



BRUGIA PAHANGI ASSOCIATED HAEMOLYTIC JAUNDICE IN A BASSET HOUND

Jaundice is a clinical sign caused by the accumulation of bilirubin in plasma and tissues leading to yellowish discolouration of mucous membranes. Normal serum bilirubin levels in dogs and cats is below 0.4 mg/dl. Hyperbilirubinaemia is clinically evident when bilirubin level exceeds 2mg/dl. Jaundice may be prehepatic, hepatic or post hepatic. Prehepatic causes accounts for haemolytic jaundice as in case of babesiosis, haemobartenellosis etc. The present case deals with *Brugia pahangi* associated haemolytic jaundice in a four year old Basset Hound.

A four year old male imported Basset Hound was presented to the University Veterinary hospital, Mannuthy with a history of fever, anorexia, lethargy, dark coloured urine and abdominal pain since five days. In spite of therapy with antibiotics and fluids the condition of the animal deteriorated.

On clinical examination the animal had haemoglobinuria, icteric conjunctival and penile mucous membranes. The temperature, pulse and respiration were 102.6°F, 110/min and 24/min respectively. On wet blood film examination, motile microfilariae (+++++) could be detected. Dark field microscopy of the urine sample did not reveal any leptospirae. Ultrasonography revealed hepatosplenomegaly and distended gall bladder. Blood smears were

prepared for detailed study. Giemsa stained blood smears revealed the presence of sheathed microfilaria (Fig.1). Haematobiochemical abnormalities included mild leucocytosis with thrombocytopenia and anaemia, elevated serum levels of alanine amino transferase (ALT) (212 IU/L), alkaline phosphatase (ALP) (459 IU/L) and total bilirubin (4.5 mg/dl), hypoalbuminaemia with altered albumin globulin ratio.

The case was diagnosed as haemolytic jaundice due to microfilariaemia. Despite treatment with antibiotics, ivermectin and haematinics, the animal died on the very next day of presentation.

Further the blood smears were subjected to histochemical staining using acid phosphatase leucocyte kit (Far Diagnostics, Italy), being the most reliable method for the differentiation of even closely related species (Chalifoux and Hunt, 1971., Lee *et al.*, 2004). Histochemical staining revealed microfilariae with intense acid phosphatase enzyme activity uniformly throughout the body of the organism (Fig.2). The mean length of the microfilaria was 280 µm. Based on micrometry and staining characters, the microfilariae were identified as *Brugia pahangi* (Kelly, 1979 and Kobasa *et al.*, 2004).

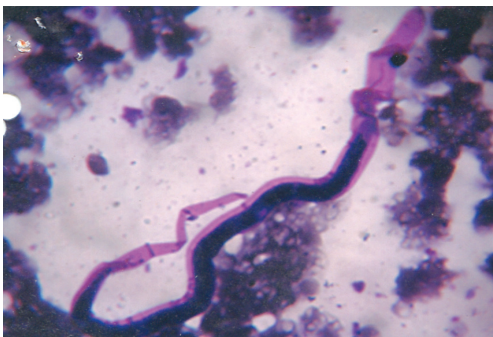


Fig. 1. *Brugia pahangi* microfilaria on giemsa stained smear.



Fig. 2. *Brugia pahangi* microfilaria on histochemical staining showing intense acid phosphatase enzyme activity throughout the body of the organism.

In the present case, anaemia and haemoglobinuria might be due to haemolysis as a result of destructive motility of microfilariae as observed by Kitagawa *et al.* (1989) resulting in haemolytic jaundice. In dogs with haemolytic jaundice, reduced oxygen supply due to anaemia may induce irreversible damage to centrilobular zone of liver resulting in hepatic centrilobular necrosis which in turn resulting in cholestasis and further aggravates hyperbilirubinaemia. Thrombocytopaenia may result from immune mediated platelet destruction due to the parasite (Anuchai *et al.*, 2006).

The increased serum levels of ALT and ALP in microfilariosis revealed liver dysfunction secondary to circulatory disturbance (Hashem and Badawy, 2008) or due to localization of large number of circulating microfilariae in the hepatic portal vein (Ananda and D'souza, 2006).

Canine filariosis is mainly caused by filarial parasite belonging to *Dirofilaria*, *Dipetalonema* and *Brugia* species. *Brugia pahangi* is a natural parasite of dogs and cats of Africa and Far East (Kelly, 1979). Earlier reports revealed the presence of only *Dirofilaria repens* in dogs of Kerala (Sabu *et al.*, 2005). This is the first report of detection of microfilariae of *Brugia pahangi* in dogs in India.

Summary

A case of *Brugia pahangi* associated haemolytic jaundice in a four year old Basset Hound is reported.

References

- Ananda, K. J. and D'souza, P. E. 2006. Haemato-biochemical changes in dogs infected with microfilariosis caused by *Dirofilaria repens*. *Indian J. Vet. Med.*, **26**:139-140.
- Anuchai, N., Sukullaya, A., Somporn, T., Siram, S. and Morakot, K. 2006. Canine dirofilariasis and concurrent tick borne transmitted diseases in Bangkok, Thailand. *J. Comp. Clin. Pathol.*, **15**: 249-253.
- Chalifoux, L., Hunt, R.D. 1971. Histochemical differentiation of *Dirofilaria immitis* and *Dipetalonema reconditum*. *J. Am. Vet. Med. Assoc.*, **158**: 601-605.
- Hashem, M., Badawy, A. 2008. Haematological and biochemical studies on filariasis of dogs. *The Internet J. Vet. Med.*, **4** : 1-12.
- Kelly, J.D. 1979. Canine heartworm disease. In: Kirk, R.W. (Ed.). *Current Veterinary Therapy VII: Small Animal Practice*. W.B. Saunders, Philadelphia. pp. 1526-1527.
- Kitagawa, H., Sasaki, Y., Ishihara, K. 1989. Clinical studies on canine dirofilarial haemaglobinurea: measured and calculated serum osmolalities and osmolar gap. *Jap. J. Vet. Sci.*, **51**: 703-710.
- Kobasa, T., Thammaphalo, S., Suvannalabha, S., Armesombun, A., Loymak, S., Leeming Sawat., Choochite, W. 2004. Identification of *Brugia malayi* like microfilaria in naturally infected cats from Narathivat Province, South Thailand. *J. Trop. Med. Parasitol.*, **27**:21-25.
- Lee, S. E., Song, H. K., Liu, J., Kim, M. C., Park, B. K., Cho, K.W., Hasegawa, A. and Kim, D. H. 2004. Comparison of the Acid-phosphatase staining and Polymerase Chain Reaction for detection of *Dirofilaria repens* infection in dogs in Korea. *J. Vet. Med. Sci.*, **66**:1087-1089.
- Sabu, L., Devada, K., Subramanian, H. 2005. Dirofilariosis in dogs and humans in Kerala. *Indian J. Med. Res.*, **121**: 691-693.

V. R. Ambily¹, Usha Narayana Pillai², P. P. Kanaran³, P. V. Tresamol⁴ and K. M. Jayakumar⁵

Department of Clinical Veterinary Medicine
College of Veterinary and Animal Sciences
Mannuthy - 680 651, Thrissur, Kerala



1. Veterinary Surgeon, AHD, Kerala

2. Associate Professor

3. Senior Veterinary Surgeon, AHD, Kerala

4. Associate Professor, Dept. of Veterinary Epidemiology & Preventive Medicine

5. Associate Professor and Head, UVH, Kakkalai