American Journal of Zoology
2021; 4(4): 57-60
http://www.sciencepublishinggroup.com/j/ajz
doi: 10.11648/j.ajz.20210404.12

Research Article

Therapeutical Management of Canine Babesiosis in German Shepherd Bitch at Hyderabad, Sindh

Ali Gul Soomro[1], Muhammad Bilawal Arain[1], Adnan Yousaf[1, *], Faiza Rubab[1], Sadia Nusrat Sharna[2], Mughir Khan Lodhi[3]

[1]Faculty of Animals Husbandry and Veterinary Science, Sindh Agriculture University, Tandojam, Sindh, Pakistan

[2]Department of Fisheries Biology & Genetics, Bangladesh Agricultural University, Mymensingh, Bangladesh

[3]Dieases Investigation Laboratory, Department of Livestock and Dairy Development Quetta, Balochistan, Pakistan

Email address:

dr.adnan011@gmail.com (A. Yousaf)

[*]Corresponding author

To cite this article:

Ali Gul Soomro, Muhammad Bilawal Arain, Adnan Yousaf, Faiza Rubab, Sadia Nusrat Sharna, Mughir Khan Lodhi. Therapeutical Management of Canine Babesiosis in German Shepherd Bitch at Hyderabad, Sindh. *American Journal of Zoology*. Vol. 4, No. 4, 2021, pp. 57-60. doi: 10.11648/j.ajz.20210404.12

Received: September 7, 2021; **Accepted**: September 24, 2021; **Published**: November 5, 2021

Abstract: A two-year-old German shepherd bitch weighing 25 kg was shown to the Clinical Department of Veterinary Medicine Sindh Agriculture University Tandojam, Pakistan. Anamnesis revealed 10 days of anorexia, 2 instances of emesis, brown urine, increased water consumption, and intermittent lethargy. Bitch appeared malnourished and had a poor hair coat. Clinical examination revealed a 104.2°F temperature, 128/min heart rate, and 54/min respiration rate, respectively, as well as pale conjunctiva and mucous membrane, elevated CRT, and skin tent twisting time. A stained thin blood smear was examined under a microscope for diagnosis, and a complete blood count (CBC) was performed. The erythrocytic parasite was discovered in a thin blood smear stained with field stain and studied under a compound microscope at 100X magnification. The CBC report revealed anaemia, with a 3.7x1012/L, 23.4%, and 8.2g/dL erythrocytic count, Hematocrit, and haemoglobin level of 3.7x1012/L, 23.4%, and 8.2g/dL, respectively. The blood test and CBC report revealed that the dog had canine babesiosis, which was treated with a single shot of IMIDOCARB DIPROPIONATE, 21 days of Doxycycline Monohydrate, and 7 days of metronidazole. Supportive therapy was also administered till the patient was able to eat properly. When the 21-day treatment period concluded, Bitch was entirely recovered.

Keywords: German Shepherd Bitch, Babesiosis, Therapeutical, Tandojam

1. Introduction

Humans and dogs lived for years together and now it turn out to be one the best human's friend and become valued pet. Dogs are closest to humans due to their splendid and remarkable social behaviors [1]. Due to higher influence on society and numerous roles, dog has given the sobriquet, "man's best friend". Dog evolved from gray wolves and is considered to be the most abundant carnivore [2, 3]. Dogs fulfill its duty for humans in the form of hunting, herding sheep and goats, protection, assisting security forces and more recently, dogs are used to identify thefts [5]. In Pakistan, dogs are mainly kept by security forces, as watch dog in houses and for herding of sheep etc by shepherds. Babesiosis is a tick-borne, intra-erythrocytic parasitic disease of dogs, livestock, horses, and rodents that is economically significant [6]. Babesia canis, Babesia gibsoni, and Babesia annae are Babesia species that cause disease in dogs [19]. Babesia canis, Babesia gibsoni, and Babesia annae are Babesia species that cause disease in dogs. In Pakistan, B. canis is nearly four times more common than B. gibsoni [20]. The order Aconoidasida, family Piroplasmida, and genus babesidae have been assigned to Babesia [National Centre for Biotechnology Information: taxonomy browser]. This disease is not only important for veterinarians, but it also has zoonotic potential. Humans are usually infected by B. microti and B. divergens species [7]. Ticks of the Rhipicephalus genus are the main vectors for

disease transmission, but Dermacentor reticularis, Haemaphysalis bispinosa, and Haemaphysalis longicornis transmit Babesia gibsoni. Due to intravascular and extravascular hemolysis, the major clinical symptoms of Babesiosis in dogs include anaemia and fever [22]. In the years 2004 and 2005, the overall prevalence of canine Babesiosis in Lahore, Pakistan, was found to be 12.49% and 13.97%, respectively [23]. This season, it has been reported that male canines of a young age have an increased tick population. Babesiosis is becoming more common in Pakistan as a result of the country's hot and humid weather [4]. The diagnosis and treatment regimen for a canine babesiosis case are described in this report.

2. Case Presentation

A two-year-old German shepherd weighing approximately 25 kg was brought to the Clinical Department of Veterinary Medicine Sindh Agriculture University Tandojam, Pakistan, with a 10-day history of anorexia, two episodes of emesis, brown urine, and excessive water intake. During the investigation, the owner revealed that the patient was depressed on a regular basis. The vaccination and deworming schedules were adhered to. Bitch was fed dog chow and boiling chicken before she became anorexic. Bitch appeared malnourished, with a drab coat. Clinical examination revealed a 104.2°F temperature, 128/min heart rate, and 54/min respiration rate, respectively, as well as pale conjunctiva and mucous membrane, elevated CRT, and skin tent twisting time. Bitch was determined to be anaemic and dehydrated after this test. The size of the lymph nodes was normal. The lack of ova was discovered in a faecal sample collected for the evaluation of GIT parasites. Blood was taken from the ear vein to make a thin film smear and from the cephalic vein to perform a complete blood count (CBC). The erythrocytic parasite was discovered in a thin blood smear stained with field stain and studied under a compound microscope at 100X magnification. The CBC report revealed anaemia, with a 3.7x1012/L, 23.4%, and 8.2g/dL erythrocytic count, Hematocrit, and haemoglobin level of 3.7x1012/L, 23.4%, and 8.2g/dL, respectively. There was thrombocytopenia (which occurs as a result of spleen damage and sequestration) with a platelet count of 53x109 and lymphocytosis with 88.4% lymphocytes. [The normal CBC values for dogs are RBC count=4.95-7.87x1012/L, PCV/Hematocrit=35-57%, Hb=11.9-18.9g/dL, platelets=211-621x109/L, and lymphocytes=8-21% of total White blood cells (https://www.msdvetmanual.com/appendixes/reference-guides/hematologic-reference-ranges)]. Canine babesiosis was identified based on the history, clinical examination, CBC report, and blood smear investigation. Babesiosis should be distinguished from other infections that produce haemolysis, anaemia, icterus, and fever. While babesiosis can be confused with Ehrlichiosis, Acute anaemia, Lyme disease, Q-fever, and typhoid fever, a stained blood smear and an ELISA test are confirmatory for canine babesiosis. To limit the harm caused by Babesia, this case of bitch infected with Babesiosis was treated with a single shot of IMIDOCARB DIPROPIONATE @ 5mg/kg subcutaneous route, Doxycycline Monohydrate 100mg/day P. O for 21 days, and metronidazole 200mg/day for 7 days. An IV infusion of 5% Dextrose and Lactated Ringer (Ringolact-d, Otsuka Pakistan Ltd.) 400ml/day for 4 days was used to revive dehydration and sustain energy levels. If administered correctly, infusions can be beneficial in this situation. To counteract the negative effects of Imidocarb, 1ml (1mg) atropine sulphate and 1ml (4mg) dexamethasone sodium phosphate were given intramuscularly 10 minutes before.

3. Result

The bitch responded well to the treatment and was able to fully recover. Bitch was healthy and had normal haematological results after 21 days of therapy. Canine babesiosis can be diagnosed in Pakistan using stained blood smears and haematological values, as in this example. The medications indicated above are an excellent choice in cases of Canine Babesiosis.

4. Discussion

Babesiosis is a globally spread protozoal disease caused by Babesia that affects a wide range of animal species. Although the cattle business is the most economically important for this disease [15] canine babesiosis is becoming a more common and serious problem in dogs. Ticks carry disease. Rhipicephalus is the disease's most common vector in Pakistan [11]. Because disease burden is proportional to the number of ticks present in a given location, disease is more widespread during the summer months, when the weather is hot and humid, which favours ticks. Blood transfusion and dog bite are two other ways for Babesiosis to be transmitted [21]. There has also been evidence of transplacental transmission from the dam to the offspring [8]. The sickness manifests itself at a relatively young age in such cases. Various areas have different pathogens for Canine Babesiosis [9]. Babesia is carried by ticks and enters the bloodstream three days after a bite. Attach to RBCs in the blood and endocytose RBCs. Haemolysis anaemia and hypotensive shock are caused by intravascular and extravascular haemolysis. Anorexia, fever, tachycardia, tachypnoea, haemoglobinuria, pale mucous membranes, and splenomegaly are all clinical signs of Babesiosis. Canine Babesiosis can cause paraplegia, which is a rare symptom [10]. Canine babesiosis also causes proteinuria and concentrated urine [14]. If discovered and treated early enough, the condition is not fatal; nevertheless, if the situation becomes complicated, the prognosis becomes bleak. When fever persists despite antipyretic treatment, blood parasitism is suspected. The severity of the disease is proportional to the amount of babesia replication and RBC lysis. Canine Babesiosis can also be caused by immunosuppression and splenectomy. When the condition is not too complicated, a diagnosis of Babesiosis in dogs is made based on symptoms seen, analysis of diff quick stained blood

smear under 100X lens of compound microscope, whereas PCR and serological detection are used to diagnose complicated/chronic cases. Blood is obtained from a peripheral vein, such as the ear or tail veins, for smear creation as previously described. The percentage of RBCs that are impacted varies and can reach 10% [18]. When the body is inflamed or damaged, the level of acute phase protein in the serum rises [16]. In Babesia canis, the levels of acute phase proteins such as C-reactive protein CRP and ceruloplasmin are elevated, but haptoglobin levels are decreased [13]. This is another method of diagnosing and determining the severity of an illness, but simple tests for the detection of acute phase protein levels in serum must be developed first. B. canis and B. gibsoni can be distinguished via serological testing with ELISA [12]. Tick and disease prevalence in a certain area, as well as the season, are contributing variables in Babesia diagnosis, particularly in countries like Pakistan, where modern testing is not available. Babesiosis can be treated with a variety of different medications. Antiprotozoal medicines such as imidocarb dipropionate and diminazine aceturate are commonly used in conjunction with antibiotics such as Doxycycline and Enrofloxacin. Another option is Metronidazole. The combination of atovaquone and azithromycin has been shown to be effective against Babesia gibsoni, but Asian genotypes of B. gibsoni are thought to be resistant. No medicine exists that can entirely eradicate the illness pathogen [17].

5. Conclusion

Babesiosis requires supportive therapy such as blood or electrolytes. In Pakistan, single-dose imidocarb dipropionate 3.5-5 mg/kg injection is used in conjunction with oral doxycycline. Ringer lactate and vitamin B complex (Neurobion®) are often recommended as supportive therapies. There is no drug that can entirely eradicate the parasite from an infected patient, and even after they heal, they can recur. Knowing how pathogens spread is vital for disease control. Ticks are the primary vector for babesiosis transmission. Tick control equates to Babesiosis control. Tick management methods include dipping, spraying, and tick collars. Owners should be encouraged to inspect their pets for ticks on a daily basis and to keep them clean. For the control of ticks on dogs, fipronil spray (Frontline TM) is widely available in Pakistan. Dog bites and blood transfusions are also sources of infection, thus dogfighting should be outlawed, and donor blood should be screened for parasites before being transfused.

Conflict of Interest

The authors declare that they have no competing interests.

References

[1] Ahmad SS, Khan MS, Khan MA (2007). Prevalence of Canine Babesiosis in Lahore, Pakistan. J. Anim. Pl. Sci. 17 (1-2): 11-13.

[2] Ahmad SS, Khan MS, Khan MA (2011). Epidemiology and seasonal abundance of Canine Babesiosis in Lahore, Pakistan. The Journal of Animal and Plant Sciences, 21 (2): 351-353.

[3] Bashir IN, Chaudhry ZI, Ahmed S, Saeed MA (2009). Epidemiological and vector identification studies on canine Babesiosis. Pak. Vet. J. 29: 51–54.

[4] Birkenheuer AJ, Correa MT, Levy MG, Breitschwerdt EB (2005) Geographic distribution of babesiosis among dogs in the United States and association with dog bites: 150 cases (2000-2003). J Am Vet Med Assoc 227 (6): 942-947.

[5] Birkenheuer AJ, Levy MG, Breitschwerdt EB (2004) Efficacy of combined atovaquone and azithromycin for therapy of chronic Babesia gibsoni (Asian genotype) infections in dogs. J Vet Intern Med 18 (4): 494-498.

[6] Bhattacharjee K and Sarmah PC (2013). Prevalence of haemoparasites in pet, working and stray dogs of Assam and North-East India: A hospital based study. Vet. World. 6 (11): 874-878.

[7] Dumler JS, Barbet AF, Bekker CP, Dasch GA, Palmer GH, Ray SC, Rikihisa Y, Rurangirwa FR (2001). Reorganization of genera in the family's Rickettsiaceae and Anaplasmataceae in the order Rickettsiales: unification of some species of Ehrlichia with Anaplasma, Cowdria with Ehrlichia and Ehrlichia with Neorickettsia, descriptions of six new species combinations and designation of Ehrlichia equi and 'HGE agent' as subjective synonyms of Ehrlichia phagocytophila. J. Sys. Evol. Microbiol. 51: 2145–2165. https://doi.org/10.1099/00207713-51-6-2145.

[8] Fukumoto S, Suzuki H, Igarashi I, Xuan X (2005) Fatal experimental transplacental Babesia gibsoni infections in dogs. Int J Parasitol 3 5 (9): 1031-1035.

[9] Hamel D, Shukullari E, Rapti D, Silaghi C, Pfister K, Rehbein S (2015). Parasites and vector-borne diseases in client-owned dogs in Albania. Blood pathogens and seroprevalences of parasitic and other infectious agents. Parasitol. Res.

[10] Jalali R, Mosallanejad MH, Avizeh B, Alborzi R, Hamidi-Nejat AR, Taghipour H (2013). Babesia infection in urban and rural dogs in Ahvaz district, Southwest of Iran. Archives of Razi Institute. 68 (1): 37-42.

[11] Jacobson LS (2006) The South African form of severe and complicated canine babesiosis. Clinical advances 199-2004. Vet Parasitol 138 (1-2): 126-139.

[12] Laha R, Bhattacharjee K, Sarmah PC, Das M, Goswami A, Sarma D, Sen A (2014). Babesia infection in naturally exposed pet dogs from a north-eastern state (Assam) of India: detection by microscopy and polymerase chain reaction. J Parasit Dis. 38 (4): 389–393.

[13] Lorusso V, Dantas-Torres F, Lia RP, Tarallo VD, Mencke N, Capelli G, Otranto D (2010). "Seasonal dynamics of the brown dog tick, Rhipicephalus sanguineus, on a confined dog population in Italy. Med. Vet. Entomol. 24 (3): 309-15. https://doi.org/10.1111/j.1365-2915.2010.00885.x.

[14] Lobetti RG, Jacobson LS (2001) Renal involvement in dogs with babesiosis. J S Afr Vet Assoc 72 (1): 23-28.

[15] Mosqueda J, Olvera Ramirez A, Aguilar Tipacamu G, Canto GJ (2012) Current advances in detection and treatment of babesiosis. Curr Med Chem 19 (10): 1504-1518.

[16] Pennisi MG, Caprì A, Solano-Gallego L, Lombardo G, Torina A, Masucci M (2012). Prevalence of antibodies against Rickettsia conorii, Babesia canis, Ehrlichia canis, and Anaplasma phagocytophilum antigens in dogs from the Stretto di Messina area (Italy). Ticks Tick Borne Dis. 3 (5-6). https://doi.org/10.1016/j.ttbdis.2012.10.026.

[17] Salem NY, Farag HS (2014). Clinical, hematologic, and molecular findings in naturally occurring Babesia canis vogeli in Egyptian dogs. Veterinary Medicine International. doi: 10.1155/2014/270345.270345.

[18] Saud N, Hazarik GC (2000) Studies on incidence and biochemical changes of babesia infection in dogs. Indian Veterinary Journal J 77 (11): 944-947.

[19] Schoeman JP (2009) Canine babesiosis. Onderstepoort J Vet Res 76 (1): 59-66.

[20] Shrivastava S, Shukla PC, Rao ML (2014). An epidemiological study on canine hemoprotozoa in Jabalpur (Madhya Pradesh). Int. J. Agric. Sci. Vet. Med. 2: 4.

[21] Ulutas B, Bayramli G, Ulutas PA, Karagenc T (2005) Serum concentration of some acute phase proteins in naturally occurring canine babesiosis: a preliminary study. Vet Clin Pathol 34 (2): 144-147.

[22] Verdida RA, Hara OA, Xuan X, Fukumoto S, Igarashi I, et al. (2004) Serodiagnosis of Babesia gibsoni infection in dogs by an improved enzyme-linked immunosorbent assay with recombinant truncated P50. J Vet Med Sci 66 (12): 1517-1521.

[23] Vial HJ, Gorenflot A (2006) Chemotherapy against babesiosis. Vet Parasitol 138 (1-2): 147-160.