CONCOMITANT THEILERIA ANNULATA AND ANAPLASMA MARGINALE INFECTIONS IN A CROSS BRED DAIRY HERD

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ABSTRACT

Investigation was carried out in response to a report of mortality among Jersey crossbred dairy cattle at Therkumedu village, Tirunelveli district which were purchased from Chittoor district, Andra Pradesh. Clinical examination was carried out in 38 animals. Most of the animals showed signs of general weakness, dullness, anaemia, icteric mucus membrane, lymphadenopathy, acariasis, bruxism, debility and passing semisolid faeces coated with mucus. Blood smear examination revealed the presence of T. annulata piroplasm and A. marginale inclusions. All the affected animals were treated with Buparvaquone @ 2.5 mg/kg and Oxytetracycline @ 20 mg/kg for 7 days supported with parenteral haematinics (Tribivet) and liver extract. Control of ectoparasites was effected with cypermethrin @ 0.2 per cent as external application and 0.4 per cent spray in animal sheds. All the treated animals recovered slowly and became normal.

Key words: Blood parasite, Theileriosis, Anaplasmosis, Crossbred cows

INTRODUCTION

Haemoproteozoan diseases cause devastating losses to the livestock industry and hence pose major constraints to the dairy industry throughout the world. In the absence of appropriate control strategies, the haemoproteozaal diseases will have serious economic impact in view of mortality, reduced milk yield and lowered animal draft power which presents a major constraint to bovine production thus hindering agricultural and socio-economical development of vast area in India (Suryanarayana, 1990). Among them, the genus Theileria, the intracellular parasite and the genus Anaplasma, the intracellular rickettsia are of great economic importance since Devendra (1995) reported the annual loss of US $800 million due to tropical theileriosis. The present paper details the incidence of theileriosis and anaplasmosis in crossbred cattle herd.

MATERIALS AND METHODS

The present study was conducted at Therkumedu village, Shenkottai taluk of

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Tirunelveli District, Tamilnadu where there was continuous death among Jersey crossbred dairy cattle herd. The animals were purchased from Chittoor district, Andra Pradesh. The detailed history of the feeding and housing, number of animals affected, mortality pattern, vaccination status and prevalence of tick vectors were recorded. Clinical examination was carried out in 38 animals and most of the animals showed signs of general weakness, dullness, bruxism, anaemia, icteric mucous membrane, lymphadenopathy, acariasis, and debility. The animals passed semisolid faeces coated with mucus. The ruminal movements were sluggish. Auscultation of the lungs showed exaggerated breathing sounds and heart sound extended over the lung area. Only one animal showed pyrexia. Blood smears and whole blood were collected from ailing animals. The blood smears were stained with Giemsa stain and examined under oil immersion microscope. Blood samples were collected from jugular vein from ten healthy and ten affected animals for haematological analysis.

RESULTS AND DISCUSSION

Blood smear examination revealed that out of the ten blood smears examined, five animals had piroplams of *Theileria annulata* and two animals had morulae of *Anaplasma marginale*.

The mean values of haematological parameters (Haemoglobin concentration, packed cell volume, total erythrocyte counts and total leukocyte count) are presented in Table 1. The affected animals revealed reduced haematological parameters which were well above the normal range reported for cattle by Jain (1986). There was a highly significant (P<0.01) difference between the health and affected animals in all haematological parameters.

All the affected animals were treated with single dose of Buparvaquone (ZUBION - INTAS) @ 2.5 mg/kg and Oxytetracycline @ 20 mg/kg for seven days. Supportive therapy with parenteral haematinics (Tribivet) and liver extract was also given. The animals were also supplemented orally with stenot liquid. Control of ectoparasites was effected with cypermethrin @ 0.2 per cent as external application and 0.4 per cent spray in animal sheds at weekly intervals for four weeks. All the treated animals recovered slowly and become normal. Subsequent examination of blood smears revealed the absence of *T. annulata* and *A. marginale*.

The present study confirmed the presence of theileriosis and anaplasmosis infection in crossbred cattle as observed by Siosdia and Mandial (1986). Tick population observed on the affected cattle was constituted mainly by *Hyalomma annatolicum anatolicum*, correlating the fact that incidence of *Theileria annulata* is tick borne pathogen. The results supports the earlier study of theileriosis infection (Jithendran and Sharma, 1998) who recorded cases of theileriosis are generally observed during summer or rainy season when the ticks have higher activity although sporadic outbreaks have been recorded year round. Low parasitemia recorded in positive cases indicated the chronic form of disease. The clinical signs recorded *viz.*, anaemia, icterus, fever, weakness, weight loss and sometimes the death of the affected animals which could be due to the endogenous pyrogens liberated by *T. annulata* and *A. marginale* causing destruction of erythrocytes and triggering various haemopoietic and thermoregutory centers of the body. Bundza and Samagh (1982) also
recorded similar findings in imported cattle in Canada affected with theileriosis and anaplasmosis.

Haemogram of the infected animals revealed anaemia as indicated by a significant decrease (P<0.01) in RBC, Hb and PCV levels. It reflects that animals’ haemopoietic system being activated in response to erythrophagocytosis (initiated by parasitic damage to erythrocytes) and decrease in RBC. This may also be due to increased level of activated complement products an removal of destroyed cells by bovine reticulo-endothelial system.

The results of the present study are in agreement with Mohammed et al. (2007) who

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Affected animals</th>
<th>Healthy animals</th>
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<tbody>
<tr>
<td>Haemoglobin (Hb g/dL)</td>
<td>4.0b ± 0.33(10)</td>
<td>12.02a ± 0.19(10)</td>
</tr>
<tr>
<td>Packed cell volume (PCV %)</td>
<td>12.5b ± 0.17(10)</td>
<td>40.0a ± 0.98(10)</td>
</tr>
<tr>
<td>Total erythrocyte count (TEC 10⁶/μL)</td>
<td>2.13b ± 0.13(10)</td>
<td>8.75a ± 0.14(10)</td>
</tr>
<tr>
<td>Total leucocyte counts (TLC 10³/μL)</td>
<td>6800b ± 933(10)</td>
<td>9530a ± 0.33(10)</td>
</tr>
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</table>

**Values sharing difficult superscript in a row differ significantly  (P<0.01)**
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REFERENCES


