

REVIEW ARTICLE

Leptospirosis, an emerging zoonotic disease in Malaysia

S THAYAPARAN *BVSc, MSc*, ID ROBERTSON *PhD*, A FAIRUZ* *MD*, L SUUT** *PhD* and MT ABDULLAH*** *PhD*

*College of Veterinary Medicine, School of Veterinary and Life Sciences, Murdoch University, Western Australia, *Institute for Medical Research, Kuala Lumpur, Malaysia, **Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak (UNIMAS) and***Department of Zoology, UNIMAS, Sarawak*

Abstract

Leptospirosis is an endemic disease in Malaysia and recently has received increasing attention mainly due to several recent incidents that have resulted in human mortality which have alarmed health professionals in Malaysia. The increasing incidence of leptospirosis in forested regions is associated with the bacteria infecting small wild mammals other than rats. Infection in wildlife could result in the introduction of new serovars to humans and domesticated animals. More research on leptospirosis and the screening of wildlife and humans near wildlife habitats is required to have a better understanding of the involvement of wildlife in the disease.

Key words: infectious disease, leptospirosis, zoonotic disease, wildlife

INTRODUCTION

Leptospirosis, caused by infection with *Leptospira interrogans*, is a worldwide disease affecting both humans and animals resulting in morbidity and mortality.¹ The agent can be transmitted both directly and indirectly.^{2,3} In 1917, the role of rats as a source of human infection was first discovered,^{4,5} and subsequently some previous studies have demonstrated that other wild mammals can also act as potential carriers,^{6,7} including flying foxes.^{7,8} However, to date there has been little research conducted on the role of wildlife in outbreaks. As a result of the current significant level of deforestation and the increasing anthropogenic activities in the forested habitats and jungle, humans are at a greater risk of being exposed to new serovars of leptospires. Leptospirosis in wildlife can have negative consequences for biodiversity, human and livestock health, animal welfare and the economy of a country.^{9,10} This review will examine the impact of leptospirosis on wildlife, the current status of surveillance and the options to strengthen policies in Malaysia.

Morphology and taxonomic classification

Leptospires are spirochaetes in the order Spirochaetales, family of Leptospiraceae and

include two genera, *Leptospira* and *Leptonema*.¹¹ *Leptospira* are obligate aerobes with an optimum growth temperature ranging from 28°C to 30°C.^{12,13} The genus *Leptospira* was divided into two species based on serological classification: *Leptospira interrogans*, which comprises all the pathogenic strains and *Leptospira biflexa*, the environmental saprophytic strains.¹⁴⁻¹⁶ Based on the microscopic agglutination test (MAT), leptospires can be further divided into over 250 serovars. Serovars that are antigenically similar have been aggregated into serogroups.¹⁴ Furthermore both pathogenic and non-pathogenic serovars can be classified within the same species. A combination of methods is now used to confirm the species of *Leptospira*.

Pathogenesis

The most adverse clinical and pathological signs usually occur in young animals, especially when their maternally-derived immunity is waning.¹⁷ However, the common signs of *Leptospira* infection in farm animals are abortions, stillbirths, decreased milk production and a failure to thrive.¹⁸⁻²⁰ In all species, congenital infection and its sequelae are well reported. The most important difference between infection of animals and humans is the presence of chronic carriers

Address for correspondence and reprint requests: S.Thayaparan, College of Veterinary Medicine, School of Veterinary and Life Sciences, Murdoch University, 6150 Murdoch, Western Australia. Tel: +61468462223. Email: thayaan@yahoo.com; tabdulla@frst.unimas.my