

Gestational Lyme Disease as a Rare Cause of Congenital Hydrocephalus

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Received 19 October 2004; received in revised form 20 December 2004; accepted 21 January 2005

Abstract

Lyme disease is an inflammatory disorder caused by infection with *Borrelia burgdorferi*. In this report a rare case of a girl surviving intrauterine Lyme disease, who subsequently developed triventricular hydrocephalus and aqueductus cerebri stenosis was presented. In earlier cases modern imaging techniques have not been used. In our patient, intrauterine magnetic resonance imaging technique has been helpful in the diagnosis and management of the therapy.

Keywords: Lyme disease, pregnancy, hydrocephalus

Özet

Konjenital Hidrosefalinin Nadir Bir Sebebi Olarak Lyme Hastalığı

Lyme hastalığı *Borrelia burgdorferi* enfeksiyonunun neden olduğu inflamatuvar bir hastalıktır. Bu vaka sunumunda, intrauterin olarak Lyme hastalığını geçirip yaşayan ve daha sonra triventriküler hidrosefali ve aqueductus serebri stenozu geliştiren nadir bir olgu sunulmuştur. Daha önce yayınlanmış olan vakalarda modern görüntüleme teknikleri kullanılmamıştı. Bizim hastamızda, intrauterin manyetik rezonans görüntüleme tekniği hidrosefalinin tanısında ve tedavinin planlanmasında yardımcı olmuştur.

Anahtar sözcükler: Lyme hastalığı, gebelik, hidrosefali

Introduction

Despite vaccines, new antimicrobials, and improved hygienic practices, congenital infections remain an important cause of death and long-term neurologic morbidity among infants worldwide. Important agents include *Toxoplasma gondii*, cytomegalovirus, treponema pallidum, herpes simplex virus types 1 and 2, and rubella virus. In addition, several other agents, such as the varicella zoster virus, human parvovirus B19, and *Borrelia burgdorferi* can potentially infect the fetus and cause adverse fetal outcomes (1).

The clinical note presents the prenatal sonographic diagnosis of congenital hydrocephalus due to gestational Lyme disease

(LD), confirmed by in utero magnetic resonance imaging (MRI), in an apparently uneventful pregnancy.

Case Report

An 18-year-old nullgravid at 34th weeks of gestation was admitted to our hospital's pregnancy department with an uneventful pregnancy. Prenatal sonography at the time showed enlargement of the lateral ventricles that meant congenital hydrocephalus. A part from head circumference the fetal maturity was appropriate for gestational age in the ultrasonography. In utero magnetic resonance imaging (MRI) scans at 35th weeks of gestation demonstrated triventricular hydrocephalus (Figures 1, 2). *Borrelia burgdorferi* IgM antibodies in maternal blood was positive, 27.5 RU (0-20) and no other positivity was found in the tests which made to explore the cause of congenital hydrocephalus. The mother had neither a clinical infection nor a history of tick bite during pregnancy, so that she did not receive any antibiotics. Elective cesarean delivery was performed due to the associated craniomegaly at 36th weeks of gestation. The infant girl had

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a born weight of 2920 gr (10-25th percentiles) and a head circumference of 37 cm (>97th percentiles). Preoperative MRI revealed triventricular hydrocephalus and aqueductus cerebri stenosis, transepandyamal cerebrospinal-fluid leakage. A ventriculoperitoneal shunt was placed on day 2 of her life. She was discharged on day 5 with her mother. After the delivery in Western-blot analysis high-specific antibodies were found in maternal blood and *Borrelia burgdorferi* non-specific antibodies were found in neonatal blood. Species-specific and highly spesific antigen with the molecular weighth of 31 kDa was present in maternal IgG Western-blot analysis. A genus-specific antigen with the molecular weighth of 41 kDa and non-specific antigen with the molecular weighth of 75 kDa were present in infant IgM Western-blot analysis. Up to date she and her mother had an uneventful follow-up.

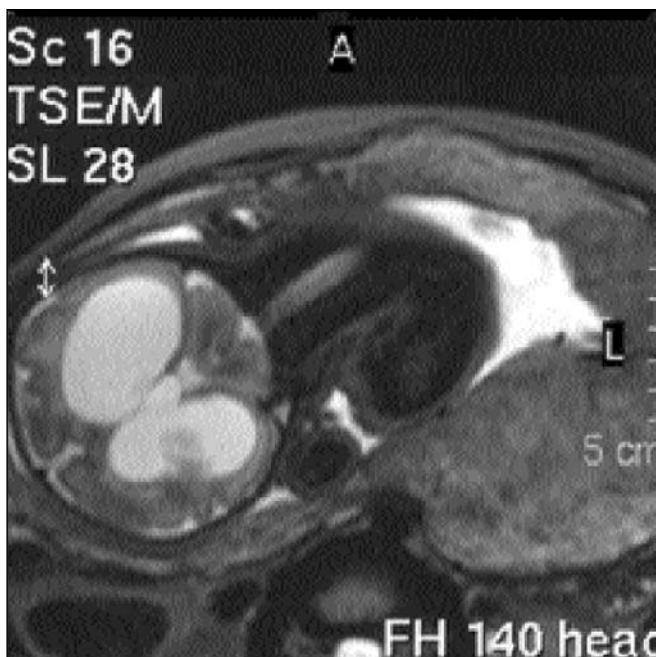


Figure 1. Intrauterine MRI of the baby.

Discussion

Lyme disease is a multisystem inflammatory syndrome caused by infection with the tick-borne spirochete *Borrelia burgdorferi*. Although this syndrome has important implications for human pregnancy, little is known about gestational infection with *Borrelia burgdorferi* (2).

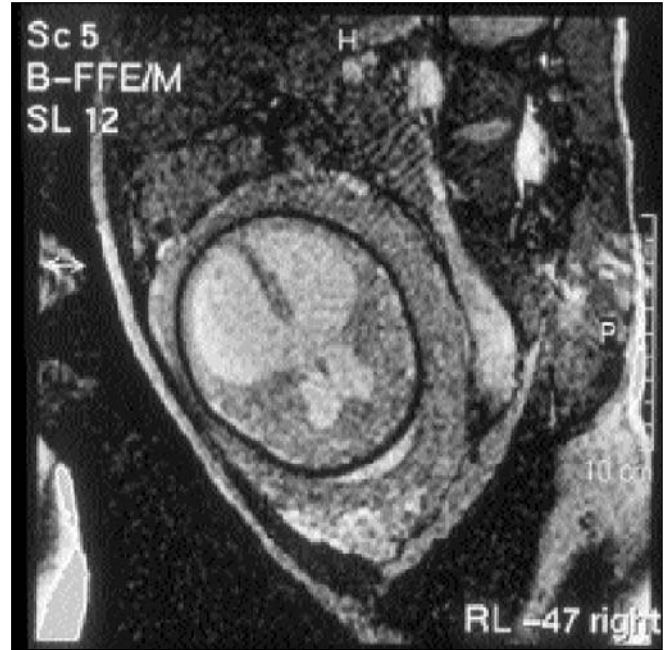


Figure 2. Intrauterine MRI of the cranium demonstrating triventricular hydrocephalus.

It is known that transplacental transmission of the spirochete from mother to fetus is possible. Many studies have associated gestational LD with fetal death, hydrocephalus, cardiovascular anomalies, neonatal respiratory distress, hyperbilirubinemia, intrauterine growth retardation, cortical blindness, sudden infant death syndrome, and maternal toxemia of pregnancy (3).

The serologic evidence of *Borrelia burgdorferi* non-specific antibodies in a neonate with a MRI image of congenital hydrocephalus and maternal infection during pregnancy proved by *Borrelia burgdorferi* high-specific antibodies were crucial to diagnosing LD consisting of congenital hydrocephalus.

References

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