

Cytomegalovirus

Background Information:

Cytomegalovirus, also known as CMV, is a common virus, that is found throughout the world. It is a member of the herpes virus family, which includes the chickenpox, “mono” and herpes (CDC, 2005). Symptoms generally depend on the age of the person and strength of one’s immune system. The virus stays in the body for life and can become reactivated from time to time (Zerr, 2006). In the U.S., between fifty to eighty percent of adults are infected with CMV by the age of forty (CDC, 2005).

CMV is transmitted in various different ways. It is shed in the mouth, urine and genital tract (Zerr, 2005). Direct contact with any of these infected fluids can infect a susceptible person. It can also be transmitted through breast milk, transplanted organs and (although rare) blood transfusions (CDC, 2005).

A teenager or adult, who is healthy, that contracts CMV, will sometimes have an initial illness similar to “mono”. Once these symptoms go away, the virus usually stays dormant and does not become a major health concern (CDC, 2005).

CMV infections are not usually diagnosed, because the symptoms are mild and go away on their own. The CDC only really recommends testing for CMV “if a patient has symptoms of infectious mononucleosis but has a negative test result for mononucleosis and Epstein Barr virus or shows signs of hepatitis, but has negative test results for hepatitis A, B, and C.” The testing can be done

by checking for antibodies for CMV or by culturing urine, throat and other tissues (CDC, 2005).

Currently, there is no cure or vaccine for CMV. Some antiviral medication, like Ganciclovir, is currently being used for adult patients with vision or life-threatening signs of CMV. There are also studies being done on infants infected with CMV in the womb (CDC, 2005).

Definition of the problem:

CMV can become a health concern when a woman contracts it for the first time while pregnant. She can pass the virus to the unborn child and the child could develop serious birth defects, such as brain damage, growth failure and blindness (Zerr, 2006).

In immunocompromised patients (people with HIV, cancer, organ transplant recipients or people taking immunosuppressant drugs like chemo or steroids), CMV can also be more serious. This can be a problem in either the initial infection or a reactivated infection. A person with AIDS can get retinitis (an infection in the back of the eye) from CMV. A person with organ transplants or cancer can get pneumonia or diarrhea (from gastrointestinal infections) (Zerr, 2006).

Statement of the Issue:

In Health People 2010, there is a push for doctors to give women, who are expecting to become pregnant, more counseling about CMV and the effect it can have on her unborn child. Generally, it is stated that medical personnel need to make patients aware of “various risk factors for adverse pregnancy outcomes

and concludes that many of these risk factors can be mitigated with good preconception and prenatal care” (ACCOG, 2005). By making women more aware of CMV, there would be less unhealthy babies born. Doctors could advise patients about symptoms that might be experienced and when to see a doctor for testing or treatment of CMV. Most importantly, doctors could advise patients about how to avoid contracting CMV. The goal of Healthy People 2010 is to have less birth defects and deaths with infants by preventing disease early on by means of educating mothers to be. This will be tracked by charting the increase or decrease of illness in the newborn due to CMV (Frey, 2002).

Epidemiologic picture of those affected by CMV:

Even though CMV is common, its epidemiology is complicated. As far as the individual person is concerned, anyone can easily contract this virus. Both men and women are evenly at risk to contract CMV. It is unknown how race affects one’s immunity for CMV. However, some studies have shown that in the U.S., more black children are born with birth defects from CMV. This tells us that the black population may contract CMV later on in life than other races (Schleiss, 2005).

Although CMV can be contracted in almost any place, there is a different rate at which the population gets CMV. In less advanced countries, most children acquire CMV as young children and almost the entire population will have CMV by early adulthood. In more advanced countries, about only half of middle-upper class adults will have contracted CMV by early adulthood (Schleiss, 2005). This tends to be a problem because if the mother contracts CMV for the first time

while pregnant, her child could become very ill. If the mother already had CMV in early childhood or adulthood, she would not have to worry about a first time infection.

The most common place of transmission of CMV tends to be at day care centers. Often, children will acquire CMV at the daycare center from other children and then these children can then give their parents CMV. This cycle is why CMV is so widespread (Schleiss, 2005).

Solutions:

The National Eye Institute is supporting research on AIDS and its ocular complications. Information can be found about CMV and eye care at their Web site (www.nei.nih.gov). The NEI finds this research to be important, because retinitis can cause visual impairment, blindness and diminished quality of life. They encourage research in drug therapies that slow down or stop the development of CMV retinitis. Currently, they have found that Ganciclovir implants into the eye are most effective in treating the virus (NEI, 2004).

The American College of Obstetricians and Gynecologists is working to support the Healthy People 2010 mission of educating women during preconception about the dangers of CMV and steps to take in avoiding transmission during pregnancy. More information can be found about preconception counseling and care at their Web site (www.acoog.org). The ACOOG is working to have fewer children born with problems associated with CMV, by educating soon-to-be mothers (ACOOG, 2005).

The National Institute on Deafness and other Communication Disorders is concerned with CMV prevention and deafness screening of infants with CMV. More information can be found about deafness from CMV in infants at their Web site (<http://www.nidcd.nih.gov>). This institute supports programs to set up newer and more accurate deafness testing in infants. Although it is unfortunate for a child to be deaf due to CMV, the sooner the parents know, the sooner they can begin to learn how to better raise a deaf child (NIDCD, 2004).

Internet resources:

Some additional Web sites that have more information regarding CMV are: The National Center for Infectious Diseases, Centers for Disease Control and Prevention at www.cdc.gov/ncid/diseases/cmvm.htm. The Mayo Clinic at www.mayoclinicproceedings.com, and eMedicine's Web site at www.emedicine.com/med/topic504.htm.

Conclusion:

Cytomegalovirus is a common virus that the general population needs to become more educated about. It has many effects on the unborn child and on people with poor immune systems. By further education of the public, CMV might have less impact on the health of many individuals.

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(Class Handout)

What is Cytomegalovirus?

- CMV is a member of the herpes virus family, which includes the chickenpox, “mono” and herpes. Symptoms generally depend on the age of the person and strength of the immune system. The virus stays in the body for life and can become reactivated from time to time. In the U.S., between fifty to eighty percent of adults are infected with CMV by the age of forty.
- CMV is transmitted by direct contact with infected bodily fluids, such as saliva, urine and genital secretions. It can also be transmitted through breast milk, transplanted organs and (although rare) blood transfusions.
- A teenager or adult, who is healthy, that contracts CMV, will sometimes have an initial illness similar to “mono”. Once these symptoms go away, the virus usually stays dormant and does not become a major health concern.
- CMV can become a health concern when a woman contracts it for the first time while pregnant. She can pass the virus to the unborn child and the child could develop serious birth defects, such as brain damage, growth failure and blindness.
- In immunocompromised patients (people with HIV, cancer, organ transplant recipients or people taking immunosuppressant drugs like chemo or steroids), CMV can also be more serious. This can be a problem in either the initial infection or a reactivated infection. A person

with AIDS can get retinitis (an infection in the back of the eye) from CMV. A person with organ transplants or cancer can get pneumonia or diarrhea (from gastrointestinal infections)

- CMV infections are not usually diagnosed, because the symptoms are mild and go away on their own. The CDC only really recommends testing for CMV if a patient has symptoms of infectious mononucleosis but has a negative test result for mononucleosis and Epstein Barr virus or shows signs of hepatitis, but has negative test results for hepatitis A, B, and C. The testing can be done by checking for antibodies for CMV or by culturing urine, throat and other tissues.
- Currently, there is no cure or vaccine for CMV. Some antiviral medication, like Ganciclovir, is currently being used for adult patients with vision or life-threatening signs of CMV.
- Ways to avoid contracting CMV are: washing your hands frequently and thoroughly, using condoms, talking to your doctor if you expect to receive a blood transfusion or organ transplant.
- If you work in a day care center, you should take special safety measures, because day care centers have a high rate of CMV transmission; due to the handling of cups, pacifiers, toys, diapers, etc. that may be contaminated with CMV.