the client. Physical examination showed wet rear, lethargy, dullness, normal mucous membrane, slight dehydration, weakness but alert.

Weight is 6kg. Clinical examination revealed: temperature 38.8^{0c}, heart rate 120b/m, pulse rate 120b/m and respiratory rate 25cycles/min. Minutes later, post presentation of the puppy at the clinic, there was sudden passage of foal smelly, mucoid, bloody diarrhea.

Fecal sample was collected and examined using parvoviral rapid test kit (babio biotech). The result was read after 10 minutes to confirm a case of parvovirus enteritis.

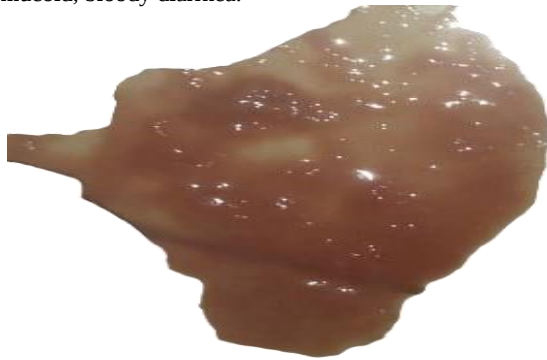


Figure 1: foal smelly bloody diarrhea passed out by the 10-week-old Alsatian puppy



Figure 2: Rapid test case confirming positive case of parvovirus antigen,

Treatment Regime include: The puppy was treated as an out-patient with Ceftriaxone x 1.5ml/10kg x intravenously x 5/7. Metronidazole x15mg/kg x intravenously x 5/7. Infusion 0.9% dextrose saline. 500ml lactated Ringers solution. Injection 33.3% Sulphurdimidine x 55mg/kg x subcutaneously x stat. 27.5 mg/kg maintenance dose. Injection vitamin B complex x 1ml x intramuscularly x 5/7. Injection 500mg vitamin C x intramuscularly x 5/7. Tablet Omeprazole x 1mgx *per os* x 5/7. Tablet Promethazine theoclate x 25mg x *per os* x stat. Injection Ivermectin x 0.2ml x subcut x stat.

Physical examination: there was frequent retching due to vomiting reflexes, constant dripping of bloody watery diarrhea, weakness and dehydration. These signs were very pronounced on the first day of presentation to the clinic. The signs gradually subsided with vigorous medication and by the third day, there was appreciable improvement in recovery, with evidence of response to thirst though at little quantity at a

time but increased with improvement. Return of nociception which was absent on first day of presentation, and gradual return of appetite, Increased movement and some degree of display of excitement. However, by the 4th day, there was marked weakness in the puppy with difficulty in keeping on sternal recumbency. On the 5th day, the puppy showed evidence of increased appetite and was fed fried fish and by next morning the puppy vomited twice. The appetite increased appreciably by the 6th day and was fed pap and sugar. By the 7th day of treatment, the demeanor was very bright and alert. The appetite was fully recovered and had a good meal of pap and sugar.

Clinical examination: The temperature was 38.0^{0c}, heart rate 120b/m, pulse-rate 120b/m, and respiratory rate 25 cycles/min on the second day of visit to the clinic. By the 4th visit, the vital signs was temperature 37.5^{0c}, heart rate 120b/m, pulse-rate 120b/m and respiratory rate 25 cycles/min. The vital signs remain normal till day 6 of the treatment.



Figure 3: Physical and clinical examination of a 10-week-old puppy suspected with a case of parvovirus enteritis



Figure 4: Treatment of parvovirus enteritis in a 10-week-old puppy

Discussion

Several treatment protocols have been employed by clinicians in the management of parvoviral enteritis in dogs with little or less benefit. Factors that directly affects the outcome of treatment includes the age of the animal affected, the time of presentation to the hospital, the vaccination status and the treatment regimen instituted by the clinician. In the current case report the puppy was at a high-risk age bracket for contacting parvovirus enteritis (Gberindyer *et al.*, 2017). At 10 weeks old, most puppies were still naïve and at that age often exhibit severe form of clinical disease especially when breed by an unimmunized dam (Venn *et al.*, 2017). However, the current report had history of full vaccination of the initial three doses of the polyvalent vaccine. The reasons for the clinical disease of parvovirus enteritis in the puppy could be multifactorial which includes potency of the vaccine used in vaccination and the host factor (Wiedermann *et al.*, 2016). Vaccines are very sensitive to temperature and are required to be maintained in cold chain in the refrigerator at varying temperature depending on the nature of vaccine (CDC, 2024). Most vaccines loses its potency on account of improper preservation and disruption of cold chain due to unsteady power supply. Loss of vaccine potency can also be attributed to exposure to very high temperatures during transportation due improper packaging. Dogs Vaccinated with poorly preserved vaccines often succumb to the same infection as a result of vaccine failure. The best practice to prevent vaccine failure is detailed in the Vaccine Storage and Handling Toolkit (CDC, 2024). The Vaccine Storage and Handling Toolkit is a comprehensive guide that reflects best practices for vaccine storage and handling from Advisory Committee on Immunization Practices (ACIP) recommendations, product information from vaccine manufacturers and scientific studies (CDC, 2024). Beyond Vaccine failure, some animals fail to respond to vaccination by failure to produce protective antibodies due to absence of immunocompetent cells, such individuals are referred to as Non-Responders (Nwoha and Anene, 2015). Similarly, some healthy humans (2-10%) fail to produce protective antibodies post- vaccination (Wiedermann *et al.*, 2016). Puppies could also succumb to field parvovirus infection post-vaccination if exposed earlier before its immune response to protective level.

In this report, the challenge apparently was a case of less potent vaccine since the puppy had some level of protective immunity which enhanced

rapid recovery from the disease. In addition, the time of presentation to the clinic was of essence in the prognosis of the diseases. The puppy was presented quite early in the disease which promote early institution of medication and speedy recovery.

The treatment regime adopted enhanced rapid recovery using ceftriaxone and metronidazole infusion as broad-spectrum antibiotics against anaerobic and aerobic bacterial. Ceftriaxone was essentially recommended to prevent incidence of bacteria septicemia while metronidazole controls anaerobic gastrointestinal bacterial (Mazzaferro, 2020). The antimicrobial combination was very effective and preferred over mirage of antimicrobial (Isenalumehe and Oviawe, 1988; Laing, 1990; Kanae Sato-Takada, 2022). There was aggressive intravascular fluid replacement to combat dehydration sequel to vomiting and diarrhea (Kahn, 2010). Lactated ringer solution essentially replaced the lost electrolytes through vomiting and diarrhea while 0.9% dextrose saline supplied energy to the blood (Heald *et al.*, 1986; Decaro *et al.*, 2007b). The intravascular fluid administration helps to maintain systemic circulation pending the return of appetite and thirst. Omeprazole aid to cushion the intestinal lining from viral damage and enhance return of appetite. Sulphurdimidine 33.3% was administered to prevent overgrowth of opportunistic protozoal infection which complicates the condition. Ivermectin injection was administered to control gastrointestinal parasite. Promethazine theoclate was used once to control emesis (Mazzaferro, 2020). Vitamin C and B complex injection were administered to enhance the immunity and recovery.

Conclusion

There could be cases of parvoviral enteritis even in fully vaccinated dogs especially in young puppies however, it is best to maintain strict vaccination of dogs using potent vaccines from standard sources in order to stimulate immunity which enhances recovery under field infection.

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