Immune cells predict outcome of West Nile virus infection

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Infection with West Nile virus (WNV) causes no symptoms in most people. However, it can cause fever, meningitis, and/or encephalitis. What determines the outcome of infection with WNV in different people has not been determined.

But now, Philip Norris and colleagues, at the Blood Systems Research Institute, San Francisco, have found that levels of immune cells known as Tregs (immune cells that suppress the function of other immune cells) in the blood of a human or mouse infected with WNV predict whether the person or mouse will have symptoms of infection.

In the study, analysis of blood donated by 32 individuals acutely infected with WNV indicated that the frequency of Tregs increased substantially following infection. However, those individuals that were asymptomatic had higher levels of Tregs than those that exhibited symptoms of infection. Similar observations were made in mice infected with WNV.

Consistent with a role for Tregs in controlling the symptoms of WNV infection, mice lacking Tregs were more susceptible to lethal infection with WNV than control mice. The authors therefore conclude that higher levels of Tregs in the blood after infection with WNV protect against severe disease in individuals with a fully functioning immune system.

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