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Prenatal diagnosis of congenital syphilis presenting with transient pleural effusion in the fetus: a case report and rising incidence of congenital syphilis in South Korea

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Summary

Congenital syphilis is preventable and curable if maternal infection is detected early, and pregnant women in Korea are screened routinely for this disease. Nevertheless, the incidence of congenital syphilis is not decreasing. Prenatal diagnosis of congenital syphilis is difficult and treatment is usually based on maternal syphilis serology. Prenatal ultrasonographic examination may sometimes reveal abnormal features suggesting congenital infection. The authors report a case of congenital syphilis that was diagnosed in both fetus and asymptomatic mother following detection on prenatal ultrasonography of transient fetal pleural effusion. The case is noteworthy for its sonographic presentation as fetal pleural effusion rapidly resolved spontaneously.

Key words: Congenital syphilis; Ultrasonography; Pleural effusion; Fetus.

Introduction

Congenital syphilis is preventable and curable if the maternal infection is detected and treated early. Serological testing is therefore recommended for all pregnant women at the first prenatal visit [1] and community-based public health centers in Korea offer free prenatal check-up services. Despite efforts to reduce congenital syphilis by universal screening, the rate of congenital syphilis has not decreased. According to Korea Centers for Disease Control and Prevention, the incidence of congenital syphilis peaked in 2009 at 3.82 cases per 100,000 births as compared to 0.54 cases per 100,000 births in the early 2000s (Figure. 1). The increase in the congenital syphilis rate was relevant to that of primary and secondary syphilis. Congenital syphilis occurs by transplacental transmission of spirochetes. The prenatal diagnosis of fetal syphilis is difficult because a fetal blood test and physical examination are generally not available. Although an infected fetus often has normal sonographic findings, the ultrasonography may show the indirect effects of fetal syphilis such as hepatosplenomegaly, ascites, and placental thickening [2]. The authors present a case of congenital syphilis revealed by prenatal ultrasonography as a transient unilateral fetal pleural effusion. This subtle sonographic finding alone led to the prenatal diagnosis of both maternal and fetal syphilis in a young woman who had received regular prenatal care.

Case Report

A 21-year-old woman, gravida 2, para 1, was referred to the present clinic following detection of a fetal pleural effusion at 27+5 weeks' gestation. The patient's antenatal progress had been unremarkable to that point. Ultrasonographic examination revealed a unilateral fetal pleural effusion in the right thorax (Figure 2A). The effusion was small and did not compress adjacent organs and no fluid collection was detected in other organs. No other fetal abnormalities were neither observed in this examination nor in fetal echocardiography. The patient was informed of the sonographic findings and underwent appropriate serological, blood type, and antibody screening tests. A genetic amniocentesis was also performed. A subsequent ultrasound scan at 28+5 weeks' gestation revealed that the fetal pleural effusion had spontaneously resolved (Figure. 2B). However, the patient's blood tests for rapid plasma regain (RPR) test were positive at 1:48 dilution. The Treponema pallidum hemagglutination assay (TPHA) was reactive at 1: 2,000 dilution and the fluorescent treponemal antibody–absorbed immunoglobulin M (FTA-ABS IgM) and immunoglobulin G (FTA-ABS IgG) assays were reactive. Early latent syphilis was diagnosed because the patient showed no clinical signs or symptoms of syphilis, and fetal syphilis was strongly suspected. At 28+6 weeks' gestation the patient received a single injection of 2.4 million units of penicillin G benzathine. One week later (29+6 weeks), she was admitted for spontaneous preterm labor with vaginal bleeding. A 1,370-g male neonate was delivered by repeat cesarean section due to placental abruption. He had an Apgar index of 5 at one minute and 7 at five minutes. His serological test for syphilis showed a reactive RPR (>1: 48), positive TPHA (> 1: 2,000), reactive FTA-ABS IgG, and nonreactive FTA-ABS IgM. Laboratory studies of the cerebrospinal fluid (CSF) showed the following values: WBCs, 9/uL; protein, 142.0 mg/dL; glucose, 58 mg/dL, with a plasma glucose level of 123 mg/dL. The venereal disease re-

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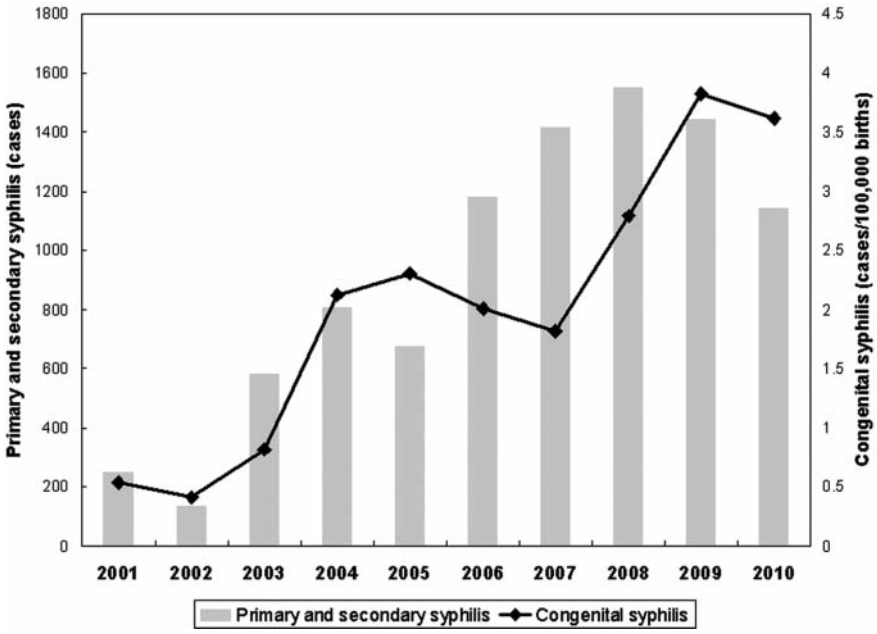

Figure 1. — Incidence of congenital syphilis in Korea (2001-2010). Data are from the National Center for Disease Control and Prevention in Korea. Rates of congenital syphilis per 100,000 births were calculated with national census data.

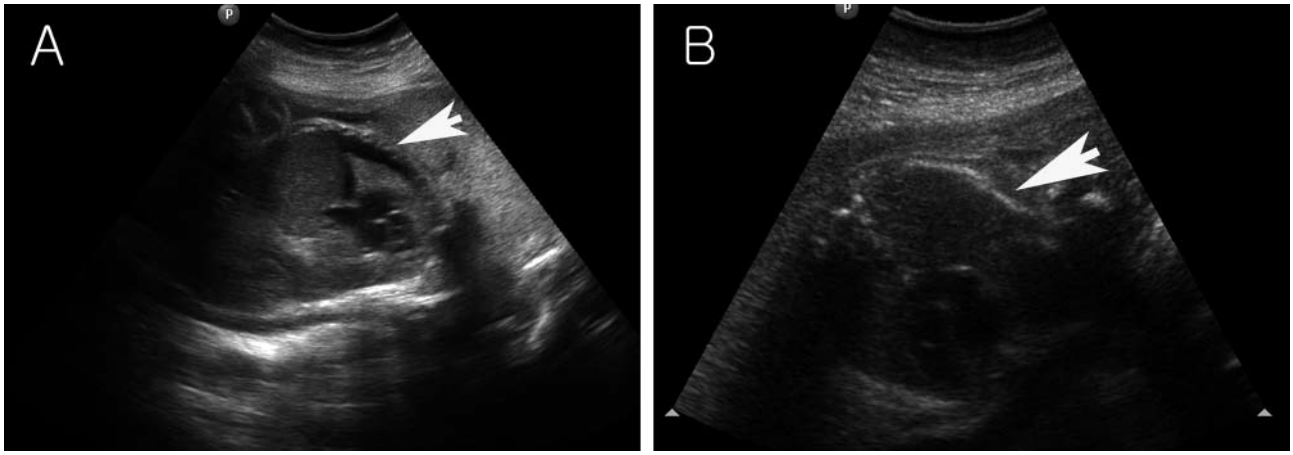

Figure 2. — Prenatal ultrasonography confirmed transient fetal pleural effusion. A) Coronal section of the thorax and abdomen of a 27-week fetus, showing anechoic space (arrow) peripherally around the lung in the right thorax, suggesting unilateral pleural effusion. B) At 28+5 weeks' gestation, a transverse section of fetal thorax appeared normal (arrow) after spontaneous resolution of right pleural effusion.

search laboratory (VDRL) test of CSF was weakly reactive. The newborn was treated with aqueous penicillin G for 21 days and discharged at 64 days of age. As of the last follow-up visit at 14 months of age, the child had suffered frequent infections and showed neurodevelopmental disability.

Discussion

With increasing use and distribution of penicillin since 1960s the prevalence of syphilis decreased in many regions of the world. Congenital syphilis is preventable and even treatable through treatment of the mother with intramuscular penicillin when maternal syphilis is diagnosed. During the last decade, however, congenital syphilis has re-emerged [3-5]. This follows a rising incidence of maternal primary and secondary syphilis, which has been attributed to inadequate prenatal care [4], illicit drug use [6], the sex trade and social upheaval in developing countries [6, 7], and regional changes in demographic and socioeconomic patterns [8]. In South Korea, the increase in congenital syphilis reflects an increase in the primary and secondary syphilis rates, which is presumably associated with liberalized sexual attitudes. Diagnosis of congenital syphilis during pregnancy usually relies on maternal serological testing. However, abnormal signs in a fetus may potentially be detected earlier and more dependably, because syphilis in the mother may be

asymptomatic and difficult to diagnose if not detected on routine screening at the first prenatal visit. The sonographic findings of fetal ascites, hepatosplenomegaly, placental thickening, and hydrops fetalis are associated with fetal syphilis [2]. In the present case, prenatal ultrasonography led the authors to diagnose fetal syphilis infection by revealing transient fetal pleural effusion, which is not often associated with congenital syphilis. Fetal pleural effusion is a rare condition, with an estimated incidence of 1/10,000 pregnancies [9]. The clinical course varies according to the underlying pathophysiology from spontaneous resolution to progressive accumulation of fluid with a high risk of stillbirth and poor perinatal outcome [10]. Fetal pleural effusion may resolve spontaneously in about 22% of cases [11], but this benign course does not guarantee that the fetus will be normal and healthy. Once fetal pleural effusion is detected, the clinician should rule out associated fetal conditions by detailed ultrasound analysis of fetal anatomy, fetal karyotyping, and maternal serological testing for congenital infection, regardless of its clinical course. In the present patient, the authors diagnosed a congenital syphilis infection through fetal and maternal evaluation, although the mild pleural effusion was completely resolved at the next follow-up visit.

Pregnant women who are treated with penicillin should be monitored for serologic response to treatment. Treatment failed in the present patient because preterm labor began secondary to placental abruption at only one week after treatment. Neonatal examination confirmed the congenital syphilis, and neurologic impairment proceeded in spite of postnatal treatment.

In summary, the present authors report a case of congenital syphilis diagnosed following detection of a transient unilateral pleural effusion on routine prenatal ultrasonography. As the incidence of congenital syphilis has increased in Korea, the authors recommend the serological testing of all pregnant women for this disease at the first prenatal visit. In addition, all physicians should be aware that this sexually transmitted disease is re-emerging and may be revealed as a fetal abnormality in an asymptomatic mother.

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