

Crimean-Congo Hemorrhagic Fever, Sudan, 2008

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[Karen Hunter] Hello, I'm Karen Hunter. With me today is Dr. Stuart Nichol, chief of the Special Pathogens Branch at the Centers for Disease Control and Prevention. We're talking about a paper in the May 2010 issue of CDC's journal, Emerging Infectious Diseases. The article reports on an outbreak of Crimean-Congo hemorrhagic fever in rural Sudan in 2008. Welcome Dr. Nichol.

[Stuart Nichol] Thanks, Karen. It's great to be here.

[Karen Hunter] Dr. Nichol, this article traces an outbreak of Crimean-Congo hemorrhagic fever in Sudan, the first reported human cases in the country of this highly fatal disease. Tell us a little bit about this disease.

[Stuart Nichol] Well Karen, the Crimean-Congo hemorrhagic fever, what we refer to as CCHF, is a tick-borne virus. People become infected either by direct bite from the virus infected ticks or from contact with virus infected livestock, which have been infected by tick bites. Or, in very resource-poor communities, you'll get what we call nosocomial transmission of the virus to people where essentially a virus infected individual will turn up to a hospital or a clinic and will infect the nursing staff and the doctors who are treating these patients and coming in close contact with them.

[Karen Hunter] Why is this disease such a concern for health officials?

[Stuart Nichol] Well, it's really a concern because the initial symptoms are fairly nondescript. So it's what we would loosely call flu-like symptoms or a febrile illness, where the patients will show up with high fever, often with chills and headaches and muscle aches and what have you. But then you'll get very rapid progression over the next three days or so to a hemorrhagic form of the disease, where you can get hemorrhaging of the blood vessels in the skin, what we call petechia, or you'll get bleeding from the nose, or you'll get bloody diarrhea, or vomit, and this can rapidly progress to multi-organ shock, and quite frequently death in these cases.

[Karen Hunter] How did this outbreak in Sudan begin and how did it spread?

[Stuart Nichol] Well, as far as we can figure, the initial case was a 60 year old butcher who had probably acquired the infection from butchering a virus-infected animal and coming in contact with the blood and tissues of that animal. He turned up to the local hospital in this very rural, resource-poor area of Sudan and quickly we had these chains of human-to-human transmission of the virus as the members of the nursing staff and the doctors became infected, and also family members of the butcher, his sister, and other family members became infected as well. It probably spread so quickly among these folks because of the resource-poor nature of the setting where they really didn't have the means to take adequate precautions to protect themselves, you

know, such as using gloves and masks and what we would consider universal barrier, nursing kind of conditions.

[Karen Hunter] In the Sudan outbreak there were a surprising number of family members infected. Any idea why this was?

[Stuart Nichol] I think, as is typical in many resource-poor areas of Africa that family members get directly involved in the care of the patients, so it's usually expected that a family member will go into a hospital with a severe case like this and will take care of their general needs, changing them, even sleeping on the same bed with them, so obviously these family members have very close direct contact with these highly infectious patients, so I think that's the reason why we saw a number of family members involved in this outbreak.

[Karen Hunter] This disease typically kills about 30 percent of its victims, but in this case the numbers seem much higher. What could be the reason for this?

[Stuart Nichol] Well, our suspicion is actually that probably the case fatality associated with an outbreak isn't as high as it would seem at first glance. Here we had something like, I think somewhere between six to nine of the cases died out of 10 to 13 cases that were identified, which is extremely high. But often it's the case in the very resource-poor settings, it's only really the very severe cases or the deaths that come to the attention of the authorities, and the milder cases would probably go undetected. So our suspicion is that probably the case fatality in this outbreak was probably closer to the more normal 30 percent level.

[Karen Hunter] These were the first confirmed cases of this disease in Sudan. How did it get there?

[Stuart Nichol] Well, again our suspicion is that it's probably been there a long time. The virus is known to be in a variety of areas throughout Africa. It's also present in southern Europe and over into various areas of Asia, Pakistan, and Western China, etc. So the suspicion is that the virus has probably been there a long time and cases have been going on undiagnosed. If we look at the genetics of the virus strain that we found in Sudan which is described in the paper, and what we can see is that there's actually a genetic link between this strain that's present in Sudan and other strains that we've seen in South Africa and parts of West Africa, Mauritania and Nigeria. So what this is telling us is that this CCHF virus is moving around over fairly broad distances in Africa. How is the virus moving? Probably by livestock movements and movements of camels that are virus infected, possibly for the larger distance movements perhaps birds might be involved in moving the virus as well.

[Karen Hunter] Thanks, Dr. Nichol. I've been talking with CDC's Dr. Stuart Nichol about a paper that appears in the May 2010 issue of CDC's journal, Emerging Infectious Diseases. You can see the entire article online at www.cdc.gov/eid. If you'd like to comment on this podcast, send an email to eideditor@cdc.gov. I'm Karen Hunter for Emerging Infectious Diseases.

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