

Foreign HIV Surfaces in the Bronx

Diverse strains found in long-term residents

By STEVE STERNBERG

Researchers were alarmed this month when a rare strain of the AIDS virus missed by standard blood tests—and not thought to exist in the United States—turned up in a woman who had recently emigrated from West Africa to Los Angeles.

Now they have more cause for concern.

Doctors have found people infected with other exotic strains of HIV, the AIDS-causing virus, in a borough of New York where the people have lived for years.

The study, reported at the 11th International Conference on AIDS in Vancouver last week, suggests that the HIV family in the United States may be more diverse than anyone had realized. This finding underscores the need for diagnostic tests that will identify multiple strains of the virus in order to safeguard the nation's blood supply. The Los Angeles woman's virus, called group O, escapes detection in about one of every five cases.

The presence of multiple strains poses a challenge to people trying to develop an HIV vaccine. They also worry that dual infections with different strains in a single individual might give rise to new variants of HIV. Such variants could spawn new epidemics.

Kathleen Irwin, a medical epidemiologist at the federal Centers for Disease Control and Prevention in Atlanta, said the cases in the Bronx are the first "to be reported for a well-characterized population of U.S. residents." In addition, their diversity is "far greater" than the researchers had expected to find in the United States.

Scientists have known for years that the AIDS pandemic comprises at least five distinct epidemics caused by variants of HIV. For the first decade of the pandemic, each variant remained confined to a distinct geographic locale. For example, the B genotype was found in North America and Europe, the A, C, and D strains in different regions of Africa, and the E type in Southeast Asia.

Francine E. McCutchan, director of glob-

al molecular epidemiology at the Henry M. Jackson Foundation and Walter Reed Army Institute of Research in Rockville, Md., reported in Vancouver, however, that the strains have begun to disperse worldwide and that they often mingle in people simultaneously infected with two strains of HIV. Sometimes they recombine, forming new versions of the virus.

The E strain from Thailand and the G strain found in Kenya and some other countries, for instance, are no longer considered distinct subtypes. Instead, McCutchan says, they are recombinants, with genes that code for the viral core of the A strain shuffled into their genomes like cards from a different deck.

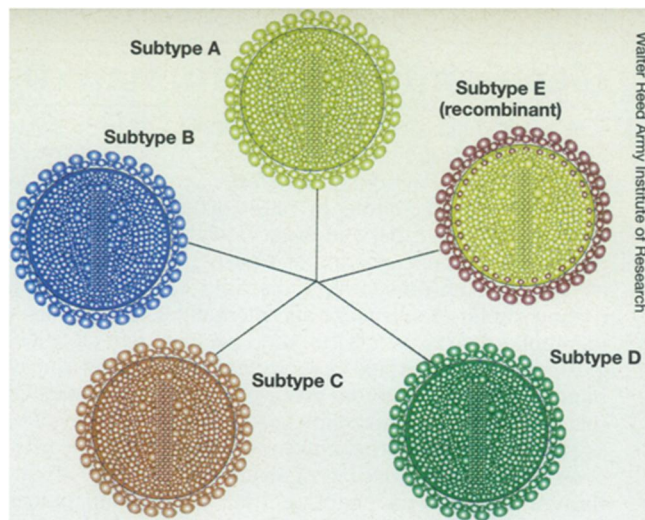
Evidence that the family of HIV strains is growing has become apparent only within the last year. Researchers worldwide have begun trying to untangle how much of this diversity is due to ordinary mutation and how much to recombination.

Whatever the answer, the intermixing of separate strains of HIV promises to alter the global makeup of AIDS forever, McCutchan warns. "We should adjust our expectations to include the potential for the generation of a great variety of recombinants with segments from many genetically distinct HIV-1 subtypes as a component of the pandemic of the future."

The discovery of rare HIV subtypes in the Bronx sets the stage for new strains to crop up in the United States.

At Bronx-Lebanon Hospital Center, 828 people who visited the hospital's emergency room and clinics participated in a confidential survey that featured voluntary HIV testing and counseling. None was known to be infected with HIV. Those who took part in the survey also agreed to participate in pre- and post-test interviews about their countries of origin and residence, behaviors that might increase their risk of infection with HIV, and their travel histories.

Forty-three of the people tested, or about 5 percent, were found to be HIV-positive, Irwin says. Their blood samples were then sent to CDC for additional tests



Global variety: Four distinct strains of HIV and a recombinant strain with the same core as the A subtype.

using methods highly sensitive to unusual HIV strains.

These tests detect proteins typical of the major identified subtypes of HIV-1, including those from group M subtypes A through F; those from the O genotype identified in the Los Angeles woman; and those from HIV-2. Each of the Bronx samples showed a single strain of the virus.

Thirty-five of the 43 HIV-positive people were infected with the North American subtype, B. However, eight harbored HIV-1 genotypes—including subtypes A, C, and a Thai variant of B—never before seen in people residing in the United States, Irwin says.

The unexpected discovery of exotic HIV strains in the Bronx reflects the magnitude of the crisis unfolding in this borough. The Bronx has "one of the highest prevalences of HIV infection and AIDS in North America," Irwin points out, in part because it has become a favored destination of many immigrants from nations where infection is more common. In addition, intravenous use of illegal drugs and high-risk heterosexual sex—such as the trading of sex for drugs—are common in the area.

Jerome A. Ernst, a doctor at Bronx-Lebanon who had called for the study, says the results indicate that public health officials are focusing their search for unusual HIV strains too narrowly. Rather than seeking unusual strains only in other countries, he says, "they should look for them here."

Investigators working on an HIV vaccine, most versions of which are based on the B strain, should also take note, Irwin says. These versions might fail to protect people from infection with unexpected strains now circulating in the United States. The newly reported cases may prompt them to begin formulating a vaccine that protects against strains previously thought to exist only in developing nations.

She adds that the Bronx is not unlike developing nations in which HIV is spreading unchecked. "It is a community that would really benefit from a vaccine." □