

# IMMUNOGLOBULIN BASED THERAPEUTIC APPROACH FOR PARVO VIRUS INFECTION IN DOG - A CASE REPORT

## ABSTRACT

Canine parvo viral infection is a highly contagious disease in dog with high mortality rate in untreated cases. This study represents a case report of an unvaccinated 4 months old German shepherd puppy presented with a history of profuse foetid diarrhoea, vomiting, inappetence and depression for 2 days. Physical examination of the dog revealed sub normal temperature (99.5°F), abdominal pain, bloat, severe dehydration and debility. Haematology showed low RBC count, low Hb level, low Hct value, lower MCV and mild lymphopenia. The dog was diagnosed as canine parvoviral infection based on the result of rapid antigen test and the characteristic clinical findings. **The treatment included fluid replacement therapy, antimicrobial drug, antiemetic, haemostatic agent along with immunoglobulins. An instant onset of passive immunity is developed upon IV administration of immunoglobulins.** The pup showed good response from 3<sup>rd</sup> day of the treatment and finally recovered successfully. Thus, administration of specific immunoglobins along with standard treatment regimen in canine parvo virus infection can be effective in reducing mortality in dogs.

*Keywords: Canine Parvovirus Infection, Rapid antigen test, Immunoglobulin*

## 1. INTRODUCTION

Canine parvovirus (CPV) infection caused by Canine parvo virus 2 (CPV2) is a highly contagious and a serious life-threatening viral disease in dog with high morbidity (100%) and varying mortality up to 10-18% in adults and 91% in pups if left untreated [1, 2, 3, 4]. CPV mainly occurs in two prominent clinical forms: (i) haemorrhagic gastroenteritis with vomiting, foul smelling bloody diarrhoea and severe leukopenia affecting all age group of dogs [5, 6, 7], (ii) myocarditis and subsequent heart failure in pups up to 3 months of age [8]. CPV2 is extensively shed in faeces for 7–12 days or possibly for long-term duration, which help it to spread rapidly among the population [9]. Prevalence of CPV infection in Assam was 25.28 to 62.86% [10, 11, 12] with 41.86% in 4-6 months age group (Deka *et al.*, 2013), 51.85% in 7-12 months of age group, 50.18% in male and was highest in German spitz breed with 55.21% [11]. CPV infection was recorded higher in unvaccinated dogs with 30.15% compared to 9.52% in vaccinated dogs [4]. Season-wise, occurrence of CPV was recorded highest in pre-monsoon (43.18%) followed by winter (34.62%) [4].

## 2. PRESENTATION OF CASE

One four months old, weaned German shepherd puppy was brought with a history of profuse foetid smell diarrhoea, vomiting, dull, depressed and inappetence for 2 days. During physical examination, the puppy had sub normal temperature (99.5°F), severe dehydration, sunken eyes, severe debilitation, abdominal pain and bloat. The puppy along with its mother was unvaccinated and not dewormed regularly. Blood sample was collected and sent for haematology. The faeces were collected and subjected for rapid immunochromatographic based antigen (Ag) test (Quickvet, Ubio) for detection of canine parvo virus Ag. The affected puppy had low RBC count ( $4.2 \times 10^6/\text{mm}^3$ ), low Hb level (8.3 g/dl), low Hct value (21.2 %), lower MCV (21.2 %) and mild lymphopenia (9.3%). Based on the result of rapid antigen test and clinical findings, the diagnosis was made as canine parvo virus infection and accordingly treatment had been commenced.



**Fig.1.** Parvo infected pup during treatment



**Fig. 2.** After treatment

### 3. DISCUSSION

The treatment was started with intra venous (IV) fluid replacement therapy that included 5% DNS and Ringer's lactate infusion to restore the fluid & electrolyte loss. Pantoprazole was administered IV @ 1 mg per kg body weight (b. w.) OD for 10 days along with Ondansetron @ 0.1 mg per kg b. w. IV BID for 7 days. Gentamicin was given @ 10 mg per kg b. w. slow IV OD for 7 days to lower the possibility of bacterial translocation across the disrupted intestinal epithelium in the gastrointestinal tract. Metronidazole was injected @ 10 mg per kg b.w. slow IV for 7 days to lower the intestinal parasites which may exacerbate the infection by increasing intestinal cell turnover and subsequent viral replication [13]. Tranexamic acid was also given slow IV @ 10 mg per kg b. w. of the animal. Based on the severity of the infection, purified hyperimmune immunoglobulin (Immunoglobulin anti parvovirus canis NLT 1024 HIU, Canglob ® -P) was administered IV @ 0.4 ml per 1 kg of body weight of the animal for 5 days. The pup showed good response from 3<sup>rd</sup> day of treatment. Injecting specific immunoglobulins at the clinical phase of canine parvo virus infection can improve the clinical symptoms, reduce mortality and subsequently facilitate rapid recovery of the patient [14, 15, 16]. Intravenous administration of Immunoglobulin, IgY derived from chicken egg yolk had been reported to

inhibit the propagation of CPV infection and thus reduce the fatality[15]. In another study, freeze-dried immunoglobulin G was found to diminish clinical symptoms and shorten hospitalization duration in naturally acquired CPV enteritis[17]. The establishment of passive immunity in the host body depends on the route of administration, quantity of immunoglobulin and frequency of replications of immunoglobulin administration. Immediate induction of passive immunity is observed following intravenous (IV) administration as compared to intramuscular or subcutaneous administration[18].

#### **4. CONCLUSION**

Based on the present case study, it may be concluded that early administration of specific immunoglobulins in canine parvo virus infection can be effective in ameliorating the clinical symptoms and reducing mortality.

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#### **AUTHORS' CONTRIBUTIONS**

This work was carried out in association with all authors.

#### **COMPETING INTERESTS**

Authors declare that there are no competing interests regarding this work.

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