EMERGENCE OF A THROMBOCYTOPENIC DISORDER IN A GROUP OF WORKING DOGS OF SRI LANKA AIR FORCE

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SUMMARY: The complicated clinical manifestations of canine piroplasmosis with severe thrombocytopenia have been occasionally observed in dogs. This clinical communication describes an acute clinical condition characterized by severe bleeding tendencies with high fatality rates in five groups of working dogs of the Sri Lanka Air Force. It is a multifactorial condition in which known hemoparasites in dogs in Sri Lanka and Anaplasmaphylaxpossibly play roles, requiring further investigation. The clinical condition was successfully managed with a combination of oral antibiotics and prednisolone.

INTRODUCTION

In Sri Lanka, tick bone diseases (TBD) are the most common canine diseases, with Babesiosis and Ehrlichiosis diagnosed as the two important TBDs (Silva, 2016). Hepatozonosis has become common and symptoms similar to Ehrlichiosis caused by Anaplasma Spp have been suspected.

Despite a favorable climate for parasites and vectors, and large populations of stray dogs, information on epidemiology, diagnosis and management of Canine Ehrlichiosis and Anaplasmosis is limited and there is a high probability of introducing new tick borne parasitesto Sri Lanka through the importation of dogs.

The TBDs in dogs are reported to induce immune-mediated thrombocytopenia caused by lysis of platelets through antiplatelet antibodies which have been identified in Ehrlichiosis, Babesiosis, Leishmaniasis, and Dirofilariasis (Lewis et al., 1996; Terrazzano et al., 1996; Breitschwerdt et al., 1988). The pathogenesis of thrombocytopenia with several infectious agents is multifactorial, involving decreased production by the bone marrow and splenic sequestration, in addition to immune-mediated destruction (Mackin, 1995).

This communication discusses the clinical manifestations and prognosis of a condition characterized by immune mediated thrombocytopenia resulting in severe bleeding tendencies and high mortality in five groups of working dogs of the Sri Lanka Air Force. The condition was successfully managed with oral medication for causative hemoparasites, oral hydration and immune suppression.

CASE PRESENTATION

The first group of 9 explosive detecting dogs (8 Labradors, 1 German shepherd of 1.5-2 years of age) at Bandaranayake International Airport at Katunayake developed fever, epistaxis and petechial hemorrhages on the ventral abdomen in July 2016 with severe thrombocytopenia (0.5-1/Field) and granular and large populations of stray dogs, information on epidemiology, diagnosis and management of Canine Ehrlichiosis and Anaplasmosis is limited and there is a high probability of introducing new tick borne parasitesto Sri Lanka through the importation of dogs.

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livers. Later in the month, similar clinical signs appeared in 3 other dogs at the Katunayake Airport, and all three were Labradors of 1.5-2 years of age. Two were treated 12 hourly with oral Doxycycline (5mg/ Kg), Clindamycin (15mg/ kg 12h) and Metronidazole (20 mg/ Kg) combination with Prednisolone (1mg/ kg), while the other dog was treated only with Chloramphenicol (25mg/ Kg) and Methylprednisolone (2mg/ Kg) 12 hourly. No parenteral fluid was given and all dogs recovered.

During this time a dog handler also suffered from fever with petechiation on palms and hands. He was suspected of a zoonotic disease though he was negative for dengue antigen PCR test and for Rickettsia.

In early August 2016, four pups (2 German shepherds and 2 Labradors, 5 months of age) developed a similar condition with high fever and petechial hemorrhages on the ventral abdomen, immediately after being transferred from Diyawathalawa breeding kennel to Anuradhapura Air Force camp. Blood pictures revealed severe thrombocytopenia ranging from 0.35-1.35 x 10^11/µl. Two pups also were positive for *B. gibsoni* in peripheral blood smears and all were treated with Berenil (3mg/ kg) and Oral Doxycycline (5mg/ Kg bid). All 4 dogs died within one week and postmortem revealed severe hemorrhages in the internal organs with fatty livers.

In mid-August 2016, the same condition with fever and petechiation were reported in 10 dogs (5 Labrador, 3 Doberman Pinscher, 1 German shepherd and 1 Rotweiller, of 1.5 to 2 years) at Katunayake Air Force Kennels. Their blood smears stained with Diff quick stain revealed severe thrombocytopenia ranging from 0.35-1.35 x 10^11/µl, low PCV (23%-25%) and granular monocytes. Five of them were treated 12 hourly with oral Doxycycline (5mg/ Kg), Clindamycin (15mg/ Kg) and Metronidazole (20mg/ Kg) while two were given Doxycycline (5 mg/ Kg) and Metronidazole (20mg / Kg). Three dogs that showed mild symptoms were given Doxycycline (5 mg/ Kg 12 hourly) only, and one died a week later. The remaining 9 dogs recovered within 10 days of treatment, and none of them were administered with intravenous fluid. Persistent high fever for longer than 12 hours was managed with a single dose Paracetamol 500 mg.

In late August 2016, 20 dogs were transferred from Diyawathalawa breeding station to Anuradhapura Kennels, and 4 of them (3 Labrador and 1 German shepherd) showed similar clinical signs namely, fever and petechial hemorrhages on ventral abdomen. Hematological parameters indicated thrombocytopenia ranging from 44-176 x 10^11/µl, leukopenia 1.61 - 2.11 x 10^11/µl with lymphocytosis in the range of 39.3%-66.1%. *Babesia gibsoni* was detected in peripheral blood smears stained with Diff Quick in all 4 and also in 2 out of 4 clinically normal dogs. One sick and one healthy dog showed intraplasmatic bodies in their platelets resembling *Anaplasma platys*.

All sick pups were treated 12 hourly with oral Doxycycline (5mg/ Kg), Clindamycin (15mg/ Kg) and Metronidazol (20mg / Kg) without intravenous fluid, and all recovered in 6 days. The treatment was continued for one month and the pups were transferred back to Diyawathalawa thereafter.

**DISCUSSION AND CLINICAL SIGNIFICANCE**

Majority of dogs involved in this report were Labradors, German Shepherds and Dobermans within the age range of 5 months to 2 years. This multi factorial condition in dogs in which known hemoparasites and *A. platys*, possibly play roles needs further investigation. The Immune-mediated thrombocytopenia may occur in association with other autoimmune diseases in dogs such as systemic lupus erythematosus and rheumatoid arthritis, however such possibilities in these dogs were ruled out considering the infectious nature of the condition. Furthermore, blood product transfusion, vaccine or any other drug administrations had not been given prior to the incidence.

*Anaplasma platys* can cause infectious cyclic thrombocytopenia in infected dogs (Salinas-melendez et al., 2014). Staining of Buffy coat using Diff quick may increase the detection of the parasite. The Diff Quick stain when compared with conventional Leishman has been shown to detect hemoparasites with a higher predictive value. Further research in confirmation, distribution and treatment of *A. platys* is warranted.

The clinical response to the condition appeared to be better when the 3 drugs were combined with prednisolone, and when intravenous fluid in not administered. Intravenous fluids can be fatal in such situations due to plasma leakage (Silva, 2016).

A study of 72 dogs in Colombo showed the presence of *Ehrlichia phagocytophilia* in neutrophils in 4 dogs which were later found to be infected with *E. platys* (Bennet et al., 2005). *Ehrlichia phagocytophilia* has been reclassified as *A. phagocytophilia* (Dumler et al., 2001) which is transmitted through *Ixodes* spp of ticks. However, a less common species *A. platys* in platelets is transmitted via *Rhipicephalus* and *Dermacentor* spp of ticks which have been reported in Sri Lanka.

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