Bartonella quintana in Homeless Persons

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[Ted Pestorius] Welcome to this CDC podcast. I'm your host, Ted Pestorius. Today, I'm talking to Dr. Marina Eremeeva of the Rickettsial Zoonoses Branch. We're discussing an article about *Bartonella quintana* that appears in the June 2009 issue of *Emerging Infectious Diseases*. Welcome to the show, Marina.

[Marina Eremeeva] Thank you for having me.

[Ted Pestorius] Tell us about *Bartonella quintana.*

[Marina Eremeeva] *Bartonella quintana* is a bacterium that's transmitted by human body lice. Specifically, it is transmitted when feces from body lice contain *Bartonella quintana*, and a person with body lice scratches the feces into the skin. It causes an acute illness called trench fever and other severe syndromes. *Bartonella quintana* may cause chronic bacteremia and endocarditis in infected people. We know that during World War I and World War II, *Bartonella quintana* caused epidemics of trench fever and that it can be life threatening to people with immunodeficiency.

[Ted Pestorius] Why is *Bartonella quintana* in homeless populations of interest?

[Marina Eremeeva] Body lice infestations are usually found on people who don't have access to water to bathe or clean their clothing, and many homeless people cannot change their clothing or take baths, which makes homeless people at risk of contracting *Bartonella quintana*. Studies conducted in France and in Japan have found that body lice taken from the clothing of homeless patient contained *Bartonella quintana*. So researchers think that human body lice may play an important role in transmitting *Bartonella quintana* among homeless persons. Some researchers are now think that *Bartonella quintana* may be transmitted through head lice and not just body lice, but the evidence for this is very weak at present. The presence of an agent DNA in head lice doesn't prove that transmission by the head lice actually occurs.

[Ted Pestorius] Tell us about the article.

[Marina Eremeeva] The researchers in this study wanted to know if body lice and head lice taken from the homeless people in San Francisco, California, carried *Bartonella quintana* or some other species of *Bartonella.* Researchers from the Vector-borne Disease Section of the California Department of Public Health tested this idea by working with San Francisco's Project Homeless to collect lice from homeless people living in the area. They collected lice from the hair, bodies, and clothing of the homeless people. If they took lice from a head of the homeless person, the researchers categorized the lice as head lice. And if they took the lice from the body or clothing of the homeless person, they categorized the lice as body lice. After they collected the lice, they sent the lice to the Center for Disease Control and Prevention in Fort Collins, Colorado, for testing for *Bartonella*.

[Ted Pestorius] Why did the authors focus on homeless populations in San Francisco?

[Marina Eremeeva] The author focused on homeless population in San Francisco because physician in the San Francisco Bay area had previously conducted a study in 1990 that had linked *Bartonella* with conditions, such as bacillary angiomatosis and bacillary peliosis hepatic. Another study in 1997 found patients suffering from bacillary angiomatosis had been infected with *Bartonella quintana* or *Bartonella henselae*, which causes cat scratch disease. Most of the patients were immunocompromised and *Bartonella quintana* infection.

[Ted Pestorius] What were the primary conclusions of the article?

[Marina Eremeeva] The researchers found evidence of *Bartonella quintana* DNA in the body lice and the head lice taken from the homeless persons. *Bartonella* was detected in body lice from 33 percent of the persons with body louse infestations and in the head lice collected from 25 percent of the persons with head louse infestations. One of the head lice samples was found to specifically have *Bartonella quintana,* while body lice from the same persons were not infected. The finding of *Bartonella* DNA in both the body lice and the head lice of the homeless persons, specifically *Bartonella quintana*, raises some questions because this is the second time *Bartonella* DNA has been detected in head lice. The previous time was in head lice from children infested with body and head lice from Nepal. Researchers now know that body lice transmit *Bartonella quintana,* but this is the first study to find it in a head lice in California. I think the way the authors identified louse as either body lice or head lice will probably raise some questions and controversy about the findings. They categorized lice as head lice if lice were taken from the head. If they took lice from the person clothing, then they categorized the lice as body lice. This is convenient, but it is possible the lice were present in head covers like sock hats or hoods or had been transferred from clothing of another person. Head lice are known to migrate by head-to-head contact or by sharing of combs or brushes, but spread of body lice also occurs and is less well understood.

[Ted Pestorius] What's the public health importance of this article?

[Marina Eremeeva] If the authors actually did find *Bartonella quintana* in head lice as they reported, this could be important to public health because head lice infestations are common in populations other than homeless people. Head lice infestation in the United States occur most often in school children, so if *Bartonella quintana* is present in head lice, then this means more people might be at risk of contracting *Bartonella quintana* infections. We know that *Bartonella quintana* is a problem among homeless populations and can cause trench fever and other health problems. The big question is whether *Bartonella quintana* can be transmitted by head lice. If head lice can acquire and transmit this pathogenic bacterium, then other populations, such as school children, might be at increased risk for these problems as well. More studies should be done to determine if *Bartonella quintana* is in head lice or if this author collected body lice with *Bartonella quintana* that migrated to the patient heads and were mistaken for head lice. It would be more convincing if molecular assays had been performed on the lice to identify them. It should also be noted that *Bartonella quintana* DNA was found only in a few samples of head lice. Since only one of those samples had enough bacterial DNA to be detected with both PCR assays

that were used, it was probably not present in large amounts. In comparison, body lice were much more common on these homeless people, and one third of the body lice were infected with *Bartonella quintana*.

[Ted Pestorius] This discussion with Dr. Marina Eremeeva was prompted by an article in the June 2009 issue of *Emerging Infectious Diseases*. This article, and others on emerging bacterial and viral diseases, can be read online at www.cdc.gov/eid.

You can submit your comments on this interview to eideditor@cdc.gov. For Emerging Infectious Diseases, I'm Ted Pestorius.

[Announcer] For the most accurate health information, visit www.cdc.gov or call 1-800-CDC-Info 24/7.