

# Congenital Cytomegalovirus Infection and Early Neonatal Death: A Case Report

## KONJENİTAL CYTOMEGALOVİRUS ENFEKSİYONU VE ERKEN NEONATAL ÖLÜM: BİR OLGU SUNUMU

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### Summary

We present a case resulting early neonatal death because of cytomegalovirus infection and review its prenatal diagnosis and Doppler studies to estimate the prognosis.

A, 32 year-old, 37 weeks pregnant woman was referred to our prenatal unit suspected intrauterine growth restriction. The fetal biometry was consistent with 30 weeks symmetrically and below the third per centile. In anatomic survey, a posterior fossa cyst, minimal ascites and hepatomegaly were diagnosed. Fetal arterial and venous Doppler was in normal limits. Two weeks later, fetal cardiac and venous Doppler were compromised. Emergency abdominal delivery was performed because of cardiotocographic abnormalities. Physical examination and diagnostic studies were revealed ascites, hepatomegaly, micrognathia, cardiac decompensation, severe fetal anemia, impaired liver function and presence of cytomegalovirus specific IgM antibody in the infant's blood. Infected neonate died soon after birth.

Congenital cytomegalovirus infection has high perinatal mortality and morbidity. So preventive measures are important especially high risk group.

**Key Words:** Cytomegalovirus infection,  
Prenatal outcome,  
Ultrasonographic findings

T Klin J Gynecol Obst 2004, 14:227-230

### Özet

Erken neonatal ölümlerle sonuçlanan bir olgumuz ışığında kongenital cytomegalovirus enfeksiyonunu, prenatal tanısını ve prognozunu belirlemede Doppler çalışmasının yerini gözden geçirmek.

Son adetine göre 37 gebelik haftası olan 32 yaşındaki gebe kadın intrauterin gelişme geriliği şüphesi ile kliniğimize referre edildi. Fetusun biometrisi 30 gebelik haftası ile uyumlu idi ve simetrik olarak üçüncü persentilin altında idi. Kraniumda posterior fossa kisti, minimal asit, hepatomegali mevcuttu. Fetal arterial ve venöz Doppler normal idi. İki hafta sonra Doppler de bozulma nedeni ile acil sezaryen uygulandı. Postnatal muayene ve tanısal işlemler konjenital CMV ile uyumlu idi.

Kongenital sitomegalovirus enfeksiyonu perinatal mortalite ve morbiditesi yüksek bir enfeksiyondur. Bu yüzden koruyucu önlemler özellikle yüksek riskli grupta çok önemlidir.

**Anahtar Kelimeler:** Cytomegalovirus enfeksiyonu,  
Prenatal sonuçlar,  
Ultrasonografik bulgular

T Klin Jinekoloj Obst 2004, 14:227-230

Human cytomegalovirus is the most common cause of viral intrauterine infection, affecting 0.5-2.5% of all live births in different parts of the world. The prevalence of cytomegalovirus infection varies according to socioeconomic background. In Europe, 45% of pregnant women are seropositive at the beginning of pregnancy (1-3).

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Ten percent of congenitally infected infants have congenital cytomegalovirus syndrome, whereas 90% are asymptomatic at birth; however, 10-15% of the latter are at risk of developing a multitude of development abnormalities such as sensorineural hearing loss, chorioretinitis, or neurologic deficit (2,4).

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Serologic diagnosis of primary cytomegalovirus infection can be documented by seroconversion or significant rise of IgG antibody titer in the presence of specific IgM antibodies associated with low IgG avidity. The detection of the virus in the amniotic fluid and presence of IgM in fetal blood, or positive fetal blood culture are all evidence of fetal infection (5). However, these findings have no prognostic value concerning the development of serious disease or severe sequelae. Fetal arterial and venous Doppler studies may be markers for a severely handicapped neonate. Here we present a congenital cytomegalovirus infection

case with abnormal Doppler studies and early neonatal death.

### Case report

A, 32 year-old, 37 weeks pregnant woman was referred to our prenatal unit suspected of intrauterine growth restriction. Her past medical and obstetric histories were unremarkable. The fetal biometry was consistent with 30 weeks of gestational age symmetrically and below the third per centile. In anatomic survey, a posterior fossa cyst (Fig. 1), minimal ascites (Fig. 2) and hepatomegaly were diagnosed. Fetal arterial and venous Doppler indi-



Fig. 1. The appearance of posterior fossa cyst.



Fig. 2. The appearance of minimal ascites.

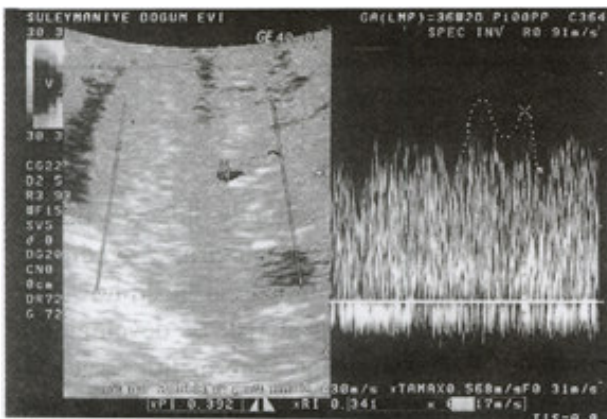


Fig. 3. Ductus venosus Doppler flow at compensatuar stage.



Fig.4. Increased ascites depicted at 37 weeks.

ces were in normal limits (Fig. 3). Maternal uterine artery Doppler studies was also normal. Amniotic fluid volume was in normal limits. Two weeks later, the fetus showed growth retardation and, ascites increased (Fig. 4). Fetal cardiac and venous Doppler indices were compromised. Emergency abdominal delivery was performed because of cardiocographic abnormalities. Apgar score at 1 and 5 minute was 4 and 6, respectively. Physical examination and diagnostic studies were revealed ascites, hepatomegaly, micrognathia, cardiac decompensation, severe fetal anemia (Hb=60 g /L), impaired liver function (AST=120 IU/L) and presence of cytomegalovirus specific IgM antibody in the infant's blood. Infected neonate died soon after birth.

### Discussion

We present a case of congenital cytomegalovirus infection, which is not clearly identified prenatally. Detection of the virus in the amniotic fluid, presence of IgM in fetal blood or positive fetal blood culture is all evidence of fetal infection. In our case, it was too late for invasive diagnostic work-up. The time elapse between maternal infection and prenatal diagnosis should be a minimum of 6 weeks (6).

The rate of congenital infection resulting from primary maternal infection is about 30%, ranging from 15% to 50%, and after a recurrent infection (reactivation or reinfection) it is 0.15-1% (6,8). Among the most severely affected infants, mortality may be as high as 30% (7). This baby died one day after birth because of intractable cardiac failure.

The most difficult step in the prenatal diagnosis of fetal cytomegalovirus infection is to estimate the prognosis. The presence of systemic cytomegalovirus infection in the fetus is not universally associated with a severely handicapped neonate. However, intrauterine resolution of hematologic and hepatic disturbances, in fact, a marker for a better outcome (8). So, fetal arterial and venous Doppler studies may be good predictors for fetal outcome.

Pregnancies with evidence of vertical transmission and definite ultrasonographic findings such as microcephaly, hydrocephaly, and intracranial calcifications are at significant risk of severe sequelae. In one study, abnormal ultrasonographic findings were observed in five (19.2%) of 26 infected fetuses (9). Severe fetal anemia can cause ascites, hepatomegaly, and abnormal blood flow in Doppler studies. Absence of cerebral lesions or severe biologic abnormalities has been associated with a good prognosis. In our case, we diagnosed a posterior fossa cyst. This association is very rare in medical literature. In a case series, one case with congenital cytomegalovirus infection has the periventricular cystic changes and this baby did not survive (10).

Congenital cytomegalovirus infection has high perinatal mortality and morbidity. So preventive measures are important especially high-risk group. Because of difficulty and complexities in the development of a protective vaccine, behavioral prevention approach as a preventive measures may reduce of transmission of cytomegalovirus infection.

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**Geliş Tarihi:** 11.11.2003

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