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Tajuk : Challenge Not In Treating Monkey Malaria But Detecting It.

Challenge not in treating monkey malaria but detecting it

KUCHING: Until 2004, monkey malaria or naturally acquired infections of *Plasmodium knowlesi* in humans was almost unheard of until a large number of infections were reported in Kapit Division.

"Previously only four species of *Plasmodium* causing malaria in humans were recognised. While cases caused by the fifth species of malaria (*P. knowlesi*) were considered extremely rare and often reported as *P. malariae*," said Professor Balbir Singh.

He was met by reporters during a public awareness talk on malaria recently in conjunction with World Malaria Day. It was not until the development of molecular detection assays, which could differentiate between *Plasmodium knowlesi* and the morphologically similar human malaria parasite *Plasmodium malariae* that the matter was brought to light, he added.

"Concurrently, there has been an increase of reported cases in South-East Asian countries and in Malaysia; most cases in Sarawak and Sabah."

Plasmodium knowlesi is a monkey malaria parasite commonly found in South-East Asia. It causes infection in long tailed and pig tailed macaques but can also infect humans; naturally by mosquito bite or artificially by blood injection.

"In 1965, an American who had returned after working in the jungle in Pahang, Peninsular Malaysia, was confirmed to have naturally been infected by *P. knowlesi*.

Fellow scientists: Sarawak Biodiversity Centre (SBC) chief executive officer Dr Rita Manurung congratulating Balbir after he delivered a talk on malaria at the SBC recently.

"This was only confirmed by injecting infected blood to inoculate Rhesus monkeys," said Balbir on the first-ever reported case of a human getting *P. knowlesi* malaria by mosquito bites.

Balbir's team works at the Malaria Research Centre, Universiti Malaysia Sarawak (Unimas) and has been significant in redefining the many infections in rural areas and in the way human malaria is perceived.

His team, in collaboration with other scientists, has done meticulous work on the study of *P. knowlesi* cases that involves studying the area where cases are reported, sequencing *P. knowlesi* genes, catching monkeys and even catching and dissecting mosquitoes.

"According to our molecular studies done on monkey and human samples, we have shown that *P. knowlesi* is an ancient parasite that was present more than 100 years ago."

P. knowlesi is transmitted by the *Anopheles leucosphyrus* group of mosquitoes, which are typically found in forest areas of South-East Asia and feed at night.

Balbir said there were two possible modes of transmission to humans by mosquitoes – either from an infected monkey to a human or from an infected human to another human.

However, the current evidence points to monkey-to-human transmission by mosquitoes.

Symptoms are usually prominent after nine days of getting bitten by the mosquito when the parasites can be seen inside the red blood cells.

"It replicates every 24 hours causing the red blood cells to burst and this creates a high density of parasites in a short period of time, which makes *P. knowlesi* more dangerous than *P. malariae*, which replicates only every 72 hours."

However, merely diagnosing a patient by symptoms is difficult as the symptoms are very non specific; fever, chills and rigour being the most common, followed by others such as headache, tiredness, muscle pain and even vomiting and diarrhoea. Someone with the flu or a bacterial infection will also have similar symptoms.

He said the challenge was often not in treating the infection but detecting it at an early stage as the parasites multiplied rapidly.

"*P. knowlesi* could only be correctly diagnosed by using molecular detection assay as it looks similar to *P. malariae* under the microscope," stressed Balbir on the importance of a correct diagnosis.

"In the number of monkey malaria cases in humans published so far in journals, Sarawak leads with 881 cases reported, Sabah had 664 while there were 96 cases reported in the peninsula. However, the actual number of cases occurring every year are much higher and ongoing studies indicate that human cases of monkey malaria in Malaysia are on the rise."

There have been deaths reported in Sabah and Sarawak due to *P. knowlesi* but Balbir said that there was no need to panic since monkey malaria was easily treatable and no resistance to anti-malarial drugs had been described.

"Dengue is more common than malaria in the urban areas and *knowlesi* malaria really is restricted to the rural areas where the natural hosts (monkeys) and the mosquitoes dwell so there is no reason to panic."

He further added that the chances of someone getting monkey malaria by venturing into the forest at night, when the malaria-transmitting mosquitoes feed, were extremely low compared with acquiring dengue in South-East Asia.

However, those who often go out to the jungles and remote areas are advised to take precautions such as taking anti-malaria pills, sleeping in mosquito nets and applying mosquito repellent. Balbir joined Unimas in 1999 and currently heads the Malaria Research Centre.