



P-ISSN: 2349-8528

E-ISSN: 2321-4902

IJCS 2020; 8(1): 1154-1156

© 2020 IJCS

Received: 01-11-2019

Accepted: 03-12-2019

Deepak Kumar Sharma

Assistant Professor, Department of Veterinary Microbiology, College of Veterinary and Animal Sciences, Navania, Udaipur, Rajasthan, India

Rajesh Singathia

Assistant Professor, Department of Veterinary Microbiology, College of Veterinary and Animal Sciences, Navania, Udaipur, Rajasthan, India

CS Bhatnagar

Regional Disease Diagnostic Centre, Department of Animal Husbandry, Udaipur, Rajasthan, India

Vijay Manne

Regional Disease Diagnostic Centre, Department of Animal Husbandry, Udaipur, Rajasthan, India

Savita Meena

Regional Disease Diagnostic Centre, Department of Animal Husbandry, Udaipur, Rajasthan, India

Corresponding Author:**Deepak Kumar Sharma**

Assistant Professor, Department of Veterinary Microbiology, College of Veterinary and Animal Sciences, Navania, Udaipur, Rajasthan, India

Acute anaplasmosis in a holstein-friesian cross breed cattle: A case report

Deepak Kumar Sharma, Rajesh Singathia, CS Bhatnagar, Vijay Manne and Savita Meena

DOI: <https://doi.org/10.22271/chemi.2020.v8.i1p.8406>

Abstract

A six year old Holstein-Friesian cross-bred cow with the history of weakness, anorexia, shivering and respiratory distress, marked reduction in milk yield, difficulty in standing after sitting since a week was reported in Udaipur, Rajasthan. On hematological analysis, Low haemoglobin level (2.8 gm %) was reported. On microscopic examination of the stained blood smear revealed the presence of *Anaplasma marginale* organisms as solid dots on the periphery the RBC. Based on these findings a diagnosis of anaplasmosis was made and the case was treated with Oxytetracycline @20 mg/kg body weight, I/V, for five days, Imidocarb (3 mg/kg body weight) for one day and other supportive therapies. Improvement was noticed after three days of treatment.

Keywords: *Anaplasma marginale*, giemsa stain, oxytetracycline, Rajasthan

Introduction

Anaplasma is an obligate intracellular rickettsial organism which infects the blood cells of mammals (Rymaszewska and Grenda 2008) [15]. *Anaplasma marginale* is an obligate intraerythrocytic rickettsial organism belonging to the family *Anaplasmataceae* of the order Rickettsiales (Brahma *et al.*, 2018) [4]. It mainly affects cattle but other ruminants like buffalo, bison, African antelopes can also be infected (Vatsya *et al.*, 2013) [18].

Anaplasma is one of the most important parasites transmitted by at least 20 ticks species (Rajput *et al.*, 2005) [13]. It is transmitted mainly by tick *Rhipicephalus microplas* which is considered to be the main vector (Aubry and Geagle, 2011) [2]. The organism is also transmitted mechanically by infected RBCs through insect bites, needles and during minor operational procedures like dehorning *etc.* Infection is characterized by progressive haemolytic anaemia, brownish urine, muscular tremors, dullness/depression, hyper-excitability, rapid deterioration of the physical condition, loss of appetite, constipation, pale mucus membrane and laboured breathing, abortion (Bram, 1983) [5]. Anaplasmosis is endemic in tropics and subtropics (Torina *et al.*, 2008) [17]. The occurrence of anaplasmosis in India has been reported from various states like Rajasthan (Bhatnagar *et al.*, 2015) [3], Haryana (Kumar and Sangwan, 2010) [9], Tamil Nadu (Karunamoorthy *et al.*, 1992 [7]; Ramesh *et al.*, 2008[14]), Kerala (Chirayath *et al.*, 2012; Nair *et al.*, 2013) [6, 10], Maharashtra (Kolte *et al.*, 2003) [8]. The present paper reports the occurrence and successful treatment of anaplasmosis in a Holstein-Friesian cross breed cattle.

Case history

A six year old Holstein-Friesian cross-bred cow with the history of weakness, anorexia, shivering and respiratory distress, marked reduction in milk yield, difficulty in standing after sitting since a week was reported in Udaipur, Rajasthan.

Clinical examination

On close physical examination, enlarged prescapular lymph nodes, whitish mucous membrane (Fig. 1), dullness, serous nasal discharge, and severe tick infestation were noticed. Physiological parameters like rectal temperature, heart rate and respiratory rates were found to be 102.5 F, 87 beats per minute and 49 per minute respectively.

About 5 ml of blood sample was collected by jugular venipuncture into an EDTA vacutainer for haematological examination. Peripheral blood was also collected from ear vein and a smear was stained with giemsa to look for any blood parasite (Brahma *et al.*, 2018) [4]. Both blood smear examination and calculation of haematological parameters *viz.* haemoglobin concentration, total leucocyte count was done. Ticks were collected, processed and identified as per standard procedure (Soulsby, 2006) [16].

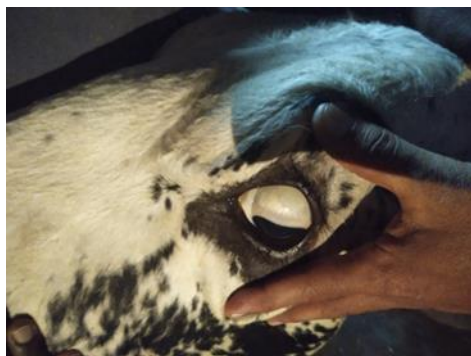


Fig 1: Photograph showing whitish mucous membrane

Diagnosis

Microscopic examination of the stained blood smear revealed the presence of *Anaplasma marginale* organisms as solid dots on the periphery the RBC (Fig. 2). Based on the morphological characters, the collected ticks were identified as *Rhipicephalus* spp. Based on all these findings a diagnosis of anaplasmosis was made.

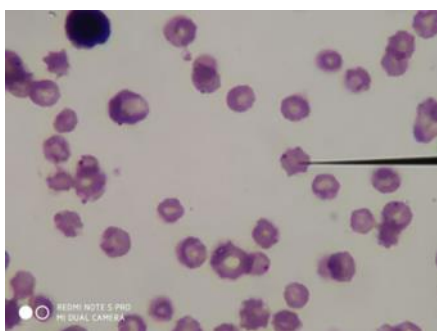


Fig 2: Photograph showing *Anaplasma marginale* at the margin of erythrocyte in giemsa stained smear (x100)

Treatment

The case was treated with Oxytetracycline @20 mg/kg body weight, I/V, for five days, Imidocarb (3 mg/kg body weight) for one day, Imferon (5 ml), Tribivet injection @ 20 ml, Tonophos injection @ 20 ml intramuscularly each at alternate days for 5 occasion, Vit AD₃ injection @ 10 ml intramuscularly for one day Other supportive therapies like Meloxicam and Paracetamol @0.5 mg/kg body weight, I/M for 5 days, Calcium magnesium plus 20% dextrose (Mifex) 450 ml, intravenous was given. Blood transfusion (500 ml) from healthy non-descript cattle was also done.

Results and Discussions

Clinical sign and symptom which are observed in present study like pyrexia, enlargement of lymph nodes and inappetence are in conformation with the findings of Kolte *et al.*, (2003) [8] and Priyanka *et al.*, (2017) [11] who also reported the presence of similar sign and symptom. Other symptoms

like grinding of teeth (Karunamoorthy *et al.*, 1992) [7], staggering gait and incoordination (Ramesh *et al.*, 2008) [14] were also observed in the present case. Microscopic examination of the stained blood smear revealed the presence of *Anaplasma marginale* organisms in the RBC. Despite recent advances for diagnosis of anaplasmosis from clinical samples, classical giemsa stained thin blood smear is a gold standard test for early, easy and economic detection of parasite (Brahma *et al.*, 2018) [4]. On hematological examination, hemoglobin and total leukocyte count were *i.e.*, 2.8 gm % and 18000 cells/cmm respectively. Low haemoglobin level (2.8 gm %) in this study are in the agreement with the finding of Vatsya *et al.*, 2013 [18]; Arunkumar and Nagarajan (2013) [1]; Priyanka *et al.*, 2017 [11] and Brahma *et al.*, 2018 [4] who also observed low haemoglobin level values in *Anaplasma* infected animals.

Blood transfusion in large animals is not commonly done in India, though, it is recommended in standard text book (Radostitis *et al.*, 1995) [12]. The major hurdle in this approach is availability of blood transfusion bags. So a direct approach has been made in this case using 50 ml syringe for transfusion blood from non-descript donor cow to affected cow. Significant clinical improvement was noticed after 3 days of treatment with increasing appetite, decreasing body temperature and slightly pinkish mucus membrane (Fig. 3) and the case as fully clinical recovered after some time which was consistent with work of Vatsya *et al.*, 2013 [18] who also observed similar finding. Faster recovery might be attributed to the early diagnosis, higher dose of oxytetracycline and supportative therapy with blood transfusion used in the present case. This is in corroborate the finding with the findings of Brahma *et al.*, 2018 [4] who opined that Oxytetracycline is more effective at higher doses.



Fig 3: Photograph showing pinkish mucous membrane

Conclusion

Anaplasmosis can be successfully treated in Holstein-Friesian cross-bred cow with intra venous administration of oxytetracycline.

Acknowledgement

The authors would like to acknowledge Hon'ble Vice chancellor RAJUVAS Bikaner and Dean, CVAS, Navania Udaipur, for providing necessary facilities and Deputy Director and other staff of Regional disease diagnosis centre, Veterinary polyclinics campus, Department of animal husbandry, Udaipur for providing laboratory diagnostic facilities during the study.

References

1. Arunkumar S, Nagarajan K. A study on prevalence status of *Anaplasma marginale* infection among cattle population of Kancheepuram and in and around Chennai

- district of Tamil Nadu. International Journal of Food, Agriculture and Veterinary Sciences. 2013; 3(1):155-157.
2. Aubry P, Geale DW. A review of bovine anaplasmosis. Transboundary Emerging Diseases. 2011; 58(1):1-30.
 3. Bhatnagar CS, Bhardawaj B, Sharma DK, Meena SK. Incidence of Haemoprotozoan diseases in Cattle in Southern Rajasthan, India. Int. J Curr. Microbiol. App. Sci. 2015; 4(3):509-514.
 4. Brahma J, Baishya BC, Phukan A, Kakati P. *Anaplasma marginale* infection in a cow: A case report. International Journal of Chemical Studies. 2018; 6(3):2405-2406.
 5. Bram RA. Tick-borne livestock and their vectors: the global problem. Tick and tick-borne diseases, FAO Animal Production and Health Paper. World Animal Review. 1983; 36:7-11.
 6. Chirayath D, Lakshmanan B, Pillai UN, Alex PC, Rejitha TS. *Anaplasma bovis* infection in a cow—a case report. J Vet Anim Sci 2012; 43:83-84.
 7. Karunamoorthy G, Varadharajan V, Balachandran C. Prevalence of Haemoprotozoan diseases in crossbred cattle in Tamilnadu. Blue Cross Book. 1992, 62:69.
 8. Kolte SW, Maske SK, Gaholod BM, Kurkure NV. Ehrlichiosis in cattle and buffaloes from Vidarbha, India. Indian Vet J. 2003; 80(5):399-400.
 9. Kumar PP, Sangwan AK. Comparative prevalence of subclinical bovine anaplasmosis under different cattle management. Haryana Veterinarian. 2010; 49:1-5.
 10. Nair AS, Ravindran R, Lakshmanan B, Sreekumar C, Kumar SS, Raju R, Tresmol PV, Vimalkumar MB, Saseendranath MR. Bovine carriers of *Anaplasma marginale* and *Anaplasma bovis* in South India. Tropical Biomedicine. 2013; 30(1):105-12.
 11. Priyanka M, Dhanalakshmi H, Rakesh RL, Thimmareddy PM, Bhat MN. *Monocytic anaplasmosis* in a cow: A case report. J. Parasit. Dis. 2016; 41(3):687-688
 12. Radostitis DM, Blood DC, Gay CC. Veterinary medicine- a textbook of the diseases of cattle, sheep, pigs, goats and horses. Seventh edition, Great Britain by the Bath Press, Avon, 1995, 1149
 13. Rajput ZI, Hu SH, Arijio AG, Habib M, Khalid MJ. Comparative study of *Anaplasma parasites* in tick carrying buffaloes and cattle. J Zlejiang. Univ. Sci. 2005; 6:1057-1062.
 14. Ramesh S, Rajendran A, Veeraselvam M, Rajesh NV, Jayathangaraj MG. Concurrent infection of *Babesia bigemina* and *Ehrlichia bovis* in a cow. Indian Vet J, 2008; 85(5):543.
 15. Rymaszewska A, Grenda S. Bacteria of the genus *Anaplasma*—characteristics of *Anaplasma* and their vectors: a review. Vet Med-Czech, 2008; 53(11):573-584.
 16. Soulsby, E.J.L. Helminths, arthropods and protozoa of domesticated animals, 7th edn. Bailliere Tindall, London, 2006.
 17. Torina A, Alongi A, Naranjo V, Estrada-Peña A, Vicente J, Scimeca S *et al.* Prevalence and genotypes of *Anaplasma* species and habitat suitability for ticks in a Mediterranean ecosystem. Applied Environmental Microbiology. 2008; 74(24):7578- 7584
 18. Vatsya S, Kumar, RR, Singh V, Arunraj MR. *Anaplasma marginale* infection in a buffalo: A case report. Veterinary research journal. 2013; 1(2):51-53.