

Cholesterol levels elevated in toddlers taking anti-HIV drugs

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(Medical Xpress) -- Toddlers receiving anti-HIV drugs have higher cholesterol levels, on average, than do their peers who do not have HIV, according to researchers at the National Institutes of Health and other institutions.

The researchers found that [cholesterol levels](#) tended to be highest among children who received a certain type of drugs - those known as [protease inhibitors](#). The average cholesterol reading for this group was 169 milligrams per deciliter of blood (mg/dL), compared with 152 mg/dL for children on other antiretroviral drugs and 147 mg/dL for children the same age who did not have [HIV](#). In contrast, HIV-positive children who were not on medication had relatively low cholesterol levels, 122 mg/dL, on average.

In addition, 10.8 percent of HIV-positive toddlers - twice the proportion of toddlers without HIV - had cholesterol levels above 200 mg/dL. This level is considered borderline high risk for developing [heart disease](#).

The study appears in the journal *AIDS*.

The findings correspond with previous studies showing that adults and older children taking protease inhibitors also develop high cholesterol levels. However, the current study is the first to look at children between 12 to 23 months of age, according to the lead author, Rohan Hazra, M.D., of the Pediatric, Adolescent and Maternal AIDS Branch of the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), the NIH institute that undertook the study.

"It's likely that these children will be taking antiretroviral drugs for a lifetime," Dr. Hazra said. "Our findings suggest that it would be a good idea for young children taking protease inhibitors to have their cholesterol monitored periodically to determine whether they face any increased risk of

heart disease as they grow older."

The study was conducted in five Latin American and Caribbean countries as part of the NICHD International Site Development Initiative (NISDI), which supports research about pediatric HIV through a network of institutions.

Other authors of the study were Rachel A. Cohen, M.P.H., and René Gonin, Ph.D., of Westat, Inc., in Rockville, Md.; Jacqueline Pontes Monteiro, Ph.D., of the University of Sao Paulo, Christina B. Hofer, M.D., Ph.D., of the Federal University of Rio de Janeiro and Marinella Della Negra, M.D., Ph.D., of the Emilio Ribas Institute of Infectious Diseases, all in Brazil; Noris Pavia Ruz, M.D., M.Sc., of the Federico Gomez Children's Hospital of Mexico; and other members of the NISDI Pediatric Study Group.

To conduct the study, the researchers reviewed the medical records of 764 children, all of whom had been exposed to HIV in the womb. Of these, 83 were infected with the virus. The children also received periodic physical examinations, at which their HIV status was periodically evaluated as were their cholesterol levels and levels of triglycerides, another fatty substance in the blood. High levels of triglycerides also are associated with heart disease. Fifty-nine percent of the HIV-positive toddlers were receiving drug therapy during the time they were in the study. In 2010, the World Health Organization issued new [guidelines](#) recommending treatment for all infected children less than 2 years old.

"Because of the new guidelines, we can expect the number of HIV-infected toddlers receiving treatment for HIV to grow rapidly," Dr. Hazra said. "Future research will determine if there are any long-term cardiovascular effects from the treatment and whether interventions for reducing high cholesterol levels are necessary for this age group."

The researchers compared measurements of cholesterol and triglycerides among four groups:

- HIV-negative children
- HIV-positive children not receiving drug therapy
- HIV-positive children receiving antiretroviral therapy with protease inhibitors
- HIV-positive children receiving other types of antiretroviral therapy

With adults and older children, cholesterol and triglyceride measurements typically are taken after a 9-12-hour fast. The [toddlers](#) in this study did not fast. However, Dr. Hazra explained, cholesterol and triglyceride readings from the group that did not have HIV provided an effective basis from which to compare cholesterol readings from the other groups.

Cholesterol levels among HIV-positive children who were not on medication tended to be below the 50th percentile level of their uninfected [peers](#). However, cholesterol levels among children receiving medication tended to be above the 50th percentile level of their uninfected peers. Among the children on protease inhibitor therapy, the number of children with cholesterol levels above the 95th percentile was notable.

In addition, children taking protease inhibitors had the highest average triglyceride level (211.0 mg/dL). Children taking other kinds of anti-HIV drugs had an average triglyceride level of 106.8 mg/dL, and those not taking any anti-HIV drugs, an average triglyceride level of 139.4 mg/dL.

The process of having patients fast before providing blood samples also allows for more accurate readings of two major types of cholesterol: low-density lipoproteins, high levels of which are associated with heart disease; and high-density lipoproteins, also sometimes referred to as "good" [cholesterol](#) high levels of which are considered protective against heart disease. Because the children in the study did not fast, it was not possible to know their ratio of low-density to high-density lipoproteins, Dr. Hazra explained. He added that studies of older children and adults have found that treatment with anti-HIV drugs tends to result in high levels of low-density lipoproteins, and normal or low levels of high-density lipoproteins.

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