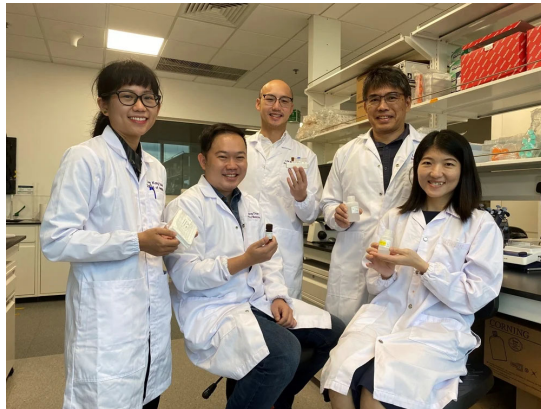


Step forward in diagnosing severe cases of dengue

Scientists and clinicians at NTU Singapore and the National Centre for Infectious Diseases (NCID) have identified two compounds -- sST2 and suPAR -- in the blood of dengue patients that could determine if a patient is at risk of severe dengue in the early phases of the disease.

Dengue is often a mild disease. However, a minority (around 15 per cent) of infections may progress to severe dengue, which is life-threatening without access to close monitoring and specialised medical care.



Methods to accurately identify potential severe cases of the disease in its early stages include polymerase chain reaction (PCR) and enzyme-linked immunosorbent assay (ELISA) using blood samples. However, these tests are not always sensitive enough to identify severe cases in the early stages.

Besides blood tests, the only other approach that the WHO recommends is using guidelines to evaluate symptoms such as fever, headache, pain behind the eyes, joint and muscle pain, rash, and mild bleeding. However, these guidelines

only offer a six to 18 per cent accuracy in screening for severe dengue, as those symptoms can overlap with milder forms of dengue and other illnesses.

As lateral flow test kits for sST2 and suPAR are already commercially available and are used to test for heart failure, the researchers are working on validating and adapting these tests into a single kit that could test for severe dengue. sST2 and suPAR are proteins in the blood linked to heart health. High sST2 levels indicate heart stress and fibrosis, helping assess heart failure severity. Elevated suPAR levels signal increased inflammation, associated with a higher risk of heart issues. Monitoring these proteins provides insights into heart health and disease progression.

The researchers estimate that this new method of monitoring the levels of the two compounds would bring a higher accuracy (55 to 60 per cent) of predicting severe dengue than the WHO-prescribed guidelines. The researchers said the test kits would greatly aid clinicians in identifying between non-life-threatening cases of dengue fever and severe dengue, which requires hospitalisation.

The scientists and clinicians discovered the importance of sST2 and suPAR in determining dengue severity during a study conducted between 2016 and 2019 involving 129 dengue patients treated in Tan Tock Seng Hospital, Singapore.

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