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Epidemiological investigation of canine microfilariasis in tarai region of Uttarakhand

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Abstract

The present study was carried out to study the prevalence of canine microfilariasis in Teaching Veterinary Clinical Complex, Pantnagar from January 2006 to December 2011. The tentative diagnosis was made on the basis of history, clinical signs, viz. weight loss, exercise tolerance, lethargy, cough, dyspnoea, syncope and ascites and physical examination of animal. Blood of suspected cases was collected and sent for haematological and parasitological examination for confirmatory diagnosis. In positive cases the direct wet smear examination revealed presence of microfilaria. Radiological examination of thorax of suspected animals was done for cardiac silhouette evaluation and to assess the severity of infection. On the basis of blood examination which showed presence of microfilaria, 23 cases were found positive for Dirofilaria. Overall prevalence of canine microfilariasis from year 2006 to 2011 was found 2.52% with maximum occurrence (3.63%) in the year 2009.

Keywords: Dirofilaria, canine microfilariasis, clinical signs, wet smear, radiological examination

1. Introduction

Canine microfilariasis is widely prevalent throughout the globe causing varied pathogenic effects. Heartworm disease, caused by the most important filaroid nematode *Dirofilaria immitis*, responsible for causing canine dirofilariosis which is increasingly diagnosed in temperate and tropical areas of the world (Genchi *et al.*, 2007) [5]. Filariasis is one of the common parasitic diseases of animals and man caused by a small group of filarid nematodes.

In India, the first case of human pulmonary dirofilariosis due to *D. immitis* was reported in Mumbai (Badhe and Sane 1989) [3]. Filarial infections in canines have been found to affect the general health, growth, working capacity and breeding efficiency. The disease is caused by *Dirofilaria immitis*. Adult parasites are localized primarily in the arteria pulmonalis or right ventricle, right atrium, and sometimes in the vena cava of definitive hosts (Atkins 2005) [2] and because of its location, it is known as "Heart worm" (Nayar, 1990) [7]. Diagnosis of canine heartworm in live animals can be done by clinical symptoms, detection is always in forefront in terms of demonstration and identification of microfilaria in the tested blood sample of suspected animals (Soulsby, 1982) [10] and also by postmortem examination (Sarkar *et al.*, 1976) [9]. The symbiotic relationship with Wolbachia (a rickettsia) along with *D. Immitis* amplifies severity of the disease (Morchon *et al.*, 2009) [6].

The clinical signs reflect the effect of the parasite on the pulmonary arteries, lungs and heart. In the affected dog findings include weight loss, diminished exercise tolerance, lethargy, poor condition, cough, dyspnoea, syncope and abdominal distension (Atkins, 2005) [2]. (Ambily and Pillai 2014) indicated renal involvement in microfilaraemic dogs irrespective of the type of microfilaria involved in the disease process. The length of the adult male parasite is 12-16 cm and female is 25-30cm. The range of length of microfilaria (larvae) remains between 307 micrometers to 322 micrometers (Soulsby, 1982) [10]. Parasite is transmitted from one dog to another by mosquitoes (Raouf and Garedaghi, 2017) [8]. The present study was carried out to study the prevalence of canine microfilariasis in Teaching Veterinary Clinical Complex, Pantnagar.

2. Materials and Methods

The prevalence of canine microfilariasis in dogs brought to Teaching Veterinary Clinical Complex; Pantnagar was studied from January 2006 to December 2011. The tentative diagnosis was made on the basis of history, clinical signs, viz. weight loss, exercise tolerance, lethargy, cough, dyspnoea, syncope and ascites, and physical examination of animal.

Blood of suspected cases was collected and sent for haematological and parasitological examination for confirmatory diagnosis. Radiological examination of thorax of suspected animals was done for cardiac silhouette evaluation and to assess the severity of infection.

3. Results and Discussion

Dogs brought to hospital with signs such as acute onset of weakness, cough, anorexia, dyspnoea, pale mucus membrane and gradual loss of condition were suspected for heart worm infection. In positive cases the direct wet smear examination revealed presence of microfilaria and haematological studies showed low haemoglobin concentration, increased sedimentation rate and eosinophilia in most of the cases, whereas neutrophilia was observed in few positive cases of heart worm. Radiological examination also revealed enlargement of heart.

Table 1: Year wise prevalence of heart worm in dogs (2006 to 2011)

Sr. No.	Year	No of animals examined	No. of positive animals	% of positive cases
1	2006	110	2	1.82
2	2007	100	2	2.00
3	2008	154	5	3.25
4	2009	110	4	3.63
5	2010	188	6	3.19
6	2011	251	4	1.59
Total		913	23	2.52

On the basis of blood examination which showed presence of microfilaria, 23 cases were found positive for Dirofilariasis. Overall prevalence of canine microfilariasis from year 2006 to 2011 was found 2.52% with maximum occurrence (3.63%) in the year 2009. (Deepa and Alex 2011) ^[4] Reported the overall prevalence was 1.70 per cent. The prevalence was highest in January (2.47%) followed by February (2.20%) and July (2.07%). Clinical signs of heartworm disease may not be recognized in the early stages, as the number of heartworms in an animal tends to accumulate gradually over a period of months and sometimes years and after repeated mosquito bites.

Recently infected dogs may exhibit no signs of the disease, while heavily infected dogs may eventually show clinical signs, including a mild, persistent cough, reluctance to move or exercise, fatigue after only moderate exercise, reduced appetite and weight loss. The application of prophylactic measures in dogs throughout the period of mosquito activity can be decreased incidence and dissemination of dirofilariasis. Dirofilariasis was originally considered a disease of strict veterinary importance but it has been recognized as an emerging zoonosis and is necessary to protect the health of animals and people.

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