DUAL INFECTION OF BABESIA AND MICROFILARIA IN A LABRADOR DOG IN MEGHALAYA - A CASE REPORT

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A male Labrador of one year of age was presented to the Division of Animal Health, ICAR, Regional Centre, Umiam, Meghalaya with a primary complaint of anorexia, vomition, red colour urine and fever. The dog was found to be dull with elevated rectal temperature 40°C. Blood smear examination revealed that dog was positive for *Babesia gibsoni* and *Babesia canis* as well as Microfilaria. Radiography of the heart showed slightly enlarged right ventricle. The dog was treated successfully with combination of antihaemoproteozoon, antiparasitic and antibacterial drugs along with supportive treatment of multivitamin and mineral supplements.

**Key words:** Babesia, Dog, Microfilaria.

A number of canine vector-borne diseases such as filariosis, babesiosis and ehrlichiosis are endemic throughout India as diagnosed mostly by morphological methods (Puteri *et al*., 2010)**. The *filariar* nematodes *viz.* *Dirofilaria* spp., *Acanthocheilonema* spp. and *Brugia* spp. have all been reported in Indian dogs (Puteri *et al*., 2010)**. Transmission of the parasite is through the mosquito bite, as a result it is limited to warm weather and duration of the transmission season varies geographically (Knight, 1998). The symptoms of *Dirofilaria* spp infestation in dog may vary from asymptomatic in mild case to exercise intolerance and fainting in severe case. Canine babesiosis is an emerging tick-borne life threatening disease caused by the intra-erythrocytic protozoan parasites under the genus *Babesia* in many parts of the world including India (Singla *et al*., 2014). It is caused by two species of *Babesia* viz; *B. canis* and *B. gibsoni*. The disease is transmitted by ticks. The severity of babesiosis is related to the extent of parasite replication in the host’s red blood cells with subsequent cell lysis. A wide variety of clinical signs like anorexia, lethargy, icterus, vomition, and marked loss of body condition have been observed. The presence of *B. canis, B. gibsoni, D. immitis,* and *Ehrlichia canis* usually in mixed infections in Assam have also been reported (Bhattacharjee *et al*., 2014). Here, we present the case of mixed infection in dog by microfilaria and babesiosis from Ri-Bhoi district of Meghalaya and its treatment.

**Case History and Observations**

A male Labrador of one year of age and 30kg body weight was presented to the Division of Animal Health ICAR, Regional Centre, Umiam with complaints like weakness, vomition, anorexia, fever and haemoglobinurea. The dog had a history of ticks and mosquitoes bite as informed by the owner. During physical examination, the dog had shown poor body condition, dehydration and weakness. Body temperature was pyretic 40°C. However the respiration and heart rate were within the normal range. Mucous membranes were pale.

A blood sample (2ml) was aseptically collected in an EDTA vial for diagnosis of haemoproteozoon parasites. Direct examination of the blood smear without staining revealed the presence of microfilariae (Fig.1). The microscopic examination of Giemsa-stained thin blood smears under oil immersion (100 X) revealed the presence of oval and comma-like organisms in the erythrocytes. On the basis of the morphological size and shape of the intracellular parasites (Fig. 2 and 3), it was identified as *B. gibsoni* and *B. canis*. Due to the detection of microfilariae in the blood, the owner was advised to get the radiography of dog’s chest. The image (Fig. 4) showed slight enlargement of the right ventricle of heart.
Treatment

The dog was treated with ivermectin injection subcutaneously @ 0.3mg/kg body weight at weekly interval for four occasions for microfilaria infection and advised the owner to give doxycycline tablets @ 10mg/kg body weight once daily orally for a month.

For babesiosis, diminazene aceturate was given @ 3.5 mg/kg body weight deep intramuscularly. In addition, supportive treatment with iron injection was given @ 2 ml intramuscularly on alternate days for 5 occasions to control anaemia. For restoring the appetite, multivitamins and minerals @ 5 ml each twice daily orally were given for 20 days. Antacid gel was also given @ 5ml twice daily orally for 7 days to control acidity during the oral antibiotic therapy with doxycycline tablets.

Results and Discussion

The dog recovered eventually after one month of treatment. We observed in our study that a number of canine vector-borne diseases such as filariosis and babesiosis are endemic in tropical areas including North east India causing morbidity and mortality in dogs. The mixed infection by these haemoprotazoons causes more life threatening disease. With the climate change where the dynamics of tick population is changing, the disease distribution over a period of time and place need to be studied so that effective control regime for vector and treatment for parasites can be evolved. The antimicrobial doxycycline and ivermectin was used for microfilaria treatment while diminazene aceturate is effective for *B. canis*. Doxycycline is reported to be helpful in clearance of *B. gibsoni*. Similarly, Grandi *et al.* (2010) suggested that a combination of doxycycline and ivermectin is effective on both microfilaria and adult *D. immitis* in dogs. The benefit of doxycycline result from its ability to remove or reduce the burden of Wolbachia, a rickettsial organism that exists in a symbolic relationship with heartworms (and other filarids), occupying the reproductive tract and lateral chords of the host. Supportive treatment with multivitamin and mineral was essential to the treatment regime. Enlargement of the heart as revealed in radiography could be due to increased functioning of the heart to compensate the blood loss or the presence of worms may cause the enlargement. Timely treatment is effective in controlling and recovery from the disease. Therefore awareness about the clinical signs help in the diagnosis and
management is important to prevent the
disease occurrence.

References
Bhattacharjee, B., Sarmah, P.C., and Barman
N.N. (2014). Seroprevalence of vector
borne parasites and other infections in
naturally exposed dogs of Assam, India.
Veterinary World, 7(2): 87-89.
Grandi, G., Quintavalla, C., Mavropoulou, A.,
Genchi, M., Gnudi, G., Bertoni, G. and
Kramer, L. (2010). A combination of
doxycycline and ivermectin is adulticidal
in dogs with naturally acquired
heartworm disease (Dirofilaria immitis).
Vet Parasitol., 169 (3-4): 347-351.
of Heartworm Infection and Implications
for Chemoprophylaxis. Topics in

Puteri, A., Megat, A.R., Peter, J.I.,
Mukulesh, G., Glen, T.C. and
Rebecca, J.T. (2010)³. Canine vector-
borne diseases in India: a review of the
literature and identification of existing
knowledge gaps, Parasites and Vectors,
3: 28.
Puteri, A., Megat, A.R., Peter, J.I.,
Mukulesh, G., Glen, T.C., Linda, M.M.I.
and Rebecca, J.T. (2010)³. A survey of
canine filarial diseases of veterinary and
public health significance in India.
Parasites and Vectors, 3: 30.
Babesiosis in “Zoonosis: Parasitic
and Mycotic Diseases” S. R. Garg (Eds), 1st
dn., Daya Publishing House, New Delhi,
India. Pp. 207–223.