Marked Placentomegaly as an Early Manifestation of Congenital Cytomegalovirus Infection Following Periconceptional Maternal Seroconversion: A Case Report

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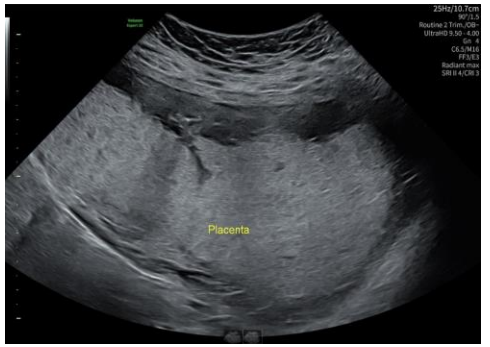
Background

Cytomegalovirus (CMV) is the most common congenital viral infection in pregnancy, affecting approximately 1 in 200 pregnancies.(1) Primary maternal infection is defined as infection during pregnancy in a patient that has no pre-existing CMV IgG antibodies. The vertical transmission rates differ greatly; primary infection carries a 30-40% risk, while non-primary infection carries a 1-2% risk of vertical transmission.(1,2) The gestational age at time of infection also has a large impact on transmission rate. Maternal infection earlier in pregnancy has the lowest rate of vertical transmission at 30%, increasing to 45% and 72% in the second and third trimester, respectively.(3) However, while the transmission rate is lower in early pregnancy, the long-term sequelae for the fetus are usually more severe.(2,4)



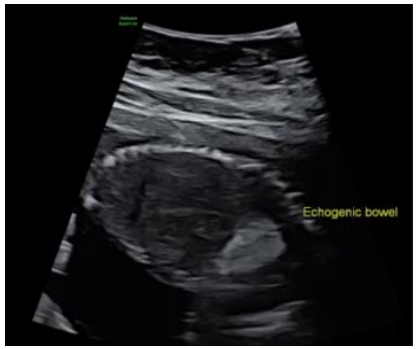


Image 1a + 1b: Ultrasound images of marked placentomegaly (1a), and fetal echogenic bowel (1b)

Case Description

A 34-year-old pregnant female with two daycare-attending children was under the care of a private obstetrician that performed targeted CMV screening in the first trimester. Notably, there was a delay in obtaining the blood tests, with results returning when the patient was 15+2 weeks gestation. The CMV IgG and IgM returned positive, with a borderline avidity (0.4). The patient was entirely asymptomatic. An early anatomy scan at 15+3 weeks gestation was reported normal, however the positive CMV serology prompted a repeat scan at 17+3 weeks at a specialist obstetric scanning facility. This ultrasound demonstrated multiple signs of congenital CMV infection; a very large and echogenic placenta on the posterior wall, mild oligohydramnios, fetal echogenic bowel and a raised middle cerebral artery systolic velocity of 35cm/s (see image 1a and 1b).

At the time of the repeat ultrasound, amniocentesis was performed with CMV DNA detected by PCR testing, confirming congenital infection. Following multidisciplinary counselling at a tertiary hospital, the patient elected for abortion care and underwent an uncomplicated surgical abortion at 19+1 weeks gestation. Histopathology confirmed CMV infection, with second-trimester type chorionic villi (see image 2), mild oedema with numerous viral inclusions positive for CMV on immunohistochemistry (see image 3).

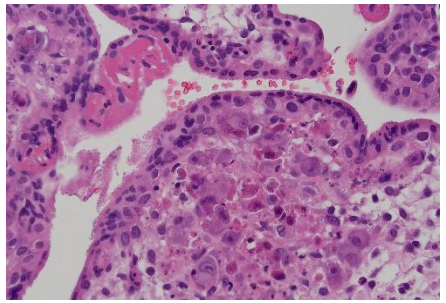


Image 2: H&E-stained slide showing second trimester type chorionic villi with stromal hypercellularity.

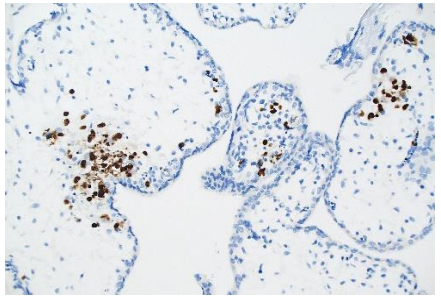


Image 3: Immunohisto-chemistry of numerous CMV viral inclusions within the chorionic villi.

Discussion

This case explores an unusual presentation of periconceptional primary CMV infection associated with severe second-trimester placentomegaly. It demonstrates the value of targeted CMV screening; however, the delay in diagnosis meant the patient was ineligible for valaciclovir, a medication used to prevent vertical transmission following primary maternal infection before 14 weeks gestation. This secondary prevention strategy supports consideration of universal CMV screening in Australia. This case highlights the importance of increasing clinician and public awareness of primary CMV infection in pregnancy, particularly in the periconceptional period. Greater awareness and education will enable patients, especially those at high-risk, to reduce their risk through behaviour modification and improved hygiene practices.

References: 1. Kenneson A, Cannon MJ. Review and meta-analysis of the epidemiology of congenital cytomegalovirus (CMV) infection. Rev Med Virol. 2007;17(4):253-76. 2. Stagno S, Pass RF, Cloud G, Britt WJ, Henderson RE, Walton PD, et al. Primary cytomegalovirus infection in pregnancy: incidence, transmission to fetus, and clinical outcome. JAMA. 1986;256(14):1904-8. 3. Enders G, Daiminger A, Bäder U, Exler S, Enders M. Intrauterine transmission and clinical outcome of 248 pregnancies with primary cytomegalovirus infection in relation to gestational age. J Clin Virol. 2011;52(3):244-6. 4. Pass RF, Fowler KB, Boppana SB, Britt WJ, Stagno S. Congenital cytomegalovirus infection following first trimester maternal infection: symptoms at birth and outcome. J Clin Virol. 2006;35(2):216-20.