Monkey malaria widespread in humans and potentially fatal

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A potentially fatal species of malaria is being commonly misdiagnosed as a more benign form of the disease, thereby putting lives at risk, according to research funded by the Wellcome Trust and the University Malaysia Sarawak.

Researchers in Malaysia studied more than 1,000 samples from malaria patients across the country. Using DNA-based technology they found that more than one in four patients in Sarawak, Malaysian Borneo, were infected with Plasmodium knowlesi, a malaria parasite of macaque monkeys, and that the disease was more widespread in Malaysia than previously thought. Infections were most often misdiagnosed as the normally uncomplicated human malaria caused by P. malariae.

Malaria, which kills more than one million people each year, is caused when Plasmodium parasites are passed into the bloodstream from the salivary glands of mosquitoes. Some types, such as P. falciparum, found most commonly in Africa, are more deadly than others. P. malariae, found in tropical and sub-tropical regions across the globe, is often known as "benign malaria" as its symptoms are usually less serious than other types of malaria.

Until recently, P. knowlesi, was thought to infect only monkeys, in particular long-tailed macaques found in the rainforests of South East Asia. Natural infections of man were thought to be rare until human infections were described in one area in Sarawak, Malaysian Borneo. However, in a study published today in the journal Clinical Infectious

Diseases, Professors Janet Cox-Singh and Balbir Singh with colleagues at the University Malaysia Sarawak and three State Departments of Health in Malaysia have shown that knowlesi malaria is widespread in Malaysia.

Under the microscope, the early parasite stages of P. knowlesi look very similar to P. falciparum, the most severe form of human malaria, while the later parasite stages are indistinguishable from the more benign P. malariae. Misdiagnosis as P. falciparum is clinically less important as P. falciparum infections are treated with a degree of urgency and P. knowlesi responds to the same treatment. However, misdiagnosis as the more benign slower growing parasite P. malariae is a problem.

P. knowlesi is unprecedented among the malaria parasites of humans and non-human primates as it reproduces every 24 hours, and one of the features of fatal P. knowlesi infections is the high number of infected red blood cells in these patients. Therefore, even a short delay in accurate diagnosis and treatment could lead to the rapid onset of complications, including liver and kidney failure, and death.

Using DNA detection methods, Professor Cox-Singh and colleagues found malaria infection with P. knowlesi to be widely distributed in Malaysian Borneo and mainland Malaysia, sometimes proving fatal. In addition, single human infections have been reported in Thailand and Myanmar.

"I believe that if we look at malaria infections in South East Asia more carefully, we will find that this potentially fatal type of the disease is more widespread than is currently thought," says Professor Cox-Singh. "Given the evident severity of the illness that it causes, I would recommend that doctors treating patients with a laboratory diagnosis of P. malariae remain alert to the possibility that they may be dealing with the potentially more aggressive P. knowlesi. This would be particularly

important in patients who have spent time in the forest fringe areas of South East Asia where the non-human primate host exists."

Source: Wellcome Trust