

Congenital Cytomegalovirus Infection

Description

Congenital cytomegalovirus (CMV) infection is the most common non-genetic cause of mental retardation in the developed world. Infection can occur at any point during pregnancy with earlier infections tending to be associated with more severe outcomes. Maternal infection in pregnancy often goes by unnoticed but can also be associated with a flu like illness or hepatitis. CMV only results in severe illness if it infects unborn children or individuals with a compromised immune system. Most women are in fact immune to CMV at the time of conception due to infection earlier in life as CMV is a common childhood infection. Only those who have never been infected are at risk of developing infection in pregnancy.

The most frequently described epidemiologic pattern is maternal infection in a second pregnancy with the eldest child acquiring CMV at childcare. Transmission is through most body fluids and for this reason fastidious hand hygiene is recommended for pregnant women changing nappies.

Not all maternal CMV infections result in infection of the foetus. In most cases the placenta acts as a barrier preventing transmission, particularly if infection occurs later in pregnancy. Of those infants infected only one in ten will have symptoms at birth.

The neurological manifestations of congenital CMV infection are diverse. The most common complication is hearing loss due to infection of the auditory nerve. This can affect one or both ears. This will usually be detected on the newborn hearing screen, but more extensive testing may be required. It is important to maintain surveillance as the degree of hearing loss can progress or fluctuate up until the age of five, presumably as a result of ongoing replication of the virus. Congenital CMV infection may also lead to abnormal brain development, more specifically in the organization of grey matter. Inflammation of the back of the eye, termed retinitis, and deposits of calcium in the brain may be seen. Severe cases can include slow head growth, learning problems and seizures. Non-neurologic manifestations include a transient skin rash at birth, enlargement of the liver and spleen and bone marrow suppression.

There is no current vaccine for CMV, although trials are underway. Screening for immunity against CMV before pregnancy is not recommended largely due to the absence of consensus over effective treatment strategies and the extremely unpredictable clinical course.

Treatment

The most effective measure is prevention through education of women of childbearing age on the importance of maintaining hand hygiene particularly if there is a child in nappies in the household.

While there are antiviral agents, which are known to be effective against CMV, their use in pregnancy is contraindicated because they are toxic to the foetus. The administration of hyperimmune CMV immunoglobulin to pregnant women infected with CMV is under investigation. This has been postulated to reduce transmission of the infection across the placenta and mitigate the severity on those foetuses already infected.

There is evidence to support the use of antiviral agents in newborn infants shown to be infected with CMV. Studies have shown that intravenous administration of ganciclovir for 6 weeks reduces the risk of hearing loss worsening. While this is an important development the decision to treat needs to be balanced against the risks of intravenous access (infection and blood clots) and hospitalisation of a newborn. There are studies underway looking at whether an oral compound may have a similar effect and whether a longer duration of therapy may have further benefit.

Prognosis

It needs to be remembered that the vast majority of pregnancies where maternal CMV infection has occurred will have an excellent outcome. In the small number of infants affected the prognosis is variable. Congenital CMV infection is compatible with normal neurodevelopmental progress, with often a degree of hearing loss being the only manifestation. In those children with more severe manifestations the factors which predicts a worse course are slow head growth and difficult to control seizures. A very small percentage of affected children will have severe neurodevelopmental problems and require long term support with activities of daily living.