Hepatitis E Virus Infection Causing Isolated Fetal Ascites: A Case Report

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Established Facts

- Isolated fetal ascites is a different entity from fetal hydrops.
- Maternal viral infection like hepatitis A, hepatitis C, cytomegalovirus, enterovirus and parvovirus B19 have been reported to be associated with isolated fetal ascites.

Novel Insights

- Maternal hepatitis E virus (HEV) infection can cause isolated fetal ascites.

Key Words

Hepatitis E • Fetal ascites • Maternal infection

Abstract

Maternal hepatitis infection, excepting hepatitis E, causing isolated fetal ascites with variable outcome has been reported previously. We present a case of maternal hepatitis E virus (HEV) infection causing isolated fetal ascites which resolved spontaneously during pregnancy and resulted in a term live-born baby with anti-HEV seropositivity. A 39-year-old primigravida woman was diagnosed with acute HEV infection at 15 weeks of gestation. Ultrasound at 19 weeks showed significant fetal ascites with abdominal calcifications. Fetal karyotype did not show any abnormality. Cord blood was positive for anti-HEV IgM and negative for other intrauterine

infections. Ultrasound at 25 weeks showed partial resolution of fetal ascites with complete resolution at 30 weeks. She delivered a healthy baby at 38 completed weeks, with normal liver enzymes at birth and 1-month follow-up.

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Case Report

A 39-year-old primigravida presented at 15 weeks of gestation with hyperbilirubinemia due to hepatitis E infection. Her serum alanine aminotransferase and aspartate aminotransferase were six times the normal value with normal prothrombin time and activated partial thromboplastin time. Her past medical history and family history were non-contributory. She tested negative for HIV (both I and II), syphilis, IgM toxoplasmosis, rubella, cytomegalovirus infection, herpes simplex virus infection and parvovirus B19

Fig. 1. Fetal ascites from acute infection with hepatitis E.

infection. She was also negative for HBsAg, HAV IgM and anti-HCV antibody and positive for HEV IgM. She had her first-trimester ultrasound (US) and double-marker serum screen for fetal aneuploidy at 12 weeks which was at low risk, i.e. less than 1 in 10,000.

Her obstetrical US showed a singleton pregnancy of 19 weeks with fetal ascites with no evidence of fluid accumulation in other serous body cavities (fig. 1). The fetal abdomen showed echogenic bowel. No other major or minor malformation was detected. Placental thickness and the amount of liquid was normal. US was repeated after 2 weeks to confirm the isolated nature of ascites. Her fetal echocardiography was normal. A diagnosis of isolated fetal ascites due to viral hepatitis was made. The cordocentesis done showed normal fetal karyotype. Cord blood was positive for anti-HEV IgM and negative for toxoplasmosis, CMV and parvovirus B19 IgM and also negative for common mutation of cystic fibrosis (p.F508del; c.1161delC; c.3849+10 kb C>T and p.S549N). Amniotic fluid which was collected simultaneously was also positive for anti-HEV. At follow-up, her total bilirubin had not increased further and liver enzyme levels gradually decreased and reached a normal level over the subsequent 10 weeks. US at 24 weeks showed partial resolution of fetal ascites with complete resolution at 30 weeks. At 38 weeks she went into spontaneous labor and had a normal delivery of a 2,500-gram female baby with normal liver enzyme levels at birth and 1-month follow-up. At birth, anti-HEV IgM and IgG from cord blood were positive. The mother's postpartum period was uneventful.

Discussion

The term isolated fetal ascites is defined as the presence of significant fluid in the abdominal cavity in the absence of any detectable malformations or fluid elsewhere. Prenatal diagnosis of a case of isolated fetal ascites

should involve a systematic and individualized approach and is possible in up to 92% of cases [1]. A wide range of etiologies is associated with isolated fetal ascites which includes fetal chromosomal abnormality, malformation, intrauterine infection, genetic disorders, intestinal perforation, neoplasms and growth retardation.

Seven cases of viral infection during pregnancy associated with isolated fetal ascites have been reported which include 2 cases of hepatitis A [2, 3], 1 case of hepatitis C [4], 2 cases of CMV [5], 1 case of parvovirus [6], and 1 case of enterovirus [7]. In both reported cases of hepatitis A infection during pregnancy [2, 3], at 13 and 20 weeks of gestation, respectively, fetal ascites was noted after 7 weeks of maternal infection and resulted in meconium peritonitis. Both cases required surgical management after delivery.

One case of hepatitis C infection during pregnancy [4] at 17 weeks of gestation had significant fetal ascites for which paracentesis was done at 23 weeks and the child after delivery was healthy with anti-HCV seropositivity. One case of chronic active hepatitis B infection superimposed with CMV infection during pregnancy at 25 weeks developed meconium peritonitis and died in utero [5].

HEV is a non-enveloped single-stranded RNA virus and is prevalent in Southeast and Central Asia, the Middle East and parts of Africa and Mexico. The infection usually presents in the epidemic form and is transmitted by the fecal-oral route (usually through contaminated water). Although the mortality rate is usually low (0.07–0.6%) in non-pregnant women, the infection may have a severe course in pregnancy, especially if the infection is acquired in the late trimester, with mortality rates reaching as high as 25–40%. Little data is available about the fetal effects due to hepatitis E infection. The complications that are reported in the literature include an increased incidence of preterm delivery [8], the majority of which are iatrogenic and with high perinatal mortality. To the best of our knowledge, fetal ascites from acute infection with hepatitis E has never been reported and this is the first case to be reported.

Conclusion

Second-trimester maternal HEV infection can cause transplacental transmission to the fetus and isolated fetal ascites. These cases may have a successful outcome.

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