



E-ISSN: 2320-7078

P-ISSN: 2349-6800

JEZS 2019; 7(3): 624-626

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Received: 13-03-2019

Accepted: 17-04-2019

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A study on babesiosis in HF cattle

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Abstract

Babesiosis is an emerging economically important tick borne diseases. The two main species to cause disease are *Babesia bovis* and *B. bigemina*. A Holstein Friesian cattle aged 6 years with the history of anorexia, high fever, dyspepsia, dark brown urine, dyspnoea and serous nasal discharge was diagnosed on the basis of history of animal, clinical examination, physical examination and laboratory examination. Animal was successfully treated with Diminazene Aceturate, oxytetracycline, Melonex, Avil, Tribivet, liquid himShakti, rumentas and Doramectin.

Keywords: Babesia, cattle, treatment, Diminazene Aceturate

Introduction

Bovine babesiosis is an emerging economically important tick-borne haemoprotozoan and zoonotic disease of dairy animals caused by *Babesia bigemina* (McCosker, 1981) [10]. *Babesia bovis* and *B. bigemina* are the most prevalent species which are found throughout most of the tropical and subtropical regions due to the universal distribution of the ixodid tick. Due to high premanence of tick vectors, this infection is more prevalent in tropical and subtropical countries (Bock *et al.*, 2004) [1]. Babesiosis is the second most widespread blood-borne disease of animals (Homer *et al.*, 2000; Hunfeld *et al.*, 2008; Gohil *et al.*, 2013) [5, 6, 4] and, prominently also as an emerging zoonosis of humans (Homer *et al.*, 2000; Kjemtrup and Conrad, 2000; Zintl *et al.*, 2003; Hunfeld *et al.*, 2008; Leiby, 2011; Gohil *et al.*, 2013) [5, 8, 22, 6, 9, 4]. Babesial parasites are the second most common and widespread blood parasites after trypanosomes found in the world and having considerable worldwide economic, veterinary as well as medical impact. According to McLeod and Kristjanson (1999) [11], due to this disease, India suffers a loss of about 57.2 million US dollars annually as a result of direct loss through mortality, reduction in milk and meat yield as well as indirect losses through the expenses done on treatment and control measures. Several reports on the occurrence of babesiosis in cattle in India are available from which it can be concluded that there is a continuous increase in number of cases (Reddy *et al.*, 1997; Jithendran, 1997; Garg *et al.*, 2004; Ravindran *et al.*, 2002, 2007; Singh *et al.*, 2009) [16, 7, 3, 14, 15, 19]. It occurs most commonly in exotic crossbred cattle under stress conditions (Radostits *et al.*, 2000) [13], particularly in tropical and subtropical countries including India, when the tick population is very high. Buffaloes possess natural resistance to babesiosis due to which they rarely show clinical signs of babesiosis because of latency of infection (Roychoudhury and Gautam 1979) [17]. However, these may act as the reservoir of infection to cattle (Bock *et al.*, 2004) [1].

History and clinical signs

A Holstein Friesian cattle aged 6 years was presented to the veterinary clinical complex with history of anorexia, high fever, dyspepsia, coffee coloured urine, dyspnoea and serous nasal discharge. On physical examination ticks were seen on the body of cattle. On clinical examination of cattle it was found that mucous membrane was pale, rumen motility was decreased and lymph nodes were slightly enlarged.

Diagnosis

On the basis of history, clinical signs and presence of ticks on the body it was tentatively diagnosed as a case of Babesiosis. Further, various laboratory tests were performed such as complete blood count (CBC), blood serum examination, urine analysis and blood slide preparation and stained with Giemsa stain. CBC showed a significant decrease in packed cell

volume (PCV), haemoglobin (Hb), total leucocytic count (TLC), differential leucocytic count (DLC) and the total erythrocytic count (TEC). In blood serum examination parameters such as total protein, albumin, globulin, ALKP and glucose were found to be decreased and ALT & AST were increased. Urine examination revealed haemoglobinuria. Thin blood smears prepared and stained with Giemsa stain (Soulsby, 2005) [20], on microscopic examination (100 X) of slide, piroplasm of *Babesia bigemina* with in the affected erythrocytes were seen (Fig. 1) and the case was finally diagnosed as that of babesiosis.

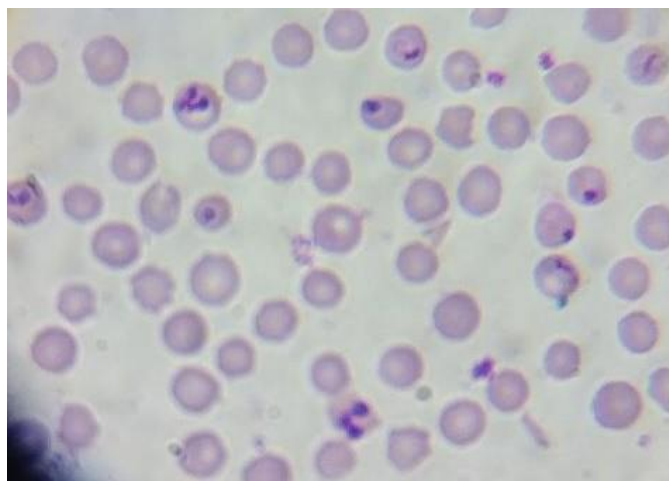


Fig 1: Blood smear showing piroplasm of *Babesia bigemina* with in the affected erythrocytes

Therapeutic management and Discussion

The clinical findings in this case such as fever, anorexia, dark brown urine were in accordance with that of Yeruham *et al.* (2003) [21]. Total serum protein level and blood glucose were declined during the hemolytic phase of Babesia infected cattle (Fujinaga, 1981) [2], while protein profile was found normal by Pandey and Misra (1987) [12]. In bovine babesiosis, packed cell volume (PCV), haemoglobin (Hb), total leucocytic count (TLC), differential leucocytic count (DLC) and the total erythrocytic count (TEC) were significantly decreased and this might be due to the intravascular haemolysis (Sharma *et al.*, 2000) [18]. The cattle was treated with Diminazene Aceturate (injection Berinil) 20 ml deep intramuscularly on the neck. Along with Diminazene Aceturate, oxytetracycline 100 ml in 1 litre NS (intravenously) for 3 days, melonex 20ml intramuscularly for 3 days, avil 10 ml intramuscularly for 3 days, tribivet 10 ml intramuscularly for 3 days and liquid himshakti 100ml per os, twice in a day for 10 day were also given. 2 bolus of rumentas per os, twice a day for 5 days were given to increase rumen motility. 8 ml Doramectin was also given intramuscularly to eliminate ticks on the body. Due to overall treatment babesia was eliminated and cattle resumed normal appetite.

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