

A deeper knowledge of the body's immune response to combat Chikungunya

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Joint pain is one of the key symptoms in patients infected with the Chikungunya virus. Credit: Creatas Images/Creatas/Thinkstock

Infection with the Chikungunya virus produces a 'signature' pattern of immune messenger molecules in the blood, according to the latest research from A*STAR scientists. This discovery will hopefully improve patients' prognoses, and lead to better outcomes for the often-debilitating disease.

The Chikungunya virus, spread by mosquitoes, is on the rise. Millions of people are already affected in the Indian Ocean islands, India, Southeast Asia, and the Caribbean islands.

"The symptoms, in particular joint pain, can be severe, with pain

sometimes lasting for years, so outbreaks can have a serious socio-economic impact," explains Lisa F. P. Ng, who leads the team at the A*STAR Singapore Immunology Network researching the virus.

Ng saw a gap in knowledge about the disease. Several studies had looked at infected people in different parts of the world. But the studies had not been combined to give a clear picture of how Chikungunya affects the messenger chemicals of the [immune system](#), known as mediators.

"The study was done in two phases," explains Ng. "First we examined how the disease manifested in a cohort of Sri Lankan people affected in an outbreak there, which included looking at the immune mediators in their blood as they went through the early, or acute, phase of the illness."

"Next, we combined the results of our Sri Lankan study with data from publications on Chikungunya infection from 2009 to 2014, which covered a range of geographical locations, to carry out a systematic meta-analysis," she says.

"We found that about half the patients with Chikungunya fever had joint pain in the knees, wrist and small joints of the hands and feet, but surprisingly their joints were not swollen," says Ng. "And although joint pain is clearly a feature of the disease, people with low levels of the virus are as likely to have joint pain as those with high viral concentrations," she adds.

In the next phase of the project, they retrospectively analyzed data from nine other studies of the disease, to determine the profile of immune mediator molecules in the blood. "Our meta-analysis showed that multiple immune mediators are elevated in patients with Chikungunya, compared with healthy controls."

"The pattern of these mediators provides a set of biomarkers that help to

distinguish between people who have the virus and people who don't," says Ng. "We also want to see if any of these immune mediators are linked with chronic [joint pain](#)," she says. "That may help to predict which patients are likely to get long-term problems with their joints."

More information: A systematic meta-analysis of immune signatures in acute Chikungunya virus-infected patients. *The Journal of Infectious Diseases* 211, 1925–35 (2015). [DOI: 10.1093/infdis/jiv049](https://doi.org/10.1093/infdis/jiv049)

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