Reemergence of Murine Typhus in the US

[Announcer] This program is presented by the Centers for Disease Control and Prevention

[Sarah Gregory] Twelve patients with murine typhus were identified in Galveston, Texas, USA, in 2013. An isolate from 1 patient was confirmed to be *Rickettsia typhi*. Reemergence of murine typhus in Galveston emphasizes the importance of vector control and awareness of this disease by physicians and public health officials.

Dr. Lucas Blanton has co-authored an article about murine typhus in Texas. He's with us today to talk about this important issue.

Dr. Blanton, why was it important to write this article?

[Lucas Blanton] At one time, murine typhus was much more prevalent in the United States. In 1944, about 5,400 cases were reported. Rats are the primary reservoir for *Rickettsia typhi*, which is the organism that causes the disease, so the rat flea is the responsible vector. Where there were rats, there was murine typhus. Port cities, like Galveston, are prime areas for the proliferation of rats. Like much of the United States, Galveston had high numbers of cases heading into the 1940s. Then, in 1946 things changed. The broad use of DDT dramatically decreased the incidence of murine typhus. The pesticide killed fleas, and the cycle of transmission was broken. By 1956, less than 100 cases were reported in the United States. In Galveston, a similar phenomenon occurred.

So end of story, right? Well there are still murine typhus cases reported in southern California and South Texas. Opossums and their fleas are the likely culprits of these sporadic infections. But in Galveston, just like other parts of the country, murine typhus sort of went away—until now. The reemergence of murine typhus demonstrates how a vector-borne disease can gain a foothold on a location. In Galveston, we believe the rat-associated cycle of transmission has changed to one involving opossums and their fleas. Although not part of this report, our preliminary studies have identified *Rickettsia typhi*-seropositive opossums and *Rickettsia typhi*-infected fleas collected from Galveston opossums.

Writing this article was important to raise awareness of murine typhus—from both a public health and a physician prospective. Like in Galveston, this disease may reemerge in other communities. As humans encroach on the habitats of reservoir animals, communities may be at risk. We need to be ready when this happens.

[Sarah Gregory] What would you like people to know about murine typhus?

[Lucas Blanton] Murine typhus is hard to diagnose. It's an undifferentiated febrile illness. In other words, there are no signs or symptoms that would give a clinician a specific clue toward the diagnosis. Many of the symptoms, such as fever, headache, and body aches are found in those with the flu. Sometimes, the presence of rash is a clue, but this finding only occurs in about 54 percent of patients. To make matters worse, there's no available rapid point of care test to help physicians make the diagnosis. A diagnosis is made by detecting the antibodies of *Rickettsia*

typhi. Unfortunately, antibodies are rarely detected during acute illness. Retesting during convalescence is usually required to detect these antibodies. A true diagnosis is therefore retrospective.

Recognizing the possibility of murine typhus as a cause of a patient's illness is very important. Treatment with doxycycline is inexpensive and very effective. The disease is usually considered mild, but the case fatality in hospitalized patients is anywhere from 2 to 4 percent. The patients I've treated would not consider this a mild infection. Several have told me that they were the sickest they've ever been. This is coming from the young, healthy, and strong. Several of the patients I've encountered had long hospital courses and expensive diagnostic workups prior to the consideration of murine typhus.

I'd really like physicians to consider murine typhus in the appropriate setting, as early treatment can save the patient a lot of grief. As an infectious disease physician, I'm stingy with the use of antibiotics, but in the case of a possible rickettsial infection, early treatment is of utmost importance.

[Sarah Gregory] I'm Sarah Gregory for *Emerging Infectious Diseases*. You can read the entire March 2015 article, Reemergence of Murine Typhus in Galveston, Texas, USA, 2013, online at cdc.gov/eid.

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