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Anaplasma platys infection in puppy: a case report

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Abstract

A case of Labrador pup with history of anorexia and fever was presented in Medicine department at Veterinary College Hospital, KVAFSU, Bengaluru, Karnataka. On presentation, the pup was recumbent with high temperature and severe respiratory distress. Hematobiochemical studies and blood smear examination revealed thrombocytopenia with neutrophilic leukocytosis and smear examination revealed positive for *A.platys*. Treatment involved Doxycycline @ 10 mg/kg with parenteral injections, fluids, antihistaminic and B-complex administration and Tab Doxycycline continued for 15 days with hematinics and platelet booster. The pup recovered by 2 weeks after initiation of treatment.

Canine anaplasmosis is caused by *Anaplasma phagocytophilum* and *Anaplasma platys*. These are tickborne, gram-negative, obligately intracellular bacteria that belong to the family Anaplasmataceae. *Anaplasma platys* infects and forms inclusions within platelets and is the cause of canine cyclic thrombocytopenia, or thrombocytotropic anaplasmosis. In dogs *A. platys* organisms infect peripheral blood platelets and form basophilic inclusions in the cells, so called morulae, which contain one or more subunits (Alvarado *et al.,*2003). Both, the appearance of the pathogen in the platelets and the following thrombocytopenia are cyclic (Dyachenko *et al.,* 2012). The initial thrombocytopenia may develop primarily because of direct injury to platelets by replicating organisms. In general, the infection is accompanied by unspecific and mild clinical manifestation including anorexia, depression, generalized lymph node enlargement, pale mucous membranes and elevated rectal temperatures (Aguirre *et al.,*2006). Nevertheless, a severe course of *A. platys* infection can show ecchymotic hemorrhages on body.

Case History and Observations

A Labrador female dog aged 52 days was presented to Teaching Veterinary Clinical Complex, Bengaluru, KVAFSU with complaint of anorexia, fever, and lethargy for 5 days. The deworming and vaccination status was up to-date. Upon general examination the animal was recumbent and clinical examination, revealed elevated rectal temperature (105.6 °F) with labored respiration and mild tachycardia, bilateral lymphadenopathy, pallor, and buccal mucosal hemorrhages. Blood sample was collected from saphenous vein before institution of therapy and after a week during treatment for complete blood count, blood smear examination, kidney function test (KFT) and liver function test (LFT). The complete haematological observations are given in Table 1 and Fig 1 to 3 which showed non-significant changes throughout treatments except platelet count and neutrophil count which came to normalcy at culmination of the treatment. Blood smear examination revealed positive for *Anaplasma platys* on staining with Giemsa stain. The kidney function and liver parameters were in normal range throughout the treatment (Table. 1 and Fig. 4).

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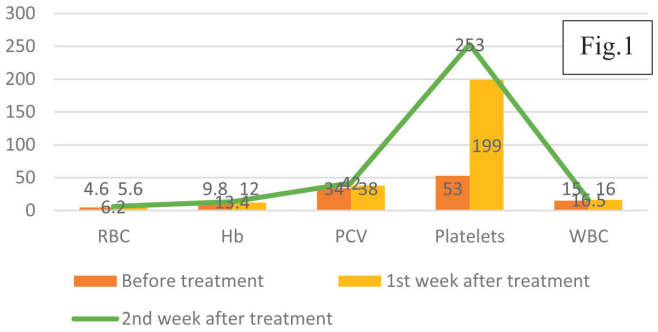
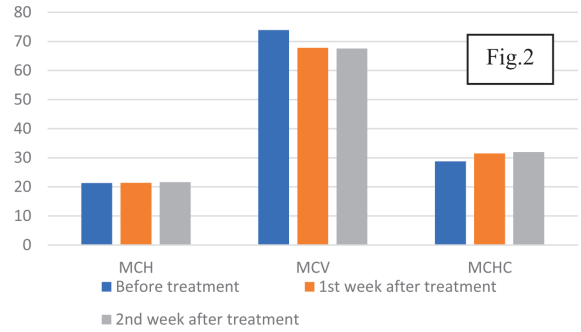
Treatment and Discussion

Fact that the animal had lower platelet count and smear indicated platelets with anaplasma organisms, the dog was first treated with Inj. Doxycycline @ 10 mg/kg slow IV on first day then Tab Doxycycline @ 10 mg/kg PO for 14 days and other supportive treatments like syrup Advaplate™ to cover up the platelet and Dexorange™ as hematinic syrup for 15 days. After two weeks of the treatment the platelet count was under normal reference range. *Anaplasma platys* infects and forms inclusions within platelets and is the cause of canine cyclic thrombocytopenia, or thrombocytotropic anaplasmosis. DNA has been found in other tick species, such as *Dermacentor auratus* ticks in Thailand, *Rhipicephalus turanicus* ticks from Israel, and Haemaphysalis spp. and *Ixodes nipponensis* ticks from Korea (Chae *et al.,* 2008) Ticks are probable reason for the infection in the present study. Different strains of *A. platys* exist that appear to vary in pathogenicity.

Thrombocytopenia due to a monoinfection with *A. platys* has a cyclic character and is considered the result of the destruction of blood platelets by the





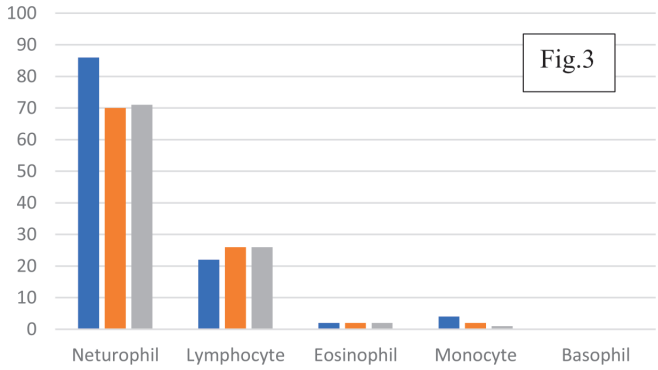


Fig. 1,2,3. Hematological parameters of dog affected with anaplasmosis before and after treatment

proliferating pathogen during initial phase of infection, which probably triggers immunologic mechanisms in the subsequent course of the infection. The recommended treatment for thrombocytopenic dogs infected with *A. platys* is doxycycline. The optimum dose and duration of treatment is unknown, but it is apparently eliminated using regimens effective for treatment of *E. canis* infection. Infection could not be detected with PCR for a 3-week followup period after just 8 days of doxycycline treatment (10 mg/kg PO q24h), which was initiated in the acute phase of infection. The same has been opined by Chang *et al.* (1997).

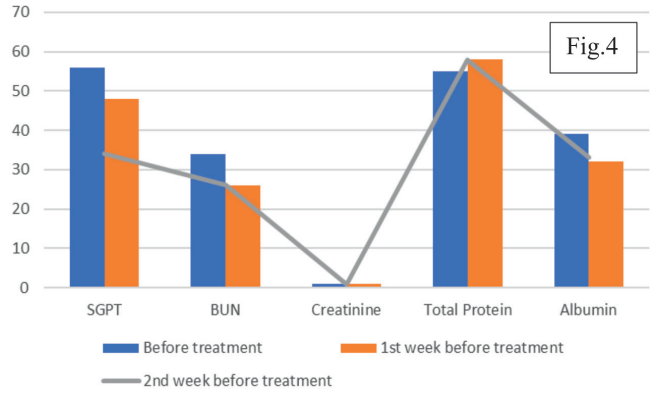


Fig. 4. Biochemical parameters of dog affected with anaplasmosis before and after treatment

Initial episode is associated with the highest number of organisms in platelets, as detected using light microscopic examination of stained blood smears (Harvey 2012). The platelet count nadir occurs 2 to 3 weeks post infection and in some dogs may be lower than 20,000 platelets/µL. Visible organisms then disappear from platelets, and the platelet count returns to normal or near-normal limits within 3 to 4 days. This also corresponds with a decrease in organism load and failure to detect the organism in peripheral blood with real-time PCR, although bone marrow and splenic aspirates may remain positive (Eddlestone *et al.,* 2007). *A. platys* infection may be made by finding organisms within platelets on stained blood films. In many instances, this method of diagnosis is not reliable because of false-negative results when the parasites are either absent or present in very low numbers.

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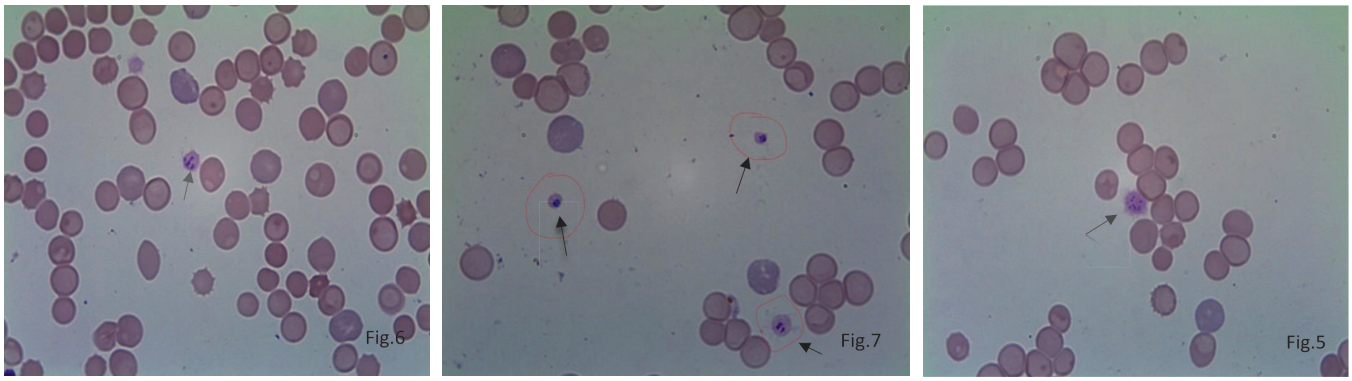

Fig.5,6,7. Blood smear of dog affected with anaplasmosis (Gimesa staining 100X) → Indicates the platelets affected with *Anaplasma platys*

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