

Emergence in Thailand of the fifth species of malaria, *Plasmodium knowlesi*

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Εμφάνιση ελονοσίας από *Plasmodium knowlesi*
στην Ταϊλάνδη

Περίληψη στο τέλος του άρθρου

Key words: Malaria, *Plasmodium knowlesi*

Malaria is an important mosquito-borne disease. This tropical disease is still a major public health threat in the present day. This disease is classified as a blood infection; it is an intraerythrocytic protozoal infection causing high fever and it can lead to death. This infection is endemic in many countries in the tropical zone and is sporadically reported in non tropical countries.

Malaria is caused by *Plasmodium* spp, which are single

Submitted 10.10.2009

Accepted 22.10.2009

cell protozoa. Five species of *Plasmodium* spp have been confirmed for causing malarial infection in humans. Apart from the four common types of malaria, caused by *Plasmodium falciparum*, *vivax*, *ovale* and *malariae*, a fifth type has more recently been identified. This newest type is caused by *Plasmodium knowlesi*, which was primarily identified in monkeys^{1,2} but, human infection has been continuously reported for a few years. The first reports of the fifth species malaria were in Southeast Asia, where there are many monkeys that live near human beings.^{1,2}

PLASMODIUM KNOWLESI INFECTION: CHARACTERISTICS

Plasmodium knowlesi infection has characteristics similar to those seen in other types of malaria, and particularly a high fever with chills in infected cases.³ This infection is considered to be a new zoonosis.⁴ Vythilingam et al reported for the first time the incrimination of *Anopheles latens* as the vector of *Plasmodium knowlesi* among humans and monkeys in Sarawak, Malaysia.⁵ Infection is due to the transmission of the malarial parasite from the monkey via the vector, *Anopheles* spp mosquito, to human beings. Human to human transmission is still questionable. The first confirmation was reported by the tropical infectious disease laboratory in Sarawak of Malaysia. Microscopically, this new parasite is very similar in appearance to *Plasmodium malariae*. The definitive diagnosis is usually made by the use of PCR based technology, and at presently, there is also available a new rapid test.^{6,7} Some observers report that elongated trophozoites stretching across the erythrocyte, called band forms, might be useful for microscopic diagnosis, but this finding is not observed consistently.⁸ Anderios et al noted that the fifth species malaria might be distinguishable by observing the appliqué appearance of the cytoplasm and the chromatin lying inside the ring.⁹ However, Lee et al concluded that “the morphological resemblance of early trophozoites of *Plasmodium knowlesi* to *Plasmodium falciparum* and later erythrocytic stages to *P. malariae* makes it extremely difficult to identify *P. knowlesi* infections by microscopy alone.”⁸

EMERGENCE OF THE FIFTH SPECIES MALARIA IN THAILAND

The first case report on the fifth species of malaria in

Thailand was published in 2004 by Jongwutiwes et al.¹⁰ This case was identified in a province in the Southern Region of Thailand, after which there was no further case report until the presently reported epidemic. In 2009 there is a new emergence of this type of malaria in Thailand. The first appearance of this epidemic was in early July 2009, and there have so far been three cases of knowlesi malaria in this epidemic. Two cases were from a province in Southern Region of Thailand, adjacent to Malaysia and the third case was from a province in Eastern Region of Thailand, adjacent to Cambodia. All three cases presented with high fever and chills. The incubation period was 1–2 days, faster than that of falciparum malaria, which is the endemic species in Thailand. The standard treatment for falciparum malaria was used, and all cases showed full recovery. The exact source of the disease in the three indexed cases has not yet been confirmed.

It should be noted that there might be more cases of knowlesi malaria in Thailand that have not been diagnosed. Possible underdiagnosis might be due to misdiagnosis as *P. malariae* malaria. In order to have precise epidemiological data on *P. knowlesi* malaria, there is a need to adapt the technique for investigating malaria. In year 2009, the most recent report on the prevalence of the fifth species malaria in Thailand was issued, according to which a molecular-based survey showed that about 0.57% of blood samples confirmed for malaria in Thailand were positive for *P. knowlesi*.¹¹

THE MONKEY AS A SOURCE OF THE FIFTH SPECIES MALARIA IN THAILAND

There is no official report on the prevalence of knowlesi malaria among the monkeys in Thailand. As in other Southeast Asian countries, there are many monkeys in Thailand and some are kept near human beings. The use of monkeys for the in-house coconut industry could be a risk factor for next epidemic of the fifth species malaria. In addition, monkey shows are a feature of many tourist sites. The author suggests a systematic study on knowlesi among monkeys in Southeast Asia and also draws attention to the possibility of *P. knowlesi* being carried to other regions of the world. There have already been several reports of knowlesi malaria in a Western traveler who visited Southeast Asia.^{12,13}

ΠΕΡΙΛΗΨΗ

Εμφάνιση ελονοσίας από *Plasmodium knowlesi* στην Ταϊλάνδη

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Αρχεία Ελληνικής Ιατρικής 2010, 27(3):548–550

Η ελονοσία αποτελεί μια σημαντική παρασιτική λοίμωξη του αίματος, γνωστή από εκατοντάδες χρόνια. Έχουν περιγραφεί 5 διαφορετικά είδη πλασμωδίων που προκαλούν ελονοσία στον άνθρωπο. Το νεότερο, πέμπτο είδος, το *Plasmodium knowlesi*, παρατηρήθηκε για πρώτη φορά στη ΝΑ Ασία εδώ και μερικά χρόνια και αναφέρεται συνεχώς. Συζητείται και σχολιάζεται η πρόσφατη εμφάνισή του στην Ταϊλάνδη.

Λέξεις ευρετηρίου: Ελονοσία, *Plasmodium knowlesi*

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