COMMUNICATION (I)

Prevalence of Dirofilariasis in Dogs in and around Kuala Lumpur, West Malaysia

RINGKASAN


INTRODUCTION

Heartworm (Dirofilaria immitis) infection in dogs has been of growing concern to pet owners in most parts of the world. The prevalence of the disease ranged from 26 to 47 percent in the USA (Lewis and Losonsky, 1977) and from 4 to 8 percent in Sydney, Australia (Kelly, 1977). In tropical areas, the problem is even more severe because of the widespread existence of the mosquito. For example, the prevalence was reported to be as high as 30 and 100 percent in Brisbane and Darwin respectively (Kelly, 1977); 25.8 percent in stray dogs in Petaling Jaya and Kuala Lumpur (Retnasabapathy and Khoo, 1976), 35 percent in stray dogs in Ipoh (Shanta et al, 1977) and 32.4 percent among dogs in Seremban (Kan et al, 1977).

Since this disease is becoming increasingly important in Malaysia, posing as a zoonosis to pet owners, a preliminary survey was undertaken to record the prevalence of this disease in various breeds of dogs presented to the small animal hospital of the Faculty of Veterinary Medicine and Animal Science, Universiti Pertanian Malaysia.

MATERIALS AND METHODS

During the period of July 1977-1980, a total of 430 dogs of various breeds were sampled. These dogs came from within a 40 km radius of the city of Kuala Lumpur; 80 percent belonged to clients and 20 percent were unwanted pets from the local humane society. These dogs were admitted for ovario-hysterectomies, chronic skin and bowel diseases, metabolic diseases, infectious diseases and other miscellaneous complaints.

Three millilitres of heparinized blood was collected from the cephalic vein routinely from each dog. One drop of blood was placed on a clean glass slide, covered with a cover slip and examined under low magnification (X100) for the presence of microfilariae of D. immitis. The same blood sample was subjected to the modified Knott's technique (Newton and Wright, 1956). Outpatients and dogs that were less than seven months old were not included in this survey.

RESULTS AND DISCUSSION

Sixty-six percent of the dogs sampled were mongrels and crossbreds, while the remaining 34 percent were pure breeds, which included toy, working and sporting dogs. The German Shepherd was the most popular breed presented. The ages of the dogs ranged from 7 months to 15 years (mean = 3 years) and comprised 67 percent females and 33 percent males.

The prevalence of microfilariae in 430 dogs is shown in Table 1. Microfilariae were detected in 18.1 percent of cases, of which 25 of 77 dogs were older than 4 years and 52 of 353 dogs were younger than 4 years. The tendency for older dogs (> 4 years) to be positive for microfilariae was significantly higher (X² = 12.94; p < 0.05). The relationship of sex to prevalence of microfilariasis is shown in Table 2. Microfilariae were detected in 23.6 percent of males as against 15.5 percent in females. The occurrence of microfilariae in male dogs was significantly higher (X² = 4.03; p < 0.05). This study demonstrates an 18.1 percent prevalence of microfilariasis in various breeds presented to the university small animal hospital, which is slightly lower than figures reported in stray dogs collected from the Petaling Jaya town board and Kuala Lumpur municipality (Retnasabapathy and Khoo, 1976), stray dogs in Ipoh (Shanta et al, 1977) and dogs sampled from Seremban (Kan et al, 1977). However, since blood samples were collected only as routine from dogs presented for other clinical problems, it was possible to examine only single samples. Thus, undetected microfilaraemia may have existed (Otto, 1977) reflecting a lower recorded prevalence.
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TABLE 1
Prevalence of microfilariasis in dogs

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of dogs</th>
<th>positive</th>
<th>negative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of dogs</td>
<td>%</td>
<td>No. of dogs</td>
</tr>
<tr>
<td>&lt; 4 years</td>
<td>353</td>
<td>53</td>
<td>15&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>&gt; 4 years</td>
<td>77</td>
<td>25</td>
<td>32.5&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Overall</td>
<td>430</td>
<td>78</td>
<td>18.1</td>
</tr>
</tbody>
</table>

<sup>a, b</sup> Values with different superscripts are significantly different (p < .05; $\chi^2 = 12.94$)

TABLE 2
Relationship of sex to prevalence of microfilariasis in dogs

<table>
<thead>
<tr>
<th>Sex</th>
<th>No. of dogs</th>
<th>positive</th>
<th>negative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of dogs</td>
<td>%</td>
<td>No. of dogs</td>
</tr>
<tr>
<td>Male</td>
<td>140</td>
<td>33</td>
<td>23.6&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Female</td>
<td>290</td>
<td>45</td>
<td>15.5&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Overall</td>
<td>430</td>
<td>78</td>
<td>18.1</td>
</tr>
</tbody>
</table>

<sup>a, b</sup> Values with different superscripts are significantly different (p < 0.05; $X^2 = 4.03$)

Further, a 69 percent accuracy using the Knott's technique on single samples was obtained as against a 97.3 percent accuracy on multiple samples (Wylie, 1970). Thus, the results from the use of the Knott's technique may reflect a somewhat lower prevalence, since it was possible to obtain only single samples.

As only single samples were examined, the prevalence of 18.1 percent in the samples could be an underestimate of the true figures for the Malaysian dog population. A certain percentage of dogs that harboured adult worms may not have shown microfilaremia (Otto et al., 1976). However, as the peak infection of microfilariasis was reported to be between 8 and 10 years (Wallenstein and Tibola, 1960), the dogs in this study (mean age = 3 years) were less likely to harbour adult worms.

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REFERENCES


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