

Cryptosporidium Infections Among Children in Peru

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[Ted Pistorius] Hello. I'm Ted Pistorius, sitting today with Dr. Vita Cama, a microbiologist here at the CDC. And today, we're talking about a study he coauthored in the October 2008 issue of CDC's journal, *Emerging Infectious Diseases*. The study's about a waterborne parasite called *Cryptosporidium*, which came into the spotlight in the United States in 1993, when it caused illness in more than 400,000 Milwaukee residents. The new study takes a look at the parasite's effects on children in Peru. So, Dr. Cama, can you tell us a little bit about *Cryptosporidium* and why you did this study?

[Dr. Cama] Sure, Ted. *Cryptosporidium*, or *Crypto* as we sometimes call it for short, is a parasite that is found in water and other sources, and can cause severe diarrhea and vomiting. Here in the U.S., we see seasonal outbreaks associated with swimming pools, but it is a much bigger problem in poor countries, especially in children.

[Ted Pistorius] What did you set out to investigate in this study?

[Dr. Cama] Previous studies in Peru had found that about 30 percent of otherwise healthy children with *Crypto* reported diarrhea. There are many different species of *Crypto* and we wanted to see which ones were making Peruvian children sick and what kind of symptoms they had.

[Ted Pistorius] How did you go about studying it?

[Dr. Cama] Between 1995 and 1998, we collected weekly stool samples from about 530 children who were born around the same time and lived in an area of the outskirts of Peru's capital city of Lima. The stool samples were later examined to determine if they had *Crypto*, and if so, which species.

[Ted Pistorius] So, what factors did you look at and why?

[Dr. Cama] We wanted to understand what was causing the infections and why the children were getting sick. We asked the children's parents about any symptoms they had observed, including number and consistency of bowel movements, stomach pain, fever, nausea, and vomiting. We also tried to identify factors which could predict getting *Cryptosporidium* infections, such as whether they had running water or contact with animals, whether their house had sturdy walls and a roof. With these questions we tried to find out if socioeconomic factors played a role in infection.

[Ted Pistorius] And what did you find?

[Dr. Cama] Out of 368 participants who met the study criteria, 30 percent had illness caused by *Crypto*. During the three-year study, about 70 percent of the *Crypto*-infected children had just

one episode, about 27 percent had two episodes and three percent had more than two. The average age at first infection was around a year and a half and the average length of infection was about eight days.

[Ted Pistorius] Were there particular species that showed up more often?

[Dr. Cama] Yes, Ted. Five species were responsible for all the infections we found. And one species in particular, called *Cryptosporidium hominis*, caused about 70 percent of the cases. While all Crypto species cause diarrhea, infections with *C. hominis* tended to cause additional symptoms, like vomiting, nausea, and general discomfort. Infections with *Cryptosporidium hominis* also tended to last nearly twice as long. This species is definitely linked with more severe disease.

[Ted Pistorius] So, did you find that there were any specific risk factors that made the children more likely to get sick?

[Dr. Cama] Ted, that's a great question. We did look at a number of different variables but didn't find any one thing that made a big difference. We think that it may be that the children were constantly exposed to this parasite from a very young age so no one risk factor stuck out. This idea is supported by the ages of the kids who got sick. Most of the cases were in children less than two years old. There were a few cases in older children, and Crypto is almost never found in adults in the community, so by the time these kids grow up, their bodies may be so used to it that it doesn't affect them anymore.

[Ted Pistorius] So, do we see the same phenomenon with Crypto in industrialized nations? And, specifically, how does this relate to what we see in the United States?

[Dr. Cama] Ted, that is another great question. In contrast to developing nations, people in the U.S. are rarely exposed to Crypto. Regardless of age, most infections detected in the American population are likely to be their first infection. Therefore, people of all ages may get sick. In our country and other industrialized nations, *C. hominis* is the species most frequently detected in waterborne outbreaks of Cryptosporidiosis. And from this study, we now know how it can affect people. Thus, studies from countries where Crypto is more common are helping us to understand the true disease potential of different species of Crypto.

[Ted Pistorius] Thank you, Dr. Cama, for taking time to speak with us today about *Cryptosporidium* in Peru. With us, Dr. Vita Cama, a microbiologist here at CDC, talking about his study which appears in the October 2008 issue of CDC's journal, *Emerging Infectious Diseases*. You can see the whole article online at www.cdc.gov/eid. Again, that's www.cdc.gov/eid. And, if you'd like to comment on this podcast, please send an email to eideditor@cdc.gov; again that's eideditor, and that's all one word, at cdc.gov. And thank you for listening.

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