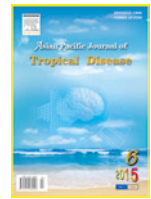




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Emerging *Leishmania siamensis* in Southern Thailand: some facts and perspectives

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ABSTRACT

Leishmaniasis is an important parasitic infestation. This blood infestation can be seen in many tropical countries in South America, Africa, the Middle East and Indian subcontinent. Focusing on Southeast Asia, this disease is not endemic though it is also a tropical region. In the past, there are sporadic imported cases of leishmaniasis in Thailand. Within the recent year, a new species was declared from southern region of Thailand. The species, namely, *Leishmania siamensis* has been continuously reported in both immunocompromised and immunocompetent cases. There are several remained questions on this new species. In this specific mini-review, the authors discuss on some facts and perspectives on emerging *Leishmania siamensis* in Southern Thailand.

1. Introduction

Leishmaniasis is an important parasitic infestation[1]. This is a blood infection that has complex life cycles involving insects, human beings, animals and cells. This blood infestation can be seen in many tropical countries in South America, Africa, the Middle East and Indian subcontinent[1]. Focusing on Southeast Asia, this disease is not endemic though it is also a tropical region. In the past, there are sporadic imported cases of

leishmaniasis in Thailand and other Southeast Asian countries[2]. Indeed, this disease is previously not a locally endemic disease in this area. Within the recent year, a new species was declared from southern region of Thailand. The species, namely, *Leishmania siamensis* (*L. siamensis*) has been continuously reported in both immunocompromised and immunocompetent cases[3]. There are several remained questions on this new species. In this specific mini-review, the authors discuss on some facts and perspectives on emerging *L. siamensis* in Southern Thailand.

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2. The imported cases of leishmaniasis into Thailand and Southeast Asia

As noted, leishmaniasis is not endemic in Southeast Asia.

However, there have been sporadic reported on imported cases for less than 50 years. According to a recent report by Wiwanitkit, it was noted that from physical examination, all had hepatosplenomegaly[2]. The striking findings were active hemophagocytosis with increased proliferation of lymphoidplasma cell line in the bone marrow and amastigotes of *Leishmania donovani* were demonstrated[4]. Hence, the problem of leishmaniasis in Thailand and nearby countries was firstly the imported diseases from the endemic area. The main reason is the returning home of the laborer. In the past, many workers came from Thailand to work mainly in Saudi Arabia and return to Thailand every year. For sure, this can be cause of bringing disease to Thailand. However, due to the recent national conflict between Thailand and Saudi Arabia, the laborer from Thailand was banned to work in Saudi Arabia and this resulted in absence of reports on imported case of leishmaniasis in Thailand. (But there are still some reports in nearby countries). As an overview of Southeast Asia, Wiwanitkit noted that although this condition is mainly found in many Middle East, African and South American countries, other parts of the world may still be affected largely due to large population migration and ease of travel made possible by modern transportations. It is therefore of paramount importance that such a condition be recognized by health providers because early detection may help to prevent early fatality[2]. It was also noted that the main factor leading to the rise in the transmission of this disease is the increased rate of travelling of people to the endemic countries and the migration of immigrants from the endemic areas. Most cases are imported cases confirming the nature of imported infection in travel medicine aspect in Southeast Asia[2].

3. Emerging of new species of leishmaniasis in Thailand

After absence for a short period of leishmaniasis in Thailand, the emerging of leishmaniasis occurs again within the few years. Of interest, the great concern is on this new emergence of leishmaniasis in Southern Thailand. The isolation of new species *L. siamensis* was reported[3]. This was mentioned as a new pathogen causing infection. Some researchers believe that this new emerging leishmaniasis is a mild infection that the disease is not much detected in this region[5]. Some propose for possibility of circulation of infection within this area[5]. The disease can be seen in both immunocompromised and immunocompetent local subjects[6,7]. However, there is still no information on the immunopathology of this infection.

There are many reports on the infected cases (both immunocompromised HIV infected and non HIV infected cases) [6,7], vector and ecology of this new disease[8,9]. The researchers

attempted to study flies in Thailand and there are many detected flies in Thailand. But there has never been a proof that the local flies can transmit the disease[8,9]. Also, there has never been the explanation on how the disease occurs in the local people who have never go aboard. In addition, there are also reported cases of Myanmar people who got the *L. siamensis* infection without history of going aboard and had diagnosis and treatment in Thailand[7].

At present, there are many questions on the situation especially for the question how this new emerging disease occurs and how it can cause new infection in Thailand. In fact, some local scientists propose the possibility that the disease might cross species from rats or dogs to human beings in Thailand via local fly. However, the remained question is why there has never been recent outbreak of animal leishmaniasis prior to the emerging of this new infection in human beings.

4. Perspective on the new disease and possible role of travel medicine

Indeed, there are some things that we might not recognize. The globalization and good transportation system might be the clue for the present problem. In fact, there are reports on *L. siamensis* from other countries, apart from Thailand, in both Europe and USA[10,11]. How can the same new species occur at different sides of the world? There might be a common source, mightn't it? The possible explanation how the new disease went to Thailand might be the delivery of disease and vector from the endemic area to Thailand. In fact, there are many workers and pilgrimages from Thailand to visit the endemic areas and return annually. Since the workers are presently banned, the pilgrimage should be focused. There are many pilgrimages, which are usually from southern part of Thailand, to the Middle East each year and it is no doubt that this might be the way that disease can be carried back to Thailand. In fact, this situation has ever been reported in France[12]. Sometimes, the local cultures (such as Hijab or Sari), which might contribute to prevention of disease in endemic countries, might act as a site for the vector to hide and the increasing risk towards the new diseases can be expected. In addition, the vectors might directly contaminate to the plains, especially low cost flight, that are easily available from endemic area to Thailand at present. For sure, within few years, the vector can be carried from endemic area to Thailand. And this might cause the local problem. In fact, the existence of the *L. siamensis* in many endemic areas of the world has never been systematically studied (since it is very common in the endemic area, the molecular entomology might be neglected). Hence, the emerging *L. siamensis* infection might be an actual imported disease due to

imported vector that causes the new emerging infectious problem in Thailand and Southeast Asia.

Focusing on the local medical personnel's knowledge, it is no doubt that most do not know this new disease. Very few physician and medical personnel can recognize this disease and this can result in underdiagnosis (the good examples are the cases of Myanmar patients that were firstly diagnosed as Sweet's disease and finally diagnosed to have leishmaniasis in Bangkok, Thailand[7]). Also, less ones have experience on treatment of leishmaniasis. The underdiagnosis is likely to be possible and this can be an important neglected problem in Thailand and can be a very big problem in the future. Finally, if the disease is already existed and locally circulated in this area, there are many challenges including a) the urgent need of education system on this new disease for local practitioners, b) availability of diagnostic test, which must be standardized and there must be the good referencing system and quality control, c) availability of new effective anti-leishmaniasis drug (such as paromomycin[13,14]), and d) how to set an effective system for disease control and surveillance. Not only assessment for the present problematic cases but also preparation for future, as a perspective, is required. We should not "forget" and we must think and have a good multidisciplinary holistic approach.

5. Conclusion

Leishmaniasis is a well-known parasitic infestation. This is an important blood infection seen in many tropical countries in South America, Africa, the Middle East and Indian subcontinent. However, focusing on Southeast Asia, leishmaniasis is considered as a new thing. It is considered as a new emerging parasitic infestation in this area. With the continuously reported cases from the southern region of Thailand, it becomes the present public health consideration for this region. Focusing on the natural history of the new disease in this area, the disease occurs in both immunocompetent and immunocompromised hosts. Although there is a recently discovered new species *L. siamensis*, it is still no clear information on the reservoir host and vector in Thailand. There are also unexplained questions focusing on transmission and pathogenesis of the disease caused by the new species. It is also doubtfully how this new emerging disease occurs in this area. Whether it was imported from other endemic regions is questionable.

Conflict of interest statement

We declare that we have no conflict of interest.

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