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Clinical Article

DIAGNOSIS AND THERAPEUTIC MANAGEMENT OF ANAPLASMOSIS IN A CROSS BRED GOAT-A CASE REPORT

ANIL KUMAR*, PANKAJ KUMAR[1], SONAM BHATT[2], VIVEK KUMAR SINGH[1] and ANKESH KUMAR[1]
Department of VCC, [1]Department of Veterinary Parasitology, [2]Department of Veterinary Medicine, BVC, Bihar Animal Sciences University, Patna-800014 (Bihar), India

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SUMMARY

A1.5-year-old male cross bred goat weighing 22 kg body weight was presented at VCC, BVC, Patna with acomplaint of anorexia, occasional serous nasal discharge, coughing and yellow coloured urine. The clinical examination revealed pyrexia (105.2 ºF), pale mucus membrane, dullness, brisket oedema, weakness and mild tick infestation. Haemato-biochemical examination revealed anaemia, hypoproteinemia and hyperbilirubinemia. Parasitological examination of blood smear showed intraerythrocytic *Anaplasma* spp. The goat was successfully treated with a single injection of imidocarb dipropionate@1.2mg/kg body weight, IM followed by inj.oxytetracycline @10 mg/kg BW, IV once a day for 3 days along with supportive treatment. A complete clinical recovery was noticed two weeks after end of treatment.

Keywords: *Anaplasma* spp., Clinical signs, Goat, Treatment

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Goat is commonly referred to as "poor man's cow" and play a major role in the rural economy of India. Various goat diseases can cause significant economic losses, and among these diseases, anaplasmosis is considered as one of the top 10 economically important diseases (Rajasokkappan and Selvaraju, 2016). There are six *Anaplasma* species which infect and cause disease in animals, among these *A. marginale*, *A. centrale* and *A. ovis* are obligate intraerythrocytic rickettsial organism and infect ruminants (Liu *et al.*, 2011), however *A. phagocytophilum* is zoonotic as it affects both humans and animals (Shabana *et al.*, 2018). The disease is mainly transmitted by tick vector *Rhipicephalus microplus* (Ghosh and Nagar, 2014) and characterized by fever, anaemia, jaundice, lethargy, anorexia (Razmi *et al.*, 2006), lower weight gains, reduced fertility, abortions (Garcia-Perez *et al.*, 2003) and case fatalities. In goats, the disease is generally undiagnosed due to its sub-clinical nature and is considered to be of minor importance (Bensaid *et al.*, 2015), but suppressed immune system could cause clinical disease (Berthelsson *et al.*, 2019) and even lead to death in acute cases. Recovered animals become carriers. Although there have been few reports of caprine anaplasmosis documented from different parts of the India (Rajasokkappan and Selvaraju, 2016); but to the best of authors knowledge, Anaplasmosis has never being reported in goats from Bihar. Keeping this in view, the present clinical case report described the diagnosis and therapeutic management of caprine anaplasmosis.

A 1.5-year-old male cross bred goat weighing 22 kg body weight was presented at VCC, BVC, Patna with a complaint of anorexia, occasional serous nasal discharge, coughing and yellow coloured urine. The owner has reported that the goat was treated at government veterinary hospital from last three days, but there was no clinical improvement. On clinical examination, the animal revealed pyrexia (105.2 ºF), pale mucus membranes, dullness, brisket oedema, weakness and mild tick infestation (Fig. 1).

Blood sample was submitted for haemato-biochemical and parasitological examination which revealed haemoglobin 7.2 gm/dl, packed cell volume 21%, total erythrocyte count 4.1 x10^6/µl, total protein 4.92 gm/dl, albumin 1.98 gm/dl, and total bilirubin 0.96 mg/dl. On blood smear examination, *Anaplasma* spp. were detected in erythrocytes (Fig. 2). On the basis of presence of intraerythrocytic *Anaplasma* spp. along with anaemia and clinical signs, a diagnosis of caprine anaplasmosis was made. The goat was treated with a single intramuscular injection of imidocarb dipropionate @1.2 mg/kg BW followed by intravenous inj. oxytetracycline @ 10 mg/kg BW, OD for 3 days along with supportive treatment consisting of inj. meloxicam (@ 0.5 mg/kg BW, IM, OD for three days), vitamin B-complex (@ 2 ml, IM, OD for 5 days) and oral hematinic (@ 10gm, PO, OD for 10 days). The animal showed complete clinical recovery after two weeks of treatment (Fig. 3).

The clinical signs observed in the present case are in agreement with those reported by Razmi *et al.* (2006) and Rubel *et al.* (2021) with the exception of brisket oedema which has been also seen in this study. This could be due to presence of severe hypoproteinaemia. The haematological findings clearly indicated anaemia. The similar observations

*Corresponding author: dranilvet95@gmail.com

were also recorded earlier by Nasreen *et al.* (2016) and Shahatha (2019) which might be due to erythrophagocytosis, activation of a complement system, immune-mediated destruction of erythrocytes and oxidative stress (De *et al.*, 2012). Biochemical abnormalities of hypoproteinemia, hypoalbuminemia and hyperbilirubinemia detected in this study might be attributed due to phagocytosis of erythrocytes in the reticulo-endothelial system and destruction of hepatocytes by *Anaplasma* spp. (Khaki *et al.*, 2018 and Abdullah *et al.*, 2020). Treatment with imidocarb dipropionate and oxytetracycline are effective in clinical recovery against anaplasmosis in goats (Subramanian *et al.*, 2017).

To the best of our knowledge, this is the first clinical case of caprine anaplasmosis in goat, and it appears to be widespread in the goat population in Patna and other districts of Bihar. Anaplasmosis is generally considered to be of minor importance in the goat population, but a suppressed immune system can cause clinical disease and even death in severe cases, resulting in a significant economic loss to the farmer. Imidocarb dipropionate and/or oxytetracycline along with supportive care can clinically cure the disease.

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