

CLINICAL MANAGEMENT OF SEVERE RENAL AZOTEMIA ASSOCIATED WITH BABESIOSIS IN GOLDEN RETRIEVER

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An eight year old Golden Retriever dog was presented with history of persistent vomiting, subnormal body temperature and dehydration. Blood smear examination revealed *Babesia canis* protozoan infection in the erythrocytes. On sero-biochemical examination, it was diagnosed with severe renal azotemia which supposedly could be associated with babesia infection. The animal was managed with the clindamycin and doxycycline along with supportive medical treatment for around 15 days. Animal made an uneventful recovery.

Keywords: Azotemia, Clindamycin, Doxycycline.

Renal Azotemia is a condition characterized by abnormally high levels of nitrogen containing compounds in the blood. It is associated with insufficient or dysfunctional filtration of blood by kidneys and can lead to uremia and acute kidney injury. The prognosis for dogs with azotemia depends on the cause of the condition and how far it has progressed, especially if there is kidney damage. Canine babesiosis is a tick-borne disease that is caused by the haemoparasite of the genus *Babesia*. Acute kidney injury is considered one of the most prevalent complication of canine babesiosis with a prevalence varying from 2.2% to 36% (Jacobson and Clark, 1994; Máthé *et al.*, 2006). This complication leads to a decrease of glomerular filtration rate and in consequence causing azotemia and uremia in some dogs. Renal damage is identified more often than overt acute kidney injury, making “renal involvement” a more suitable description for this complication (Lobetti and Jacobson, 2001). *Babesia* parasitic infections are associated with many complications, which are considered to be result of systemic inflammatory response syndrome which is found in the majority of clinical infections (Köster *et al.*, 2015). Based on studies the reported occurrence of azotemia ranges from 0 to 36% in all *Babesia* species (Zygner and Gojska-Zygner, 2014). Solano Gallego *et al.* (2016) reported fever, anorexia, pale mucous membrane and lethargy in babesia affected dogs.

Case History and Observations

An eight year old Golden Retriever male dog presented to Teaching Veterinary Clinical Complex with the history of persistent vomiting, dull, depressed and was dehydrated. The animal did not have any visible injury and the vaccination and deworming were up to date. Clinical examination revealed low rectal temperature (98.6°F, dehydration and presence of ticks over the body. Respiration rate was 21/min, pulse rate 80/min and heart rate 65/min. The animal was not able to stand up properly. Haemogram revealed increased haemoglobin content (16.4g/dl), TLC 5300×10^3 cell/mm³, ESR 40mm/hr, neutrophils 77%, lymphocytes 20%, monocytes 2%, and eosinophils 1%. On haematological examination for haemoparasite it was found positive for *Babesia canis* infection. Serum biochemical parameters were BUN 85.00 mg/dl, creatinine 5.84 mg/dl, total protein 7.32g/dl, albumin 2.07g/dl and A:G ratio 0.39, sodium 142.50mEq/L, potassium 5.42mEq/L, ALP 126.00 U/L, GGT 11.90 U/L which clearly revealed severe renal azotemia. On the basis of history, clinical manifestations haemato-biochemical alterations, the case was diagnosed as severe renal azotemia associated with babesiosis.

Treatment and Discussion

Vomition was controlled with Inj Metoclopramide @0.2mg/kg body weight. Treatment was done with combination of Doxycycline (@10mg/kg b.wt) and

Clindamycin (@12.5mg/kg b.wt) for 14 days to combat Babesiosis. Fluid therapy was given to overcome dehydration and supportive treatment was done using Inj. Neurobion forte (2ml IM on alternate days,) and inj. Pepsid C (@2ml IM), Silymarin and

Dexorange syrup (@5ml PO bid,). Post-therapeutic evaluation was done on basis of microscopic evaluation of blood smears and sero-biochemical analysis. Animal recovered after 15 days of treatment.



Fig 2. *Babesia canis* observed using Giemsa staining in the erythrocytes under microscope (100X).

The pre-treatment haemoglobin level was higher and it can be attributed to haemoconcentration in animal's blood due to dehydration. Haemoglobinemia is one of the main cause of damage to the kidneys, however, experimental studies carried out on healthy dogs by giving haemoglobin intravenously did not confirm that nephropathy occurred in these individuals as also reported by Lobetti and Jacobson, (2006). It has also been observed that methaemoglobinuria observed in canine babesiosis, may be another cause of renal injury, as methaemoglobin has proved to be nephrotoxic in dogs as also mentioned by Lobetti and Reyers, (1996). Renal hypoxia caused by anaemia and systemic hypotension seems to be the primary cause of renal damage as also reported by Ayoub *et al.*, (2013). Dogs were considered to be collapsed at presentation when they were unable to walk unaided. Acute respiratory distress syndrome was suspected clinically based on the presence of dyspnea and variably based on arterial blood gas analysis, radiological evidence of pulmonary edema, and exclusion of other causes of pulmonary edema. Higher level of ALT, AST and ALP, hypoalbuminaemia, increase in BUN and creatinine were observed in present case. The high values of BUN may be due to dehydration, muscle tension, hypotension, muscle catabolism and renal disease. Efficacy

of treatment regimen was observed based on haematological and sero-biochemical parameters. Thus, detection of renal function impairment, before the onset of clinical abnormalities and development of azotemia, will allow initiation of more effective therapy.

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