Expectant mums’ dengue history poses risk

NUS ‘mouse model’ shows effect on babies if antibodies are passed on

By FENG ZENKUN

PREGNANT women who had been infected with dengue in the past may inadvertently endanger their babies, passing anti-dengue antibodies in their bodies to their babies through the placenta.

This may protect the babies against dengue for a few months after birth. But as the antibodies wane, their risk of developing more severe dengue symptoms if infected may rise temporarily.

While these windows of protection and danger have been known for years, National University of Singapore (NUS) scientists have reproduced the effect for the first time in mice, allowing them to further study how it works.

Their “mouse model” involved making mice – usually resistant to dengue – vulnerable to the disease, infecting adult females, allowing them to recover and then mating them with healthy males.

Both the mothers and babies – which the team infected with dengue – were studied to better understand how the antibodies are transferred and confer the protection and risk.

NUS Yong Loo Lin School of Medicine’s Associate Professor Sylvie Alonso said the model could be used to shed further light on the effect, and to test theories such as whether dengue-immune mothers could endanger their infants through breast milk.

As research progresses on a dengue vaccine, “the model may also be extremely useful to test whether vaccination of women may endanger their babies once they are pregnant”, she said, adding that pharmaceutical firms have approached the team.

The research also involved Duke-NUS Graduate Medical School and the National University Health System. It was published last month in PLOSpathogens, a science journal on infectious diseases.

The research showed the maternally transferred antibodies protected the infant mice against dengue for about two to three weeks.

As the antibodies waned, however, the mice were more prone to developing more severe symptoms between the third and eighth week, when infected with dengue.

The antibodies were gone after eight weeks. Clinical reports have said that in people, the protection could last up to six months after birth, and the risks of more severe symptoms increase from the sixth to ninth month.

“After nine months, the baby is considered no longer at greater risk because the level of antibodies in its blood is too low,” Prof Alonso said.

More research is needed, she said, as different strains and serotypes of dengue may work differently.

The team’s work was funded by the Singapore STOP Dengue Translational and Clinical Research Programme.

It is helmed by Tan Tock Seng Hospital, NUS and the Duke-NUS school.

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