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. Haematobiochemical 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±0.05°F and 212.88±2.9/min respectively. Increased body temperature (104-106°F) was noted in 24.54% while 75.45% dog had subnormal temperature (98-100°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 conside with finding of Banja et al. 2002.

The mean hemoglobin concentration, PCV and TEC decreased significantly (P≤0.05) in CPV infected dogs to 8.89±0.38/dl, 26.95±1.28% and 3.56±0.20×10^6/µl 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±0.18×10^3/µl 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≤0.01) to 68.54±1.52% in neutrophil and decrease in lymphocyte to 18.40±1.28% in the infected dogs and non-significant change in eosinophil, monocytes and basophils to 7.84±0.36%, 4.68±0.18% and 0.98±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≤0.01) lower to 5.24±0.80g/dl, 3.00±0.08g/dl and 1.58±0.06g/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±1.66 mmol/l and 2.66±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±1.46 m mol/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±1.82IU/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±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.

References


