UNIVERSITI PUTRA MALAYSIA

PREVALENCE OF VECTOR BORNE DISEASES IN DOG SHELTERS WITH DIFFERENT MANAGEMENT

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PREVALENCE OF VECTOR BORNE DISEASES IN DOG SHELTERS WITH DIFFERENT MANAGEMENT

BY

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It is hereby certified that we have read this project paper entitled "Prevalence of vector borne diseases in dog shelters with different management", by Radiatun Nadwah binti Dolah and in our opinion it is satisfactory in terms of scope, quality, and presentation as fulfilment of the requirement for the course VPD 4999 – Project.

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ABSTRAK

Abstrak daripada kertas projek yang dikemukakan kepada Fakulti Perubatan Veterinar untuk memenuhi sebahagian daripada kursus VPD 4999- projek ilmiah tahun akhir

PREVALENS PENYAKIT BAWAAN VEKTOR DI PUSAT PERLINDUNGAN ANJING DENGAN PENGURUSAN YANG BERBEZA

Oleh

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Penyakit bawaan vektor adalah antara masalah utama di pusat perlindungan anjing. Nyamuk, sengkenit, kutu, hama, dan lain-lain adalah antara vektor yang menyebarkan penyakit-penyakit bawaan vektor. Sesetengah penyakit bawaan vektor ini boleh menjadi penyakit zoonotik dan mengancam nyawa manusia. Pengurusan yang berkesan di pusat-pusat perlindungan anjing dari segi kawalan vektor dan pencegahan penyakit adalah amat penting. Sampel serum anjing yang diambil daripada tiga pusat perlindungan haiwan di Malaysia dengan pengurusan yang berbeza telah digunakan dalam kajian ini untuk mengesan antigen dan antibodi penyakit bawaan vector menggunakan SNAP® 4Dx® Plus Test Kit (*Ehrlichia*

Canis, Ehrlichia ewingii, Borrelia burgdorferi, Anaplasma phagocytophilum, dan *Anaplasma Platys,* dan juga *Dirofilaria immitis*). Daripada sembilan puluh sampel serum anjing dari tiga pusat perlindungan haiwan mendedahkan bahawa *Ehrlichia* spp. adalah antara penyakit yang paling biasa dikesan kerana 50 daripada 90 (55.5 %) haiwan yang diuji menunjukkan reaksi positif, diikuti oleh *Anaplasma* spp., lima belas daripada 90 (16.7 %) haiwan menunjukkan positif. *Dirofilaria immitis* antigen pula hanya boleh dikesan di salah sebuah pusat perlindungan haiwan (10%, sembilan daripada 90 anjing). Walaubagaimanapun, tiada bukti *Borrelia burgdorferi* dikesan dalam kajian ini. Empat belas daripada 90 haiwan yang diuji adalah positif untuk lebih daripada satu penyakit. Daripada hasil kajian ini, ia menunjukkan bahawa pengurusan pusat-pusat perlindungan memainkan peranan yang penting dalam mengurangkan prevalens penyakit bawaan vektor di kalangan anjing-anjing.

Keywords: penyakit bawaan vektor, prevalens, zoonotic, anjing, pusat perlindungan

ABSTARCT

Abstract of the final year project paper presented to the Faculty of Veterinary Medicine in partial for the course VPD 4999- final year project

PREVALENCE OF VECTOR BORNE DISEASES IN DOG SHELTERS WITH DIFFERENT MANAGEMENT

By

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2015

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Vector borne diseases are major problem in dog shelters. The diseases are transmitted by arthropod vectors such as mosquitoes, ticks, lice, fleas, and others. These diseases can be zoonotic and causing life-threatening diseases in human. Effective management of the dog shelters in term of controlling the vectors and preventing the diseases is of crucial importance. This study was conducted by using the collected dog's serum samples from three different animal shelters in Malaysia with different management in order to detect the antigen and antibody of vector borne diseases using SNAP® 4Dx® Plus Test kit (*Ehrlichia canis, Ehrlichia ewingii, Borrelia burgdorferi, Anaplasma phagocytophilum*,*Anaplasma platys*, and

also *Dirofilaria immitis).* Ninety dog's serum samples tested from the three animal shelters revealed that *Ehrlichia* spp. is the most common disease detected as 50 out of 90 (55.5%) animals showed positive result, followed by *Anaplasma* spp. as 16.7% (15/90) of the animals showed positive. *Dirofilaria immitis* antigen can only be detected in one of the animal shelters (10%, nine out of 90 dogs). No evidence of *Borrelia burgdorferi* detected in this study. Fourteen out of 90 animals were positive for more than one disease. From the results of this study, it showed that the management of the shelters do play a role in reducing the prevalence of the vector borne diseases among the dogs.

Keywords: vector borne disease, prevalence, zoonotic, dog, shelters

1.0 INTRODUCTION

Nowadays, interaction between human and animals becomes closer as many people have a tendency to own a companion animal such as dogs, cats, and other exotic animals. This animal is considered as one of their family members and close contact between them cannot be avoided. Epidemiology of vector borne disease involved wide number of infectious agents, vectors, hosts and also environment. Infectious agent such as parasite, virus, bacteria and other pathogenic agents was transmitted to the host by arthropod such as mosquitoes, ticks, fleas, mites, or other arthropod vector as an intermediate host. Several cases was reported where zoonotic pathogens transmitted via bites from the arthropod vectors infecting dogs and eventually causing problem to human such as Lyme borreliasis, human granulocytic ehrlichiosis, dirofilariasis, and others.

Southeast Asia is one of the regions in the world where the environment and climate is suitable for the spreading of arthropod-transmitted infection, in combination with the high population of stray dogs and cats, including Malaysia. Vectors species such as mosquitoes, ticks, fleas, and mites can be found abundantly in the environment as Malaysia has the suitable climate that was suitable habitats for the vectors. Because of this, Malaysia is considered endemic for several type of vector borne diseases that infecting animals especially dogs.

In order to prevent the spreading of vector borne diseases in both animal and human population, environmental management for vector-borne disease control is of crucial importance. Lots of study was conducted in other countries regarding the importance of management the animal shelters in controlling vector borne diseases

in their environment via administration of vaccine, ecto and endoparasite controls, screening of the animals in the facilities, and also effect of treatment to the animals.

However, management of the shelter is differed from one shelter to another's due to financial status of the shelter itself. According to Polak (2014), only a limited portion of the budget is allocated for the medical care of individual animals in shelter animals. This included the administration of vaccines, treatment of the animals, and ecto- and endo-parasite control program.

1.1 Rational of study

In dogs, vector borne disease is one of the major health and welfare issue. Not only of its economic lost due to the medical treatment, but also to human public health concern. Human has been reported infested with the dog heartworm and lead to focal pulmonary infarction with granuloma formation. Malaysia is endemic for canine heartworm and other vector borne diseases such as Ehrlichiosis and Anaplasmosis and several studies had been done on the prevalence of the disease in stray dog population and also in the dog shelters. However, no study has been conducted before that relate the prevalence of vector borne disease with the management of the animal shelter in Malaysia.

1.2 Objectives

The aim of this study is:

To study the prevalence of vector borne diseases in dog shelters with different management.

1.3 Hypothesis

Null hypothesis for this study is there is no difference of prevalence of vector borne disease in between different shelter management.

On the other hand, the alternate hypothesis is there is a difference of prevalence of vector borne disease in between different shelter management.

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