CLINICO-HEMATO-BIOCHEMICAL AND THERAPEUTIC STUDY OF CANINE DISTEMPER: A REPORT FROM NORTH-EASTERN PART OF INDIA

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ABSTRACT

A study was conducted to evaluate clinico-hemato-biochemical parameters and its therapeutic management in ten dogs with canine distemper virus (CDV) infection. Hematology revealed normocytic hypochromic anemia, thrombocytopenia, neutrophilic leukocytosis and lymphopenia with occasional presence of intracytoplasmic inclusion bodies both in RBC and WBC. Plasma biochemistry revealed mild hypoproteinemia and hyperglobulinemia with marked hypoalbuminemia. Prompt diagnosis followed by aggressive therapy helped the animals to recover completely.

KEYWORDS: Canine distemper virus, inclusion bodies, lymphopenia, hypoalbuminemia

INTRODUCTION

Canine distemper (CD) is a severe life-threatening, infectious disease of dogs with a worldwide distribution caused by canine distemper virus (CDV) belonging to genus *Morbillivirus* and family Paramyxoviridae. It is having a worldwide mortality rate second only to rabies (Greene, 2006). Though the disease is enzootic in India (Vanak *et al.,* 2007), very few naturally occurring clinical cases of CD have been reported in India and no systematic study has been undertaken from north-eastern part of India so far. Keeping above facts in view, an effort has been made to study the clinico-hemato-biochemistry and its therapeutic management in naturally occurring cases of canine distemper in dogs in north east part of India.

CASE HISTORY AND OBSERVATIONS

Ten dogs (7 Crossbred, 2 Mongrels and 1 Doberman; 6 males and 4 females) from age groups of 2.5 to 7 months were presented to the outpatient department of the college with complaints of anorexia, depression, bilateral mucopurulent oculonasal discharge. Clinical examination of all the cases revealed pyrexia (mean rectal temperature of 104.2ºF) in 50% cases, dyspnea (mean

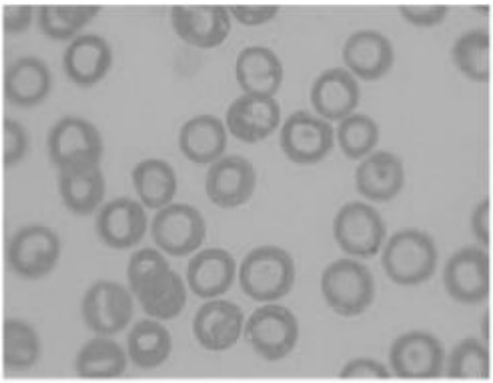

Fig. 1 : Normocytic hypochromic anaemia. Giemsa stain (x1000)

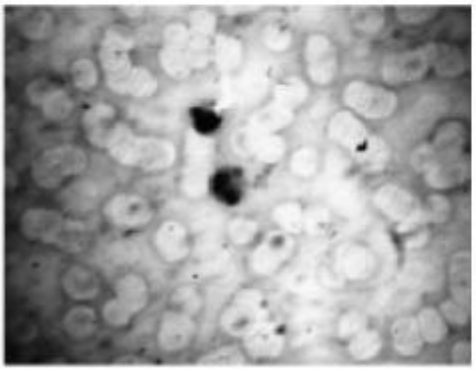

Fig. 2 : Cytoplasmic inclusion in a circulating neutrophil. Giemsa stain (x1000)

Table 1. Comparative hemato-biochemical indices of canine distemper infected dogs on day 0 and two weeks post-therapy (Mean ± SE).

	On day 0	Two weeks post-therapy	Healthy control
Hb (g/dl)	9.60±0.65^{s}	12.15±1.03^{b}	14.45±0.61^{b}
Hematocrit (%)	30.75±1.70^{a}	39.50±2.22^{b}	42.85±2.20^{b}
TEC (x 10^6/µl)	4.50±0.31^{a}	5.57±0.50^{b}	6.17±0.46^{b}
TLC (x 10^3/µl)	14.6±1.08^{a}	13.47±0.65^{a}	13.6±0.91^{a}
N (%)	90.25±0.85^{a}	79.25±2.87^{b}	66.75±1.80^{c}
L	5.00±0.71^{a}	12.25±1.3^{b}	15.25±1.11^{b}
M	3.50±0.29^{a}	7.00±1.08^{b}	6.0±0.91^{b}
E	1.25±0.48^{NS}	1.50±0.65^{NS}	1.5±0.65
Platelet (x 10^3/µl)	159.50±31.94^{a}	240.25± 24.56^{b}	265.50±18.82^{b}
Total protein (g/dl)	4.75±0.41^{NS}	5.30±0.34^{NS}	5.50±0.23
Albumin (g/dl)	1.87±0.13^{a}	2.60±0.25^{b}	2.77±0.13^{b}
Globulin (g/dl)	2.87±0.48^{NS}	2.70±0.15^{NS}	2.72±0.19
ALT (U/L)	64.50±17.02^{NS}	62.5±10.28^{NS}	47.25±9.84
BUN (mg/dl)	25.25±3.20^{NS}	24±1.87^{NS}	22.5±1.32
Creatinine (mg/dl)	0.82±0.22^{NS}	0.775±0.19^{NS}	0.70±0.18

$^{a, b}$ Values bearing different superscripts on day 0 and 14 in a row differ significantly ($p<0.05$)
Comparison has been made in a row with healthy control; S- significant, NS- non significant

respiratory rate of 45/min/) in 60% cases, tachycardia (mean heart rate of 124/min) in 50% cases, inappetance to anorexia in all the cases, depression (50% of cases), bilateral mucopurulent oculonasal discharge in 70% cases, congested conjuctival mucus membrane (in 50% cases), dehydration (mean dehydration level ≤4%) in 40% cases and vesicular to pustular dermatitic lesions on ventral abdomen (80% of cases) as the predominant clinical variants whereas myoclonus (30% of cases), nasal hyperkeratosis (20% of cases), hard pad (10% of cases), vomiting and diarrhea were noticed as the minor clinical variants.

Hematology revealed significant (≤ 0.05) decrease in the level of Hb, RBC, hematocrit and thrombocyte count in 70% of cases was indicative of normocytic hypochromic anemia (Fig. 1) as well as thrombocytopenia and neutrophilic leukocytosis with lymphopenia in 80% of cases. There was also occasional presence of intracytoplasmic inclusion bodies both in RBC and WBC in 20% cases (Fig. 2). Plasma biochemistry revealed significant (≤ 0.05) hypoalbuminemia (Table 1).

Presumptive diagnosis was made on the basis of history, physical examination, characteristic clinical signs, laboratory findings followed by confirmation with lateral flow immunochromatographic assay (Scanvet) marketed by Intas.

TREATMENT AND DISCUSSION

Treatment of CD is symptomatic, supportive, and frequently unrewarding except if therapy instituted at a very early stage in intensive manner, low pathogenecity of virus as well as host immunity (Greene, 2006). Inspite of all the odds, because of our prompt diagnosis followed immediately by intensive therapy, ten animals did recover completely. The therapy instituted involved mandatory intravenous preparations of dextrose 10% @ 30 ml/kg OD, Ringer's lactate @ 80 ml/kg OD, Ceftriaxone @ 50 mg/kg OD, Xlplex (multivitamin) @ 2ml OD, Hermin (amino acid drip) @ 10 ml/

kg, Melonex @ 0.2mg/kg BD (for 3 days only), Deriphylline @6mg/kg BD etc. till recovery. The varied clinical signs observed in these CD cases might be attributed to virulence of the virus strain, environmental conditions and host age and immune status (Nelson and Couto, 2009). As per Greene (2006), dogs with skin lesions usually have favorable prognosis which supported our findings. Anemia may be due to erythroid hypoplasia because of persistence of the virus in the bone marrow (Ezeibe and Udegbunam, 2008). Neutrophilic leukocytosis with lymphopenia may be attributed to viral multiplication in the lymph node (Heller *et al*., 1998).

There was no sex or breed predilection. But the disease was more common in young dogs of < 7 months of age with marked severity (Nelson and Couto, 2009). The disease was observed throughout the year mostly due to lack of vaccination and partly to favorable environment in this part of the country both in summer (20 to 29 °C) and winter (7 to 21 °C) for the virus to thrive.

The dogs were assessed for 28 days at an interval of 7 days post-therapy. Clinical improvements with respect to normal vigour and appetite were observed gradually by 72 hours post therapy with complete regainment of appetite by 5th day post-therapy. Significant improvements were observed 14 days post-therapy with respect to Hb, PCV, TEC, thrombocyte and albumin level as compared to day 0 (table 1).

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