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TRANSCRIPT

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Report

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Smallpox Vaccine Causes Rare Complications

A Chicago boy contracted a life-threatening case of the vaccinia virus -- a virus similar to smallpox -- after his father, a soldier, received the smallpox vaccine. The NewsHour reports on doctors' and the military's efforts to prevent and treat this rare complication.



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ELIZABETH BRACKETT, NewsHour Correspondent: At the University of Chicago's Comer Children's Hospital, strict quarantine procedures were in place behind these doors for a 2-year-old boy whose illness started out as a medical mystery. Pediatrician John Marcinak coordinated the child's care.

DR. JOHN MARCINAK, Pediatrician: The main concern from our standpoint was that the child was very ill. He had a great deal of lesions all over his body, and we were concerned for his health.

ELIZABETH BRACKETT: Pediatric dermatologist Sarah Stein was one of the first to see the young patient, who was known to have had eczema in the past.

DR. SARAH STEIN, Pediatric Dermatologist: When he was first admitted, we thought he had underlying severe eczema, or atopic dermatitis, complicated by a secondary infection.

ELIZABETH BRACKETT: After being admitted to the hospital, he kept getting worse. All sorts of illnesses were considered.

DR. SARAH STEIN: And we said, "Wow, these blister vesicles are not very classic for herpes. Now they're looking bigger, puffier, all the same, all in the same stage of development." And that was just very unusual. And we looked at each other, and we said that, "Could this be smallpox?"

Smallpox vaccinations

ELIZABETH BRACKETT: Doctors these days don't see cases of smallpox. Because of the successful vaccination program, the deadly disease was officially declared eradicated in 1979, and most vaccination programs ended.

Then came 9/11, followed closely by the still-unsolved anthrax attacks. Fears of devastating bioterrorist attacks grew. And in December of 2002, President Bush made this announcement.

GEORGE W. BUSH, President of the United States: I'm ordering that the military and other personnel who serve America in high-risk parts of the world receive the smallpox vaccine.

ELIZABETH BRACKETT: Since then, 1.2 million military personnel have been vaccinated against smallpox.

U.S. MILITARY SPOKESMAN: Smallpox is a live virus.

ELIZABETH BRACKETT: And as doctors learned, one of them was the boy's father. He had recently been vaccinated and then returned home before his deployment to Iraq.

In the University of Chicago hospital's microbiology lab, Director Kenneth Thompson and microbiologist Cynthia Phillips learned about the vaccination when they called the medical team to tell them they still couldn't analyze the boy's lesions.

CYNTHIA PHILLIPS, Clinical Microbiologist: And I said, "I'm so sorry. I'm getting the same results I got yesterday. All I can tell you is, all my results are inconclusive. We've got to wait."

He said, "Well, I've got a news flash to for you," and he told me about the father being a soldier and the vaccination, and that's what they thought they had. They said, "This is our epiphany."

Vaccinia virus

ELIZABETH BRACKETT: The smallpox vaccine contains a live virus, vaccinia, which is very similar to smallpox.

KENNETH THOMPSON, Director, Clinical Microbiology Lab: And he told me he thought it was vaccinia. And I thanked him and immediately called infection control, because this is something they needed to know.

ELIZABETH BRACKETT: The pediatric infectious disease chief was contacted, and he, too, began to believe they were looking at an extremely rare, but life-threatening case of vaccinia virus.

DR. KENNETH ALEXANDER, Chief, Pediatric Infectious Diseases: My reaction was, boy, this looks just like what you see in the books.

ELIZABETH BRACKETT: And tell us the difference between smallpox and the vaccinia virus?

DR. KENNETH ALEXANDER: This is a key distinction to make, that smallpox is, of course, one of the great historic scourges. It's killed millions of people over the years. Smallpox infection has a mortality rate of between 20 percent and 50 percent.

Vaccinia is a related virus that we use to prevent smallpox infections, but, occasionally, because this is a live virus, kids, adults, vaccinees and contacts of vaccinees can become infected.

ELIZABETH BRACKETT: Both the critically ill boy and his mother, who was also ill, were placed in isolation with procedures so strict even the air in their room is vented inward, keeping the virus inside. Because vaccinia virus is a highly dangerous, contagious disease, it must be confirmed in a government lab.

At the same time samples were sent here to the Illinois state lab, additional samples were sent to the Centers for Disease Control in Atlanta, along with pictures of the child's lesions. The results from the CDC were the same as those from Illinois: This was vaccinia virus. Now the question was how to treat it.

Treating the virus

ELIZABETH BRACKETT: Doctor Marcinak knew the hospital could not handle this case alone. If it was the vaccinia virus, he had to get government agencies involved.

DR. JOHN MARCINAK: I said, "This is amazing," and we have to work on getting vaccinia immune globulin from the Centers for Disease Control.

ELIZABETH BRACKETT: The vaccinia immune globulin, or VIG, which provides antibodies against vaccinia, is held in the CDC's strategic national stockpile, to be used in the case of a bioterrorist attack.

Although U.S. marshals brought it to the hospital, the chief of critical care, Dr. Madelyn Kahana, says the child did not improve.

DR. MADELYN KAHANA, Pediatrician: He got sicker and became systemically ill. developed what we would call systemic inflammatory response syndrome, where he had lung injury and kidney injury in addition to skin.

ELIZABETH BRACKETT: That's when the CDC put in a call to Siga Technologies, a small research and development drug company in Corvallis, Oregon, that had received \$30 million in federal funds to develop a drug to combat smallpox. The company's chief scientific officer, Dennis Hrubby, says the CDC wanted to try their experimental drug, ST-246.

DENNIS HRUBY, Siga Technologies: I was amazed, on a Saturday afternoon, within an hour, we had a

conference call set up with CDC, all my folks, and all the senior officials at the FDA, discussed the situation, what we wanted to do. They had access, which they were going to in real-time, for all of our data. A collective decision was made this made sense, and they issued over the phone a telephonic emergency IND to allow us to proceed.

ELIZABETH BRACKETT: With the IND, permission to bring the experimental drug in hand, Hruby flew the drug to Chicago in a private jet.

DR. JOHN MARCINAK: And so I got a call, and then I got up, I came in. And we had the drug, and the first dose started Sunday morning.

ELIZABETH BRACKETT: The young boy survived the weekend. Dr. Kahana says there are many lessons to be learned from this case, including what the military tells those getting vaccinated.

One case is 'too many'

DR. MADELYN KAHANA: I think that the military should be aware of the fact that their educational process was ineffective and that, although this is a rare complication and they've given over a million vaccines, and this, to my knowledge, is the only case of severe vaccinia that we've seen in this country, one is too many.

ELIZABETH BRACKETT: When soldiers are vaccinated, they are told to keep the area covered with a Band-Aid, to keep others from touching the site, and to wash their hands frequently. Since the Army resumed smallpox vaccinations, two deaths have been reported from vaccinia virus, and 60 people caught the virus from someone close to them who had been vaccinated.

Dr. Michael Kilpatrick, the deputy director of force health and readiness programs, says the young boy's case may bring some changes in procedure.

DR. MICHAEL KILPATRICK, Department of Defense: We want to make sure that, how do we not have this happen again, given this sort of circumstance? And so I think that, as we take a look at what kind of communication needs to happen, what kind of education process needs to happen, I think, yes, there will be changes there.

ELIZABETH BRACKETT: The child's survival means researchers may be a little closer to finding a drug to treat vaccinia and, more importantly, smallpox.

GWEN IFILL: This past Friday, after six weeks in the hospital, the toddler returned home. He is expected to make a full recovery.
