

## CLINICO-HEMATOBIOCHEMICAL CHANGES IN PARVO VIRAL INFECTION IN DOG

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**Abstract:** Canine parvo virus (CPV) infection is a contagious disease of dogs characterized by vomitions and diarrhea. Haemato-biochemical changes including clinical signs in 53 CPV infected dogs presented at RVC clinics between March, 2016 to February, 2017 were taken for the study. Most of the dogs showed non-haemorrhagic vomition and haemorrhagic diarrhea with subnormal body temperature (98-100°F). The affected dogs showed marked alterations in electrolyte balance with hypoproteinemia and hypoglycemia.

**Keywords:** Canine, CPV, Hemato-biochemical, Clinical, Ranchi.

### Introduction

Canine parvovirus enteritis is a highly contagious and fatal disease caused by parvovirus type -2 affecting mainly intestinal tract and causing vomition, diarrhea and fever (Legendre, 2000). The present study was taken to record the hemato-biochemical changes and clinical signs of CPV dogs in and around Ranchi.

### Materials and Methods

A total of 53 dogs irrespective of age, sex and breed were screened for CPV infection. The dog presented for treatment between March 2016 to February 2017 at RVC clinics from different part of Ranchi with the history of gastroenteritis and vomition were screened for CPV infection through HA & HI Test (Carmichael *et al.*, 1980). The haematological of biochemical parameters like hemoglobin, PCV, TEC, TLC and DLC were made as per standard method (Brar *et al.*, 2000). Blood glucose, total serum protein, albumin, globulin, SGOT, Serum sodium, potassium and chloride were determined by Semi automated blood analyzer. The data were analyzed using standard method of test significance. (Snedecor and Cochran, 2004)

### Results and Discussions

The dog infected with CPV infection were having prominent clinical signs of anorexia, dullness and vomition which was either haemorrhagic (44.55%) or non haemorrhagic (55.45%). The haemorrhagic enteritis was suggestive of regurgitation of haemorrhagic

duodenal contents (Balu and Thangraj,1981). In this study, haemorrhagic diarrhea was noted in the maximum number 92.45% while non haemorrhagic diarrhoea was seen only in 7.55% cases. Dullness was observed in 72.73% where as 80.91% cases showed moderate to severe dehydration. The average body temperature and heart rate were  $104.25\pm 0.05^{\circ}\text{F}$  and  $212.88\pm 2.9/\text{min}$  respectively. Increased body temperature ( $104-106^{\circ}\text{F}$ ) was noted in 24.54% while 75.45% dog had subnormal temperature ( $98-100^{\circ}\text{F}$ ). The increased body temperature may be suggestive of viremia in early stage of disease, while late reported case had subnormal body temperature due to severe fluid and electrolyte losses. These finding in CPV infected dog coincide with finding of Banja *et al.* 2002.

The mean hemoglobin concentration, PCV and TEC decreased significantly ( $P\leq 0.05$ ) in CPV infected dogs to  $8.89\pm 0.38/\text{dl}$ ,  $26.95\pm 1.28\%$  and  $3.56\pm 0.20\times 10^6/\mu\text{l}$  respectively. These findings collaborated with the findings of Rai *et al.*, 1994 and Ramprabhu *et al.*, 2002 in CPV infected dogs. Hoskins (1998) stated that the CPV damage the capillaries of the villi of intestine leading to loss of blood, which is responsible for the reduced hemoglobin concentration and TEC in the present study. The PCV in the present study might be reducing due to the haemorrhage and blood losses through the diarrhoea and vomitus in the disease process (Biswas *et al.*, 2005 and Panda, 2006).

A non-significant reduction to  $8.64\pm 0.18\times 10^3/\mu\text{l}$  in the CPV infected dogs might be due to fact that the blood samples in all the cases were not collected at the stages of viremia when leukopenia prevailed, rather many samples were collected at the later stages when leukocytosis had already developed due to secondary bacterial infections as opined by Rajesh *et al.*, 1991 and Rai *et al.*, 1994.

A significant increase ( $P\leq 0.01$ ) to  $68.54\pm 1.52\%$  in neutrophil and decrease in lymphocyte to  $18.40\pm 1.28\%$  in the infected dogs and non-significant change in eosinophil, monocytes and basophils to  $7.84\pm 0.36\%$ ,  $4.68\pm 0.18\%$  and  $0.98\pm 0.04\%$  respectively was noted in this study which supported the findings of Gretillate,1981 and Ramprabhu *et al.*,2002. Neutrophilia as observed in this study might be occurred due to the secondary bacterial infections, associated with the CPV infections. Ramprabhu *et al.*, 2002 and Chakrabarti, 2003 recorded lymphonemia which might be due to virus replication in the lymphoid organ resulting in lymphocytosis.

The total serum protein, albumin and globulin levels were significantly ( $P\leq 0.01$ ) lower to  $5.24\pm 0.80\text{g}/\text{dl}$ ,  $3.00\pm 0.08\text{g}/\text{dl}$  and  $1.58\pm 0.06\text{g}/\text{dl}$  respectively in CPV infected dogs. Such findings were also noted by Ramprabhu *et al.*, 2002. This hypoproteinemia might be

happened due to leakage of serum protein through damaged capillaries of villi of intestine and also due to less absorption through the damaged villi.

The mean values of serum sodium and potassium decreased significantly ( $P \leq 0.01$ ) to  $116.36 \pm 1.66$  mmol/l and  $2.66 \pm 0.18$  mmol/l respectively in CPV infected dogs as also reported by Aiello *et al.*, 1998 and Ramprabhu *et al.*, 2002. The loss of sodium through gastric and intestinal secretion as a result of severe inflammatory changes or loss of potassium through diarrhea might be the possible cause of hyponatremia and hypokalemia during disease process (Ettinger *et al.*, 2010). Similarly significant decrease ( $P \leq 0.01$ ) in chloride level to  $92.78 \pm 1.46$  mmol/l were also agreed with the finding of Aiello *et al.*, 1998 which might be attribute to severe loss of chloride ions through the vomition (Hoskins *et al.*, 1998). A significant increase ( $P \leq 0.05$ ) of SGOT level of  $36.47 \pm 1.82$  IU/L might be due to hepatic damage caused by toxemia which has occurred due to CPV infections. This is in agreement with earlier finding of Mohan *et al.*, 1991.

A significant decrease ( $P \leq 0.05$ ) in blood glucose level to  $56.63 \pm 1.54$  gm/dl was noted which may be due to inappetance/anorexia (Shinde *et al.*, 2000) complemented by malabsorption from intestine (Coles, 1986).

Hence, on this basis it was noticed that haemorrhagic enteritis with haemorrhagic or non haemorrhagic vomition were the most important cardinal signs of CPV infected dogs and it causes severe fluid and electrolyte imbalances. So, restoration of electrolyte along with dextrose, antibiotics and hematinic drugs are useful in treatment of CPV infection in dogs.

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