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New Study Ties West Nile Virus to Risk of Shorter Life Span: Death Rate Rises from 'Delayed' Fatalities Long After Recovery

New evidence presented at ASTMH Annual Meeting paints darker picture of disease often perceived as mild

ATLANTA (14 November 2016)—West Nile virus may be much more deadly than previously believed, with deaths attributable to the mosquito-borne disease occurring not just in the immediate aftermath of the infection but also years later, long after patients seem to have recovered from the initial illness, according to a new study presented today at the 2016 Meeting of the American Society of Tropical Medicine and Hygiene (ASTMH).

"While we understand the current focus on Zika virus, for many people in the United States today, West Nile virus is the much more serious mosquito-borne threat and that threat may persist even for patients who appear to have survived the infection unscathed," said Kristy O. Murray, DVM, PhD, of Baylor College of Medicine and Texas Children's Hospital, who is the principal author of the study.

Murray and her colleagues looked at 4,144 West Nile virus (WNV) infections that occurred in Texas between 2002 and 2012, focusing on both "acute" deaths recorded in the first 90 days after infection and also on WNV patients who died months to years later—yet far sooner than other people of similar age and overall health condition. The researchers found there were 286 people who died in the acute phase of WNV. But after examining causes of deaths and symptoms from the initial infection, Murray and her colleagues concluded that 268 people who survived infection subsequently died early (they call it "delayed mortality") due to the virus.

Overall, counting both the acute and delayed group, the researchers attributed 554 deaths to WNV during the 10-year period, a 13 percent fatality rate. That's much higher than the 4 percent national fatality rate for WNV recorded between 1999 and 2015 by the U.S. Centers for Disease Control and Prevention (CDC), though those statistics accounted only for deaths that occurred during the acute phase of illness.

WNV, which also can infect birds that help spread the virus further, has been detected in all of the lower 48 states since it was introduced into the United States in 1999. It belongs to the same family of viruses as Zika and yellow fever. Like Zika, most people infected with WNV never experience symptoms. Those who do typically have a fever, nausea, fatigue or a rash, though in rare cases, it can cause severe neurological complications that can lead to swelling of

the brain and spinal cord. There is not a specific treatment for WNV infections nor is there a vaccine to prevent it.

Murray noted that the Texas study is the largest study to date to investigate what has been seen in much smaller groups of WNV patients, which is that the disease appears capable of causing health problems years after someone is over the initial infection.

“For several years, we had followed smaller groups of patients and felt that many had died prematurely,” Murray said. “We saw many people who were otherwise healthy until they had West Nile virus—and then their health just went downhill.”

Murray said most of the delayed deaths were clustered around a large outbreak of WNV in Texas in 2012, which means they occurred just a few years after the initial infections. But Murray said other early deaths were recorded up to 10 years after the initial epidemic of West Nile. She said her research team feels confident in its conclusions because, for each patient, they had access to both information about the course of the initial infection and records maintained by the Texas state death registry that document cause of death.

Murray said that the delayed deaths appeared to be more common in patients who had suffered significant neurological complications during the acute phase of their illness. Also, for patients suffering delayed deaths, Murray said kidney disease, increasingly suspected as a potential long-term complication of WNV, was statistically found to be a significant cause of death.

Murray was the principal investigator of a 2012 study that followed 139 patients diagnosed with WNV and found 40 percent of them developed chronic kidney disease. Murray said kidney issues caused by WNV could also explain why it was not just elderly patients who were found to be at risk of delayed death but especially patients under 60 years old.

“We had been surprised in the 2012 study to see so much chronic kidney disease develop in younger West Nile patients because it’s not that common in people under 60,” she said.

“In much the same way that research into Zika virus is showing a more destructive virus than originally thought, we are still discovering previously unreported long-term destructive effects of West Nile,” said Stephen Higgs, PhD, president of the American Society of Tropical Medicine and Hygiene. “Those of us in the tropical medicine community have long been concerned that West Nile is a significant public health problem and that U.S. federal investments are warranted in finding better ways to treat and prevent it.”

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The American Society of Tropical Medicine and Hygiene, founded in 1903, is the largest international scientific organization of experts dedicated to reducing the worldwide burden of tropical infectious diseases and improving global health. It accomplishes this through generating and sharing scientific evidence, informing health policies and practices, fostering career development, recognizing excellence, and advocating for investment in tropical medicine/global health research. For more information, visit astmh.org.