Haryana Vet. (June, 2015) **54 (1)**, 83-84

Short Communication

COMPARATIVE EVALUATION OF TWO TREATMENT REGIMENS AGAINST CANINE PARVOVIRUS INFECTION

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Received: 07.01.2015; Accepted: 18.04.2015

ABSTRACT

In the present investigation 100 dogs were screened for canine parvovirus (CPV) infection. Out of 53 CPV-positive dogs, 16 dogs selected at random to determine the efficacy of different treatment regimens were divided into two groups. Group I (n=8) dogs were treated with Inj. Haemaccel+Inj.Ciprofloxacin, while, dogs in Group II were treated with whole blood and metronidazole with same supportive drugs in both the groups. All haematological values were found to be decreased on day 0. After start of therapy, on day 3 and 7 in group I, four dogs died while four recovered indicating the efficacy to be 50%. However, in group II, only two dogs died while six recovered indicating the efficacy of treatment to be 75%.

Key words: Canine parvovirus, dogs, haematology, HGE

Haemorrhagic gastroenteritis (HGE) is a common and fatal disease of pups (Chakrabarti, 2006). Dogs have been found to suffer from HGE due to parvo-, corona- and distemper-virus infection. HGE can be managed by therapeutic employment of antibiotics, fluids coupled with continuous monitoring up to 48 h (Bhutia and Rao, 2008). In this paper, we report the efficacy of two treatment regimens against canine parvovirus (CPV) infection in dogs.

MATERIALS AND METHODS

The present investigation was carried out in the Department of Veterinary Medicine, College of Veterinary Science and Animal Husbandry, Mhow (M.P.). Dogs brought to the Teaching Veterinary Clinical Complex (TVCC), with the symptoms of vomiting, blood mixed diarrhoea, dehydration, anorexia and pale mucous membrane and gastrointestinal disturbances were included. A total of 100 dogs, irrespective of age, sex and breed were screened for CPV by kits (Rapid immunochromatographic assay for the detection of CPV antigen, Intas Pharmaceuticals). Of these, 53 dogs were found positive for CPV.

Sixteen CPV-positive dogs selected at random were divided into two groups (groups I and II). Dogs in group I were treated with Inj. Haemaccel I/V; the amount depending upon frequency of vomiting, diarrhoea, percentage of dehydration and haematocrit values, and Inj. Ciprofloxacin @10 mg/kg body weight BID, OD. Dogs in group II were treated with whole blood (amount of fluid/blood for administration was determined on the basis of frequency of vomiting, diarrhoea, percentage of dehydration and haematocrit values) and metronidazole @ 20 mg/kg body weight BID, OD I/V. Supportive therapy such as ascorbic acid @ 100 mg/day I/V, soda bicarbonate @1-5 mg/dose I/V, Inj. Prochlorperazine @ 0.5 mg/kg body weight BID I/M, Inj. Dicyclomine @ 0.1 mg/kg body weight BID I/M , Inj. Ranitidine @ 0.5 mg/kg body weight BID I/M, Inj. Vitamin K @1 mcg/kg body weight single dose I/M and Inj. Haemocoagulase @ 0.5-1ml (total dose) TID I/V was same in both the groups. The evaluation of therapeutic regimens was done on the basis of changes in clinico-haematological parameters on day 0 (before treatment) and day 3 and 7 after treatment. Following haematological parameters were estimated: haemoglobin (Hb; g/dl), packed cell volume (PCV; %), total leucocyte count (TLC; 10^3/cubic mm), total erythrocyte count (TEC; 10^6/cu mm), differential leucocyte count (DLC; %) by the standard methods of Jain (1986). The data were statistically analyzed by using CRD design (Snedecor and Cochran, 1994).

RESULTS AND DISCUSSION

The CPV affected dogs exhibited clinical signs such as anorexia, vomiting, diarrhoea with blood, dehydration and pallor of mucosa. Initiation of fluid and antibiotic with supportive therapy in dogs showed recovery within 3 days and the affected dogs returned towards the normal pathophysiological condition between 4 to 7 days. In group I, out of eight dogs, four died while the remaining four recovered indicating the efficacy of the treatment to be 50%. However, in group II, of the eight dogs, only two dogs died and the remaining six recovered indicating the efficacy of treatment to be 75%. The results of the present investigation are in agreement with those reported by Singh *et al.* (2008). Death of dogs in both the groups was

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Table 1

Comparative haematological observations in canine parvovirus affected dogs that were treated with different regimens

Parameters	Mean±SE in Group I						Mean±SE in Group II					
	Day 0		Day 3		Day 7		Day 0		Day 3		Day 7	
	S, n=4	D, n=4	S, n=4	D, n=4	S, n=4	D, n=4	S, n=6	D, n=2	S, n=6	D, n=2	S, n=6	D, n=2
Hb	10.24±0.14^{a}	9.05±0.17^{c}	10.79±0.15^{b}	5.45±0.46^{b}	11.40±0.18^{c}	Died	5.83±0.17^{a}	5.9±0.10^{c}	8.33±0.16^{b}	4.65±0.55^{c}	9.17±0.12^{c}	Died
PCV	28.0±0.91^{a}	22.0±0.82^{c}	30.25±0.75^{b}	11.75±0.85^{b}	32.25±0.63^{c}	Died	13.83±0.75^{a}	12.5±0.5^{c}	21.67±0.67^{b}	6.50±0.5^{b}	28.67±0.56^{c}	Died
TLC	5.06±0.12^{a}	4.38±0.13^{c}	5.46±0.08^{b}	3.59±0.14^{b}	6.00±0.04^{c}	Died	3.89±0.14^{a}	2.56±0.38^{c}	5.44±0.08^{b}	1.6±0.26^{c}	6.08±0.02^{c}	Died
TEC	4.21±0.11^{a}	3.98±0.05^{c}	4.39±0.09^{a}	2.03±0.11^{b}	5.53±0.03^{c}	Died	3.23±0.06^{a}	3.12±0.03^{c}	4.78±0.09^{b}	1.88±0.11^{c}	5.53±0.03^{c}	Died
Neutrophils	78.0±0.41^{c}	73.5±0.65^{a}	71.25±0.63^{b}	83.0±2.16^{b}	68.0±0.91^{a}	Died	82.83±1.87^{c}	80.5±1.5^{a}	75.67±0.99^{b}	90.5±0.5^{b}	66.83±0.87^{a}	Died
Basophils	0.0±0.0^{a}	1.25±0.48^{c}	1.0±0.0^{a}	0.0±0.0^{c}	0.75±0.25^{a}	Died	0.17±0.17^{a}	0.5±0.5^{a}	0.17±0.17^{a}	0.5± 0.5^{a}	0.5±0.22^{a}	Died
Eosinophils	2.75±0.95^{a}	5.25±0.25^{c}	4.75±1.0^{a}	4.5±0.29^{c}	4.5±1.19^{a}	Died	1.33±0.42^{c}	1.0±0.0^{c}	0.83±0.31^{c}	0.0±0.0^{c}	0.67±0.33^{c}	Died
Lymphocytes	12.5±0.29^{a}	12.5±0.29^{c}	15.0±0.82^{b}	6.50±0.5^{b}	18.5±0.87^{c}	Died	9.5±0.76^{a}	11.0±1.0^{c}	15.83±0.83^{b}	4.5±1.0^{b}	23.17±0.79^{c}	Died
Monocytes	6.75±0.25^{a}	7.50±0.29^{c}	8.00±0.0^{b}	6.00±2.04^{b}	8.25±0.25^{bc}	Died	6.17±0.87^{a}	7.00±0.0^{c}	7.83±0.40^{a}	4.50±0.5^{b}	8.83±0.30^{ab}	Died

S=survived dogs, D=died dogs, n=number of dogs

probably due to hypovolemia and septic shock with extensive damage to the liver and kidney. It indicated that viremia and accumulation of metabolic waste products in body caused severe damage to the vital organs (Yadav *et al.*, 2011).

The decreased Hb, PCV and TEC values in both the groups (Table 1) might be due to haemorrhage, blood loss in faeces and haemodilution resulting from absorption of fluid from the intestinal tract and compensatory reabsorption of water by the kidney (Zafar *et al.*,1999). In the present investigation, there was leukopenia with neutrophilia and lymphopenia in both the groups (Table 1) which could be due to the viral infection. Whole blood transfusion showed comparatively greater efficacy because it is known to reverse the tissue hypoxia due to decreased blood supply besides restoring the cellular elements of blood to certain extent (Goddard and Leisewitz, 2010). Metronidazole helps in controlling anaerobic infection, diarrhoea and sepsis and combination of these drugs might have helped in establishing the normal metabolism faster than that in group 1. Combination of these two drugs in group II showed better efficacy in reversing the hypovolemic, haemorrhagic and septic shock as compared to group I. The combination of inj. Haemaccel+inj. Ciprofloxacin showed lesser efficacy when compared to the combination of whole blood+inj. Metronidazole, because haemaccel serves as only expander of blood volume without much effect on haematocrit. Volume expansion of blood and body fluid solely cannot serve the purpose of reversing tissue hypoxia, though the perfusion to the vital organs may be improved (Singh *et al*., 2008). Thus, whole blood transfusion alongwith metronidazole may help save the life of a dog affected with CPV.

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