Cystitis due to capillaria infection in a dog and its treatment

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Abstract *Capillaria* spp infection was diagnosed in a 3 year old dog with history of pollakiuria, dysuria and haematuria. Confirmatory diagnosis was done by demonstration of the parasitic ova in the urinary sediment, cystitis by ultrasonography, presence of proteins and leukocytes in the urine. Dog was successfully treated with fenbendazole and ivermectin along with supportive therapy. Recovery was noticed after 2 weeks of treatment with clear and transparent urine and absence of parasitic ova in urinary sediment.

Keywords *Capillaria* spp · Cystitis · Dog · Urinalysis

Introduction

Capillaria plica is a worldwide distributed nematode parasite of the urinary tract in carnivores. *Capillaria* spp eggs passed through the urine and contaminate the environments which become source of infection to other dogs (Inforzato and Santos 2009). Usually, dogs affected with urinary capillariosis do not show any signs but due to heavy infection, dogs may exhibit pollakiuria, cystitis, dysuria and inappropriate micturition (Studzinska et al. 2015). *Capillaria* spp infection in the bladder of dogs, rarely reported and it is self limiting in nature (Sarma et al. 2011;

Basso et al. 2014). The purpose of this report is diagnosis of cystitis caused by *Capillaria* spp and its therapeutic management in a dog.

Case history and observations

A three year old male dog presented to the Teaching Veterinary Clinical Complex, College of Veterinary Science, Proddatur with history of pollakiuria, occasional haematuria. Upon examination dog showed dysuria and restlessness. Temperature, pulse and respiration recorded were 101.4 °F, 96/min and 28/min respectively. Whole blood, urine, peripheral blood smears were collected for laboratory examination (Reddy et al. 2014a). Abdominal ultrasonography was also done.

Peripheral blood smear examination did not reveal any haemoprotozoans. The haematological values were haemoglobin 12.8 gm/dL, total erythrocyte count 5.68×10^6 /cumm, total leucocyte count 13.6×10^3 /cumm, Neutrophil (8704/cumm), Lymphocyte (3808/cumm), Eosinophil (952/cumm) and Monocyte (136/cumm). The ultrasound evaluation of urinary bladder showed thickened hyperechogenicity bladder wall (Fig. 1). The urine appeared to be cloudy, alkaline in nature (pH 7.5) and uristic urine test strip was positive for blood, leukocytes, protein and nitrite. Dog was treated for cystitis with cefpodoxime proxetil (@5 mg/kg body weight, PO, SID) and prednisolone (@1 mg/kg Body weight, PO) for 2 weeks. After treatment, cloudiness of the urine was reduced but presence of pollakiuria was noticed.

Again urine was collected and microscopic examination of the urinary sediments revealed the presence of *Capillaria plica* ova along with few erythrocytes, leucocytes and epithelial cells. Ova were in size of $55\text{--}65 \times 25\text{--}30 \mu\text{m}$, barrel-shaped, with two opercules with polar plugs (Fig. 2).

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Fig. 1 Thickened urinary bladder wall indicative of cystitis

Fig. 2 Presence of *Capillaria* spp. ova in urinary sediment examination

Treatment and discussion

After confirmation of *Capillaria* spp infection, dog was treated with oral fenbendazole @ 50 mg/kg body weight/day for 10 days and two doses of ivermectin @ 0.2 mg/kg body weight subcutaneously at weekly interval. Two weeks after treatment, complete clinical recovery was noticed with absence of pollakiuria and dysuria. Repeated urine examination did not reveal any abnormalities. Based on the ultrasonography and urine analysis it was treated for cystitis with cefpodoxime which acts on both gram positive and negative bacteria (Reddy et al. 2014b). On the first day of presentation urine sediment was not examined because it is not a routine activity and case was diagnosed to be cystitis. We thought cystitis might be due to a bacterial infection alone.

After incomplete response to the antibiotic therapy, examination of urine sediment was carried out to detect the further abnormalities. Diagnosis of infection was according

by demonstration of parasitic ova in urinary sediment (Studzinska et al. 2015). Ultrasonographically inflammatory contents were noticed as hyperechoic foci or debris in bladder along with thickening of bladder wall which confirms the cystitis in this case. Adult *Capillaria* spp worms affect mainly urinary bladder but may be occasionally localized in the ureters and renal pelvis. Presence of the adult worms in the bladder damage the mucus membranes causes inflammation which leads to secondary bacterial infection (Deplazes et al. 2013). Similar condition was observed and treated by different authors with different drugs with fenbendazole, albendazole, levamisole and ivermectin (Basso et al. 2014, Studzinska et al. 2015). We preferred fenbendazole for this case because of easy availability. Dogs with refractory cystitis should be checked for occurrence of *Capillaria* spp.

Conclusion

Present study reports about the diagnosis of *Capillaria* spp infection through urine sediment examination, cystitis by ultrasonography and their successful therapeutic approach in a dog.

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