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Effects of Theileriosis on Blood Parameters of Exotic Cattle and Efficacy of Buparvaquone and Oxytetracycline

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Abstract: Hematological values of theileriosis infected animals before any treatment revealed 6.14 ± 0.6 , 24.4 ± 0.76 and 7.5 ± 1.7 in group B and 5.4 ± 0.4 , 25.6 ± 0.31 and 7.2 ± 1.26 in group C of TEC, PCV and Hb respectively. While in A group (control) the values of TEC, PCV and Hb were 6.86 ± 0.4 , 30.2 ± 0.14 and 9.9 ± 1.1 respectively. 15 days after treatment with buparvaquone (Butalex,ICI) in group B the hematological values raised and reached upto 6.45 ± 0.3 , 29.4 ± 0.36 and 9.1 ± 1.02 of TEC,PCV and Hb respectively. oxytetracycline (oxytetra 10, coophavet) treated C group showed values 5.8 ± 0.29 , 26.6 ± 0.31 and 8.2 ± 0.8 of TEC,PCV and Hb respectively. No change in hematological was found in non infected control A group. The efficacy of buparvaquone found to be 55 percent and oxytetracycline 15 percent. These findings indicate that theileriosis have bad affects on hematological values and treatment with buparvaquone is more effective and reliable for theileriosis than any other drug under field conditions.

Key words: Friesian Cattle, Total Erythrocyte Count, Packed Cell Volume, Hemoglobin Concentration, Buparvaquone, Oxytetracycline

Introduction

Theileriosis is one of the most important diseases of hemoparasites and is transmitted by ticks belonging to the genera *Hyalomma* and *Boophilus*. This disease has posed a great threat to live stock industry and caused huge economic losses due to death of calves and adult animals (Hussain *et al.*, 1990).

In Pakistan recently the susceptibility to the tick borne disease has increased due to introduction of cross breeding programs with imported semen of purebred Friesian and Jersey breeds. Crossbred and pure bred suffer more acutely from the disease as compared to indigenous stock. The present study was designed to know the susceptibility of exotic cattle to wards theilerioses and its effects on blood parameters.

Materials and Methods

Sixty Friesian cattle (female) were used in this study. Managemental conditions were same for all the animals. All the animals were divided into three equal groups A, B and C. Group A was kept as non-infected Control, while animals of groups B and C were showing clinical signs of disease and were positive for theileriosis (Diagnosed based on blood examination). Approximately 10 ml of blood was drawn from jugular vein into a sterilized and dry syringe. A drop of blood was placed on a clean glass slide for making blood smear and subsequently stained with Giemsa's stain as suggested by MAFF (1986). Then diagnosis was confirmed by glass slide method as described by Soulsby (1982). The remainder blood sample was poured into test tube containing 1 percent EDTA and mixed by gentle shaking. The blood samples were brought to the laboratory for hematological studies. Methods of total erythrocyte count (TEC), packed cell volume (PCV) and hemoglobin concentration (Hb) was done as suggested by Benjamin (1978). Then animals of group B were treated with buparvaquone while group C with oxytetracycline as per directions of manufacturer. Fifteen days after medication, again 10 ml of blood from each animal containing 1 percent EDTA was collected for hematological purpose to know the efficacy of buparvaquone and oxytetracycline.

Results and Discussion

Total erythrocyte count (TEC), Packed cell volume (PCV) and Hemoglobin concentration (Hb) in group B was 6.14 ± 0.6 million/ μ l, $24.4 \pm 0.76\%$ and 7.5 ± 1.7 mg/100 ml respectively. Fifteen days after treatment with buparvaquone (Butalex; ICI) the

hematological values raised and reached up 6.54 ± 0.3 million/ μ l, 29.4 ± 0.36 percent and 9.1 ± 1.02 mg/100 ml of TEC,PCV and Hb respectively (Table 1).

Table 1: Hematological Values of Group A, B and C Before and after Treatment and Recovery Percentage

Groups	A	B	C
TEC million/μl			
Before treatment M \pm SD	6.86 ± 0.4	6.14 ± 0.6	5.4 ± 0.4
After treatment M \pm SD	6.86 ± 0.4	6.54 ± 0.3	5.8 ± 0.29
PCV %			
Before treatment M \pm SD	30.2 ± 0.14	24.4 ± 0.76	25.6 ± 0.31
After treatment M \pm SD	30.2 ± 0.14	29.4 ± 0.36	26.6 ± 0.31
Hb mg/100 ml			
Before treatment M \pm SD	9.9 ± 1.1	7.5 ± 1.7	7.2 ± 1.26
After treatment M \pm SD	9.9 ± 1.1	9.1 ± 1.02	8.2 ± 0.8
Recovery %age 15 days after treatment			
Butalex	-----	55%	-----
Oxytetra 10	-----	-----	15%

TEC = Total erythrocyte count (million/ μ l)

PCV = Packed cell volume (%)

Hb = Hemoglobin concentration (mg/100 ml)

Similar study have been conducted by Kipton *et al.* (1983). who found decreased hematological values when animals were affected with Theileriosis. After treatment the hematological values raised considerably. These findings are in close agreement with that of Shastri (1989) and Sharma and Mishra (1990) who found significant difference between the hematological values of pre and post medication with buparvaquone. In group C before treatment the hematological values of TEC, PCV and Hb were 5.4 ± 0.4 million/ μ l, $25.6 \pm 0.31\%$ and 7.2 ± 1.26 mg/100 ml respectively. After treatment with oxytetracycline (Oxytetra 10), the values raised slightly and reached upto 5.8 ± 0.29 million/ μ l, $26.6 \pm 0.31\%$ and 8.2 ± 0.8 mg/100 ml of TEC, PCV and Hb respectively. This study is in line with Srivastava *et al.* (1987) who found slight increase in hematological values when animals were treated with oxytetracycline. In group A the hematological values of TEC, PCV and Hb were 6.86 ± 0.4 million/ μ l,

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30.2±0.14% and 9.9±1.1 mg/100 ml respectively. These values remained same as this group was non-infected non treated control.

The recovery percentage of buparvaquone was 55 and with oxytetracycline 15. This study is in line with Hussain *et al.* (1990) and Dhar *et al.* (1988) who found better recovery rate when animals were treated with buparvaquone. It is therefore concluded that Theileriosis affects the blood parameters of exotic cattle (Friesian) and treatment with buparvaquone has better results than oxytetracycline.

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