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## RAPID DETECTION AND SYMPTOMATOLOGY ASSOCIATED WITH CANINE PARVOVIRAL ENTERITIS IN DOGS- A CASE STUDY

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**Abstract:** Canine parvoviral enteritis is probably one of the most common infectious disorders of dogs throughout the globe and the most prevalent virus responsible for high mortality (in the absence of therapy) in pups with haemorrhagic gastroenteritis. The disease is highly contagious and may be often fatal. Hence, early diagnosis of the infection has utmost importance. In the present study, faecal samples from twenty four pups suspected for canine parvoviral enteritis were tested with sandwich lateral flow immunochromatography assay kit. Out of which fourteen were found to be positive for canine parvoviral (CPV) antigen. Detailed symptomatology was recorded in CPV affected pups (fourteen) which revealed varying degree of severity in the clinical findings. Dullness, anorexia, hematemesis, bloody foul smelling diarrhoea, dehydration and fever were recorded in majority of the patients while some patients had less intense symptoms.

**Keywords:** Canine parvovirus, dogs, immunochromatography, symptoms

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**Introduction:** Canine parvovirus (CPV) is considered as highly contagious and one of the most significant viral causes for acute haemorrhagic enteritis and myocarditis. This is often fatal, caused by strains of CPV-2 (2a, 2b and 2c) (Greene and Decaro.,2012). Acute CPV-2 enteritis can be seen in dogs of any breed, age, or sex, but puppies between 6 weeks and 6 months are more susceptible (Pollock and Coyne.,1993) whereas myocarditis is very rarely seen unless infection occurs in utero or in puppies less than 8 weeks old born to unvaccinated bitches. "Dull the first day, vomiting on the second, diarrhoea on the third and dead or better on the fourth" neatly sums the clinical features of CPV enteritis (McCandlish.,1998). Besides canine parvovirus, several other pathogens such as coronaviruses, adenoviruses, morbilliviruses, rotaviruses, reoviruses, noroviruses may cause diarrhoea in dogs (Greene and Decaro.,2012). Clinical diagnosis of CPV is indecisive and not definitive (Castro *et al.*, 2007). Therefore, a rapid diagnosis of CPV infection is much important in dog's population to confirm the disease, to isolate the infected dogs and to prevent secondary infections of susceptible contact animals (Decaro and Buonavoglia., 2012, Al- Tayib., 2014). In the present study, sandwich lateral flow immunochromatography assay was employed for the detection of canine parvoviral

antigen which yielded rapid and accurate result under field conditions.

**Materials and methods:** Twenty four patients presented with clinical signs suggestive of canine parvoviral infection such as vomitions, bloody diarrhoea, fever, weakness, inappetence, lethargy etc., were selected for the present study. Faecal samples were collected by inserting sterile swab into the rectum and were tested for CPV antigen with Scan Vet™ PARVO kit (sandwich lateral flow immunochromatography assay kit). Detailed symptomatology was recorded in CPV positive pups.

**Results and discussion:** Faecal samples from fourteen dogs (58.33 %) were found to be positive for the CPV infection. Positive and negative results with Scanvet™ PARVO kit are depicted in Figure 1. (A & B). In the present study, immunochromatography based Scanvet parvoviral antigen detection kit was used which was a rapid, sensitive, simple diagnostic tool (Pillai and Deepa.,2010 and Dongre *et al.*, 2013) and reliable in comparison with molecular methods such as PCR (Mohyedini *et al.*, 2013). Prominent clinical signs noticed were dullness, anorexia, emesis, bloody foul smelling diarrhoea, dehydration and fever. On the day of presentation, all the affected dogs had dullness (100%). Anorexia was present in ten patients (71.43%) and four patients (28.57%) had inappetence. The

prominent clinical sign reported by the owners of patients in the present study was emesis. Vomiting was whitish and watery in four (28.57 %) and three patients (21.43 %) respectively which might be due to absence of bile staining, indicating gastric and, or, salivary secretions as stated by Macartney *et al* (1984). While four patients had haematemesis which might be due to severe haemorrhagic gastritis or regurgitation of haemorrhagic duodenal contents (Balu and Thangaraj., 1981 ). Destruction and collapse of the germinal epithelium of the intestinal crypts and the resulting villous atrophy was responsible for diarrhoea in all the patients of present study (100 %), which was in accordance with the studies of Greene and Decaro (2012). Bloody diarrhoea reported in eleven patients (78.57 %) might be due to break down of the barrier separating the digestive tract from the blood stream leading to bloody diarrhoea and bacterimia, as also suggested by Nandi and Kumar (2010). Greenish, yellow greyish diarrhoea evinced in three patients (21.43 %) of the present study was supported by the observations of Hoskins (2006). Dehydration was observed as a characteristic clinical sign in the present study and based on skin turgor test it was graded as mild (50 %, 7 pups), moderate (35.71 %, 5 pups) and severe (14.28 %, 2 pups). Large quantity of fluid and protein losses from vomiting and diarrhoea might be responsible for dehydration as stated by Crawford and Sellon.,2010. Previously, dehydration in 72 per cent of CPV cases (Mohan *et al*, 1993) and moderate to marked dehydration in 72.82 per cent of dogs with parvoviral enteritis (Biswas *et al*, 2005) was documented.

In the present study, the mean rectal temperature of affected dogs (103.86±1.23°F) was significantly elevated when compared to healthy dogs (101.23±0.15°F). However critical examination revealed pyrexia in ten patients and four patients were afebrile. Inflammatory

processes in the gastrointestinal system induced by canine parvovirus and concurrent secondary bacterial infection might be responsible for febrile condition in ten patients (71.43 %) in corroboration with the observations of Bhat *et al* (2013) who stated that during the process of inflammation, release of certain inflammatory mediators especially interleukin-1 causes fever along with cachectin, a polypeptide derived from activated macrophages. On auscultation, the mean value of heart rate (132.14±20.82 bpm) was significantly elevated in affected dogs as compared with apparently healthy dogs (103.83±3.83 bpm). On detailed analysis, tachycardia was clearly evinced in eight puppies which might be due to the effect of catecholamine and other compensatory mechanisms of heart to maintain oxygen supply to tissues as suggested by Saxena *et al* (2006). In the present study, death in two pups might be secondary to hypovolemic shock, endotoxemia, and sepsis or as a consequence of systemic inflammatory syndrome (SIRS), as suggested by Mantione and Otto (2005). of the two dead pups, one pup aged 50 days exhibited symptoms of dyspnoea, squealing, crying and retching besides diarrhoea which might be due to CPV myocarditis associated with CPV enteritis (Greene and Decaro., 2012). Eleven patients (78.57%) had normal, fair body condition, while thin body condition was observed in three patients (21.43%). Conjunctival mucous membrane was congested and pale pink in each of the four patients (28.57%) and six cases (42.86%) had normal pink conjunctival mucous membrane.

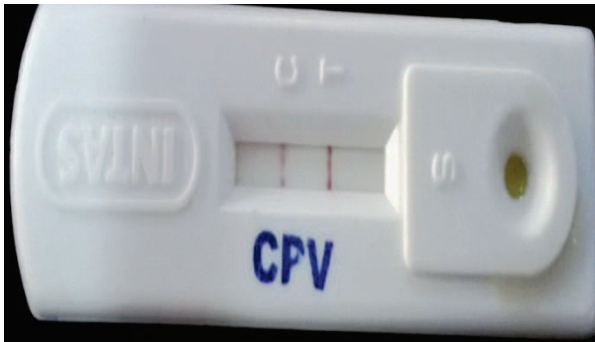
The variation in the degree of clinical signs may be attributed to one or more of the factors *viz* individual host resistance, virulence of the viral agent, infective dose, existence of diseases and environmental conditions as stated by Glickman *et al* (1985), Hagiwara *et al* (1996) and Banja *et al* (2002).

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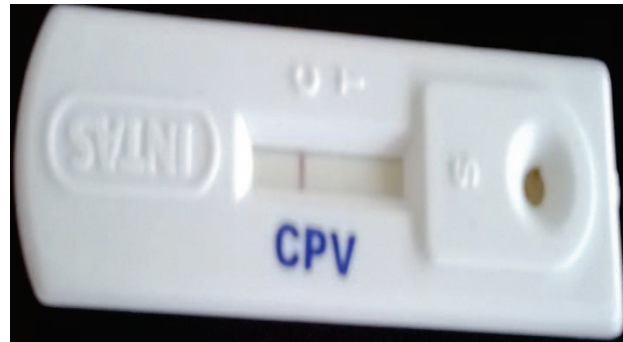
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A. Positive result



B. Negative result

Figure 1.

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