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News

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***Sexually transmitted virus causes
problems in newborns and transplant
recipients

DALLAS -- Many people carry a certain strain of herpes virus known as cytomegalovirus with no apparent problem; they may even have an infection with no symptoms. But for two groups, an infection with cytomegalovirus can be critical: newborn babies and the recipients of organ transplants.

The virus is also under suspicion in AIDS (acquired immunodeficiency syndrome), a problem often associated with homosexuals.

Cytomegalovirus is the major known viral cause of birth deformities, said Dr. James Luby, professor of Internal Medicine and head of the Infectious Diseases Unit at The University of Texas Health Science Center at Dallas. The virus, which an infant may contract from the mother in the womb, in the birth canal or from breast milk, can cause abnormalities of hearing and mental retardation. However, it is not usually lethal in babies, he says.

There is "more and more evidence" that the virus is sexually transmitted, and "in homosexual men in certain communities, CMV infection is extremely common and antibody is almost universal. In fact, it has been found very uncommon to find a gay man in San Francisco without CMV antibody," says the infectious disease researcher.

Because of the frequency of CMV in gay men, the virus is being investigated as a cause of AIDS. "But it is not presently thought that CMV causes AIDS," said Luby. "Although there apparently is an association of AIDS in gays with the presence of CMV antibody, there are cases of AIDS in heterosexual drug abusers and hemophiliacs without CMV antibody."

CMV has been linked with Kaposi's sarcoma, which is frequently associated with AIDS. Antibody to the virus has been found in the blood of patients, and viral antigen (the part of the virus that causes the body to form antibodies) has been found in the tumor itself.

Kaposi's sarcoma is epidemic in Zaire, Uganda and Tanzania with two peaks of occurrence -- in early childhood and in 30- to 39-year-olds, predominantly in males. One investigator found CMV antigen in the tumors of patients in Uganda and determined that patients with melanoma (another type of skin cancer) in this country had significantly less CMV antibody.

More recently in Kaposi's sarcoma patients in San Francisco, who also had AIDS, CMV antibody was found in the blood and antigen in the tumor. But the antigen was not present in normal skin in the same patients.

While CMV is being studied as a possible cause of Kaposi's sarcoma and AIDS, "the sexual transmission of CMV is not doing anybody any good," he said.

The most serious disease known to be caused by cytomegalovirus occurs in kidney and bone marrow transplant recipients. In them, CMV may be fatal.

"In these patients, because their immune systems are suppressed, infection is a major problem," said Luby. "Pneumonia is the leading cause of death among bone marrow transplant recipients, and its chief cause is CMV. Since CMV is a herpes virus, it can cause persisting infections and remain latent for the life-time of the individual. It is known

(over)

that either host vs. graft or graft vs. host reactions ('rejections' following transplantation) can reactivate CMV infections.

It is not known how this happens. But it is thought that the virus is latent in some memory cell of the immunologic system and that the virus reproduces itself after intense antigenic stimulation. Certain immunosuppressive drugs are known to induce reactivation of the virus. And to complicate the situation further, the virus itself is also recognized as a potent suppressor of the body's immune system.

Thus the transplant recipient may have a latent CMV reactivated or receive the virus in a blood transfusion or even in the donated organ itself. In blood, CMV is thought to be present in the white cells since freezing the blood virtually eliminates CMV transmission. Because of CMV one of the major bone marrow transplant centers in the country has stopped giving white cell transfusions to transplant patients.

About one percent of all newborns excrete CMV in the urine. Of these about 10 percent will eventually show some hearing or neurological defect related to the virus. Nationwide, this translates to about 2,500 infants per year with a CMV-related deformity out of 2.5 million births. Luby studied 58 babies with symptoms of a CMV infection at Parkland Memorial Hospital and Children's Medical Center from 1970 through 1981.

No symptoms of CMV infection could be found in the mothers of the 58 babies. "This finding is similar to other studies, and it is recognized that the majority of primary (first) infections in normal hosts at all stages of life are asymptomatic," said Luby.

Thirty of the babies were born at Parkland, and 28 were born elsewhere and hospitalized at Parkland or CMC. Mothers of infected babies tended to be younger and to have had no other children.

Luby predicts that a vaccine against CMV will soon be perfected and that effective drugs will be available in the near future.

In the meantime, it is known that the virus passes from pregnant or lactating mother to infant, between sexual partners and through transfusions of blood. It also passes quickly from child to child in a day care center. This health problem is serious when a child contracts the disease at the day care center and takes it home to the pregnant mother.

It is the primary CMV infection that causes birth deformities. For this reason, the target population for a vaccine will be young women before they become pregnant. Women who are pregnant and have a "mono-like" (infectious mononucleosis) illness should have a blood test for CMV. If the test shows the presence of primary infection, they have a 40 percent chance of infecting the unborn baby. If the mother has the virus, amniocentesis with a viral culture to determine whether the baby is infected can be performed.

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