Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 7, Issue, 12, pp.24309-24310, December, 2015

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

ISSN: 0975-833X

REVIEW ARTICLE

A CASE OF ACUTE RESPIRATORY DISTRESS SYNDROME IN A 2 YEAR OLD MALTESE TERRIER

[1,*]Makau, D., [2]Matole, A., [2]Gitari, A., [3]Karoki, B. and [3]Tutu, D.

[1]Department of Health Management, University of Prince Edward Island
[2]Department of Clinical Studies, University of Nairobi
[3]The Andys Vet Clinic, Nairobi Kenya

ARTICLE INFO

Article History:
Received 26th September, 2015
Received in revised form
24th October, 2015
Accepted 29th November, 2015
Published online 30th December, 2015

Key words:

Acute respiratory distress syndrome, *Babesia*, Pulmonary Edema, Anemia,Canine.

ABSTRACT

A case of acute respiratory distress syndrome following treatment of Babesiosis was reported in a 2 year old male Maltese terrier. The patient was admitted to the clinic following a history of anorexia and dullness with preferred recumbence. Main presenting signs on admission were severe pallor, prolonged clotting time, and dyspnoea, lethargy. Blood smears obtained from the ear revealed multiple *Babesia* parasites, severe regenerative anemia, neutrophillia and monocytosis. After meticulous clinical therapy for 5 days patient was discharged having become more active and with improved appetite. Within 24 hours of discharging form the clinic patient developed sudden dyspnoea. Patient went into respiratory shock within 2 hours of the onset of dyspnoea the patient died before arrival at the clinic.

Citation: Makau, D., Matole, A., Gitari, A., Karoki, B. and Tutu, D. 2015. "A case of acute respiratory distress syndrome in a 2 year old Maltese terrier", *International Journal of Current Research*, 7, (12), 24309-24310.

INTRODUCTION

Canine babesiosis is a tick borne protozoa disease caused by a number of species of *Babesia* parasites. These include: *Babesiagibsoni*, *Babesiacanis, Babesiavogeli* and *Babesiarossi* (Simões *et al.,* 2011). The protozoa parasite infects the erythrocytes in the hosts body causing hemolysis. The disease which is also zoonotic is transmitted by the Damacetor and Ripicephalus ticks. It has worldwide spread and affects all age groups and breeds of dogs although some genetic predisposition has been reported in the Grey hounds and Pit Bull terriers (Hines, 2012). Its incubation period ranges from 10-28 days. *B.canis* has a shorter incubation period compared to *B. gibsoni*. For infection to occur, the infected female tick bites and feeds on the host for about one week during which inoculation occurs. The severity of disease is influenced by the species of parasite, immune status of the host and age of the host (Schoeman, 2009). Although the disease affects many systems in the body, the main clinical signs include: Depression, pallor of mucous membranes, tachycardia, tachypnoea, weakness, splenomegaly and fever.

****Corresponding author: Makau, D.,***
Department of Health Management, University of Prince Edward Island,2,3Department of Clinical Studies, University of Nairobi.4,5 The Andys Vet Clinic, Nairobi Kenya.

The condition can be classified as acute, subclinical, clinical and chronic depending on the presenting signs which may at times be vague i.e. fever, lethargy, vomiting and anorexia (Schoeman, 2009, Irwin, 2010). The disease condition presenting as above is usually manageable when intervention is prompt. However, other body systems may be involved in cases of acute and complicated forms of babesiosis. These complications may affect one or more systems in the body presenting as pacreatitis, dark coloration of urine and acute renal failure, vasculitis and diathesis, seizures, coma, stupors and respiratory failure resulting from pulmonary edema and hypotension. The clinical presentation of the disease is a result of hemolysis and in some cases the initial phase of disease may go unnoticed for long before the body's regenerative ability is overwhelmed (Schoeman, 2009, Irwin, 2010).

Hemogram of a patient with the disease is characterized by *Babesia* parasites, regenerative anaemia -which may not be present in chronic cases-, thrombocytopenia, leukocytosis, reduced PCV, MCHC and MHC, protein levels may also be lower than normal. Hemoconcentartion may also be a finding despite hemolytic reaction. Patients with hemoconcentarion are at a higher risk of suffering acute respiratory distress (Irwin, 2010). This study describes a case of ARDS in canine babesiosis in a 2 year old Maltese terrier.

Case history findings and management

Alvin a 2 year old male Maltese terrier weighing 8kg was presented to the clinic with a history of anorexia, dullness, dyspnoea and listlessness for two days. On examination the patient was very weak, dull, dehydrated and with severe dyspnoea. Mucus membrane were paper white and capillary refill time was 6 seconds, body temperature was39.0^{o}C, heart was pounding, lung sounds were normal. Submandibular, prescapular and popleteal lympnodes were enlarged. Blood smear examination indicated multiple *Babesia* parasites, severe anaemia characterized by anisocytosis. Severe anemiaanemi neutrophilia and monocytosis was also evident and blood clotting time was prolonged.

Given the anorexia and apparent weakness coupled with dehydration, the patient required rehydration to prevent shock. However the severe anemia constrained our ability of rapid rehydration. Normal saline and 5% Lactate Ringers solution (2:1 volume ratio) mixture was administered subcutaneously for two day at 35ml/kg twice daily before placement of an intravenous cannular which was used for fluid therapy for the next three days at 50ml/kg twice daily. The patient was also placed on Oxytetracycline 10% injections intramuscularly, vitamin B complex injections intramuscularly as well as dexamethasone 2% injections daily. The Imidocarb diproprionate 12% dose was split into 2 and was given 2 days apart to mitigate the effects that could result into shock. The patient was also placed on lml daily dose of Hemoton syrup (multi vitamin and iron combination).

This treatment was maintained for 5 days during which the patient was kept under close observation. The patient became more active, the appetite resumed and respiration was normal. The patient was then discharged with doxycycline and prednisolone for the remaining 9 days of treatment. On arrival at home the client reported no change in the state of the patient and activity and appetite were normal. 20 hours later the patient was reported to have become dull and anorexic, weak and with laboured breathing. Aproximately 2 hours later, the patient died before arrival at the emergency clinic. Significant post mortem findings were generalised icterus with pulmonary edema and hydropericardia.

DISCUSSION

To the researchers understanding, there has been no documented case of Acute Respiratory Distress Syndrome in the Andys Veterinary Clinic. Cases of babesiosis diagnosed in the clinic before have been the uncomplicated forms which have previously been successfully treated. Common presenting cases of uncomplicated forms were as described by (Jacobson 2006, Irwin, 2010). Following infection of the erythrocytes, haemolysis occurs resulting in anemia and hence tissue hypoxia (Schoeman, 2009). Tissue hypoxia results in cellular damage and release of cytokines which trigger a generalised inflammatory response resulting in a Systemic Inflammatory Response Syndrome SIRS (Shetters and Klerskens, 2009). ARDS occurs as a result of pulmonary edema and intravascular migration of leukocytes. Tissue hypoxia results in accumulation of carbonic acid hence decrease in pH of body fluids, hence respiratory acidosis. Endothelial cells of lung vasculature are also hypertrophied, and following the recruitment of inflammatory cells, endothelial cells develop trans-cellular channels that facilitate influx of protein-rich intra-alveolar fluid resulting in pulmonary edema. Increased intraalveolar fluid impairs gaseous exchange hence respiratory failure (Wright *et al*., 1989, Hemmer *et al*., 1999). In some cases the body response may be overwhelmed resulting in Diseminated Intravascular Coagulopathies which subsequently result in Multiple Organ Dysfunction Syndrome (Mathe *et al.*, 2006). It is the opinion of the author that given the presenting signs, the patient died as a result of respiratory shock. The pulmonary edema resulted in severe tissue hypoxia to the vital organs including the heart (resulting in hypotension) and brain hence sudden death. The general prognosis of uncomplicated case of *Babesia* is good with about 85% survival rates. However, in complicated cases of babesiosis prognosis is poor and mortality rate ranges between 50-100% (Welzl *et al*., 2001). The pathogenesis in this case seems to have been delayed by the initial therapeutic intervention but resumed following discharge of the patient form the clinic.

REFERENCES

Aleri, J.W., KIpyegon, A.N., Mande, J.D., Mulei, C.M. and Karanja, D.N. 2011. Acute Respiratory Distress Syndrome Due to Babesiois in a Dog: Case Report. *Research Journal of Animal Scieces,* 5(2): pp14-16.

Hemmer, R.M., Wozniak, E.J., Lowentine, L.J., Ploper, C.G., Wong, V. and Conrad, A.P. 1999. Endothelial cell changes are associated with pulmonary edema and respiratory disteess in mice infected with the WA-1 human *Babesia* parasite. *J. Parasitol.,* 85(3) pp 479-489.

Hines, R. 2012. *Babesia* and other tick carried infections in your dog. http: //www. 2ndchance. info.

Irwin, P.J. 2 010. Canine Babesiosis. *Vet. Clin.* Small Anim.40: pp 1141–1156.

Jacobson, L.S. 2006 . The South African from of severe and complicated canine babesiosi. Clinical advances 1994-2004. *Vet. Parasitol.,* 138 pp 126-139.

Mathe, A., Voros K., Papp L. and Reizigel J. 2006. Clinical manifestations of canine Babesiosis in Hungary (63 cases). Acta Vet. Hung., 54; pp 367-385.

Schetters, T. and Klerkskens, 2009. Systemic responces in dogs experimentally infected with *Babesiacanis*: A hematological study. *Vet Parasitol.,* 162 pp 7-15

Schoeman, J.P. 2009. Canine Babesiosis. *Onderstepoort Journal of Veterinary Research,* 76:pp59–66.

Simões, P.B., Cardoso, L., Araújo, M., Yisaschar-Mekuzas, Y. and Baneth, G. 2011. Babesiosis due to the canine Babesia microti-like small piroplasm in dogs - first report from Portugal and possible vertical transmission Parasites & Vectors, 4: pp50

Welzl, C., Leisewitz, A.L., Jacobson, L.S., Vaughanscott, T. and Myburgh, E. 2001. Systemic inflammatory response syndrome and multiple-organ damage/dysfunction in complicated canine babesiosis. *Journal of the South AfricanVeterinary Association,* 72:158–162.

Wright, I.G., Goodger, B.V., Clark, I.A., Parrodi, F. and Wattisbuhi, D.J. 1989. Immupathophysiology of *Babesial* infections. *Transactions of Royal Society of Tropical Medicine and Hygiene,* Vol. 83 pp 11-13.

****