

Research discovers a hidden burden of vivax malaria parasites causing severe malaria

23 January 2015

New research into the malaria parasite *Plasmodium vivax* has provided insights into why people infected with this malaria species may develop severe disease.

Plasmodium vivax causes millions of cases of malaria each year, including about half of all malaria cases in the Asia-Pacific region. Although previously considered benign (and therefore neglected), work by Menzies School of Health Research (Menzies) and others in recent years have shown it can cause severe disease and death. However it has remained a mystery how the parasite can cause severe disease when the numbers of parasites detectable in the blood are so low.

Working with colleagues in Sabah, Eastern Malaysia, researchers from the Menzies have discovered that the number of *Plasmodium vivax* parasites in the body is much higher than previously thought.

Their research, released in this month's edition of the prestigious international journal *PLOS Pathogens* shows that many extra parasites are hiding in parts of the body not detectable by routine blood tests.

Menzies Malaria researcher and infectious diseases specialist, Dr Bridget Barber, explained that unlike *Plasmodium falciparum*, which is the major cause of severe malaria worldwide, *Plasmodium vivax* exists in low levels in the blood when viewed under a microscope.

"We measured substances produced by the parasite to estimate the total amount of parasite in the body and found that the total burden is underestimated by the amount of parasite seen in the peripheral blood. In other words, by looking under the microscope, we may only be seeing the tip of the iceberg of the extent of parasites found in the body," Dr Barber said.

"Our study shows that there is a hidden burden of parasites in the body- these may be hiding in organs like the bone marrow or spleen. This hidden parasite burden appears to cause significant inflammation throughout the body and likely contributes to severe disease."

"We hope our research will enable us to better understand how this parasite causes severe disease, which will guide future studies and ultimately improve the management of patients with malaria," Dr Barber said.

An important implication of the findings is that patients with vivax malaria presenting with any features of severe disease should be managed with immediate intravenous therapy in the same way that a patient with severe falciparum malaria would be managed, as a low level of parasites in the peripheral blood may be falsely reassuring.

The findings may also have implications for malaria elimination efforts in communities where vivax malaria occurs. Hidden vivax parasites may mean that blood testing of communities to monitor elimination efforts, may fail to detect parasites hiding elsewhere within the body, and may therefore underestimate the number of people who are infected

View the article on the PLOS Pathogens Journal website:

<http://journals.plos.org/plospathogens/article?id=10.1371/journal.ppat.1004558>

ENDS

Media note:

Dr Bridget Barber is an infectious diseases physician and malaria researcher in the Global Health Division at the Menzies School of Health Research in Darwin. She collaborates with clinical research programs in Sabah, Malaysia.

Media contact:

Lucy Barnard, senior media and events officer 08 8946 8679, 0439 393 900,
communications@menzies.edu.au

Menzies Background

Menzies School of Health Research is Australia's leading Medical Research Institute dedicated to improving Indigenous, global and tropical health. We have a 30 year history of scientific discovery and public health achievement. Menzies works at the frontline, joining with partners across the Asia-Pacific as well as Indigenous communities across Northern and Central Australia. We collaborate to create new knowledge, grow local skills and find enduring solutions to problems that matter.