International Journal of Clinical Obstetrics and Gynaecology

ISSN (P): 2522-6614
ISSN (E): 2522-6622
© Gynaecology Journal
www.gynaecologyjournal.com
2021; 5(2): 26-32
Received: 18-02-2021
Accepted: 22-04-2021

[1]Mohammed Alsabri, MD, M.B, B.S, FISQUA
Pediatrics, Brookdale University Hospital Medical Center, Brooklyn, USA

[2]Tabrikah Alshaibah, RN,MSc,CIC
National Rehabilitation Center, UAE

[3]Ann Mary Hanna, MD
College of Osteopathic Medicine, NYIT, Glen Head, New York, United State

[3]Mohamed Saker, MD
Pediatrics, Brookdale University Hospital Medical Center, Brooklyn, USA

[4]Mahmoud Hassanein ,MD
Infection Disease Specialist
Pediatrics, Brookdale University Hospital Medical Center, Brooklyn, USA

Corresponding Author:
Mohammed Alsabri
MD, M.B, B.S, FISQUA
Pediatrics, Brookdale University Hospital Medical Center, Brooklyn, USA

Congenital syphilis: Case report and review

Mohammed Alsabri (MD, M.B.B.S)[1*], Tabrikah Alshaibah (RN, MSc)[2], Ann Mary Hanna (MD)[3], Mohamed Saker (MD)[1,] Mahmoud Hassanein (MD)[1]

DOI: https://doi.org/10.33545/gynae.2021.v5.i3a.900

Abstract
Despite a plan in 1999 by the CDC to eradicate syphilis, the United States has seen a resurgence in syphilis cases; with this resurgence, there has been a concomitant rise in the number of cases of congenital syphilis. Congenital syphilis is both preventable and treatable, yet a combination of factors such as high-risk sexual behavior, ethnic disparities, low socioeconomic status, missed screening and prevention opportunities, and a lack of prenatal care have led to the increased number of neonates who are born with congenital syphilis, whether clinical manifestations are immediately apparent or manifest years later. Inconsistent maternal syphilis screening during pregnancy contributes to missed diagnostic and curative opportunities, fetal infection, and resultant mortality and morbidity risks. We present a neonate born to a 36 y/o G7P5015 African American female EGA who had not received any prenatal care and presented for a fetal echocardiogram due to the presence of congenital heart disease in one of her other children. During the fetal echocardiogram, she developed contractions and was sent to labor and delivery. Due to the unstable condition of the fetus, an urgent Cesarean section was performed. The neonate was found to have poor tone, weak cry, and birth weight. Physical exam revealed peeling of the skin of the palms and soles, and bluish lesions scattered over the chest, abdomen, and shin. Imaging revealed syphilitic osteochondritis in the long bones, and the periosteal reaction was seen in the left humorous and the forearm. Ten days later, the neonate developed further clinical complications including hepatosplenomegaly, syphilitic pneumonia, and a severe rash. This case illustrates a severe presentation of congenital syphilis and emphasizes the crucial need for syphilis screening and treatment throughout pregnancy, as well as testing at delivery if no screening has been done. Clinicians should be especially wary regarding particularly vulnerable patients with one or several critical risk factors.

Keywords: Congenital syphilis, diagnosis, treatment, prevention

Introduction
Worldwide, congenital syphilis is the second most common cause of preventable stillbirth. Even if the neonate survives, there is a risk of prematurity and intrauterine growth restriction. The presentation of congenital syphilis is variable, as it can present at birth or it can remain asymptomatic for months or years [1]. Syphilis is dangerous as the fetus is at risk for the duration of the pregnancy; mother-to-child transmission of the spirochetes can lead to congenital infection at any time if the infection is not identified and fully treated with penicillin [2]. The infection and resultant inflammatory response that is induced in various body organs and tissues by *T. pallidum* cause the clinical, laboratory, and radiographic abnormalities that manifest in congenital syphilis [3]. Congenital syphilis can be subdivided into an early and late stage. The first stage is classified as clinical manifestations appearing within the first two years of life and commonly features hepatomegaly, a desquamating rash, hepatomegaly, and rhinitis; also, anemia, thrombocytopenia, peri-ostitis, and osteomyelitis have been documented [4]. 2/3 of infants are asymptomatic at birth and may not develop the clinical manifestations associated with syphilis for 3 to 8 weeks. If congenital syphilis is left untreated, early congenital infections may progress to late manifestations such as Hutchinson teeth, mulberry molars, interstitial keratitis, deafness, saddle nose, saber shins, and such neurologic abnormalities as developmental delay and general paresis [5]. Although syphilis is both preventable and treatable, research shows that there has been a steady increase in the rate of congenital syphilis even in high-income countries such as the USA [5, 6]. Fluctuation in the incidence of congenital syphilis is associated with the incidence of primary and secondary syphilis in women of reproductive age, which has approximately doubled during 2014-2018 [6]. Besides, historical data demonstrates that untreated syphilis in pregnant women acquired in the four years before delivery can lead to infection of

the fetus in up to 80% of cases or even infant death in up to 40% [7]. Risk factors for syphilis are numerous and include age younger than 30 years of age, low socioeconomic status, substance abuse, HIB infection, concurrent STIs, and high-risk sexual activity (characterized as sex with multiple high-risk partners) [5]. Also, congenital infections in the United States have been correlated with a lack of prenatal care which has been linked with racial and socioeconomic disparities, as well as with mental health disorders that go untreated, substance abuse disorders, and recent immigration to the United States [5]. Disease Control and Prevention (CDC) and the American College of Obstetricians and Gynecologists recommend routine testing at the first prenatal visit for all pregnant women, and in the second trimester and at delivery for high-risk women and those living in high prevalence areas [4]. We report an infant diagnosed with congenital syphilis with an unusual clinical presentation, whose mother did not have adequate prenatal care. This case sheds light on the resurgence of congenital syphilis in the United States, the notable epidemiological risk factors that are associated, and the role of clinicians in, as well as the importance of, prenatal screening.

Review

Case Report

A 36 y.o African American female G7P501522-year-old with no prenatal care patient was referred on 2/16/2021 for fetal Echocardiogram due to a history of congenital heart disease in a sibling. While at fetal Echo patient complained of strong painful contractions causing the study to be aborted with a recommendation for postnatal echo to complete cardiac evaluation. The patient was sent immediately to the labor. The contractions were associated with late deceleration. The patient immediately started on IV fluid bolus, Oxygen via face mask, and placed in left lateral position. Due to the persistent fetal late decelerations, the delivery was effected via urgent Cesarean section. The amniotic fluid was stained with meconium. The Apgar score was 6 & 7 points at 1&5 minutes respectively. Immediately after the delivery, the neonate was found to have poor tone, weak cry, HR>100, AGA with birth weight 3 lb 1 oz. PPV applied for 1 minute. P/E significant for peeling of the skin of palms and soles, hepatosplenomegaly, respiratory distress, and bluish lesions scattered over the chest, abdomen, elbows, and shin. The baby was further admitted to NICU for management of congenital syphilis complications in the setting of prematurity. Based on the clinical suspicion of congenital infections, a full sepsis screen was done including blood cultures, CSF (for culture, VDRL, viral studies including HSV and CMV to rule out other TORCHES), surface cultures for HSV, serum VDRL, CBC, and CRP. RPR confirmed congenital syphilis with reactive readings of 1:256 and maternal titer of 1:128, the baby was started on IV Penicillin G 50,000 Units/kg Q12H, CSF VDRL was also reactive (1:64).

Upon admission, the baby was noted to have respiratory distress and was commenced on Bubble Nasal CPAP, however, he continued to have progressively worsening respiratory distress and repeated episodes of desaturations despite optimizing settings of bubble CPAP. On Day 5 of life, he was intubated, started on SIMV and then HFOV because of acute hypoxemic respiratory failure not responding to conventional mechanical ventilation. Echocardiography was done because of pulse oximetry demonstrating a difference of greater than 10 percent between the pre-and postductal oxygen saturation and confirmed the diagnosis of pulmonary hypertension with large patent ductus arteriosus with the bidirectional flow, small interatrial communication with the bidirectional flow, and systemic right ventricular pressure. Ultimately, the baby was stabilized on high ventilator support, inhaled nitric oxide, and sildenafil infusion. X-ray examination of the neonate's long bones revealed signs of syphilitic osteochondritis in all bones, and the periosteal reaction was seen in the left humerus and the forearm (Figure 1, 2). Serial Chest X-rays were consistent with Sever RDS and/or bilateral CS Pneumonia (figure 3). Ultrasonography internal organs revealed hepatosplenomegaly. The patient was noticed to have to trend up ALT, AST and direct bilirubin with normal GGT, likely from syphilis induced hepatitis Abdominal U/S showed no biliary disease. After birth, the baby was noted to have a petechial rash on the chest and extremities. CBC done within 1st few hours of life showed anemia (Hgb 8.2 mg/dl) and thrombocytopenia (Plt- 14,000). Reticulocytes of 14.3% and negative Direct Coombs test. Because of recurrent anemia, thrombocytopenia the baby received multiple blood and Plt transfusions alongside intermittent immunoglobulin transfusion. Current CBC showed Hb/HC (12.5/33.2), Plat 97. The baby had daily WBC monitored with a subsequent decrease in bands and IT ratio. Blood, CSF, and eye swab cultures have been negative for 5 days. IV Penicillin G dose increased to 70,000 unit/kg Q8H as recommended by the ID specialist for a total of 14 days because of possible neurosyphilis. The rash immediately started resolving and disappeared within a week TORCH tested back negative. No microorganisms were found in blood or CSF culture samples. Infection disease consultant confirmed the diagnosis of early-stage and a serological follow-up examination after 3 months was recommended. The neonate's overall condition remained unsatisfactory throughout the treatment period, he still in a critical condition in NICU. The recommendations were the following: monitoring by an ID specialist, serological follow-up of RPR titer till non-reactive within next repeat in 2-4 weeks3, auditory examination using the otoacoustic emission test, and continuous ENT monitoring.

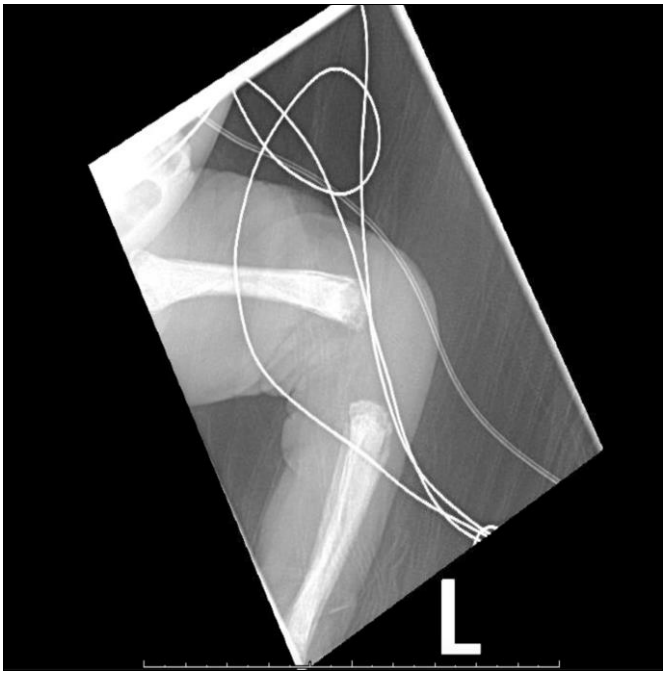

Fig 1: Left Knee There is an abnormal appearance of both lower extremities with periosteal reaction and lucency and irregularity of the metaphysis of the distal femur and proximal tibia. In the proper clinical setting, the findings are consistent with congenital syphilis.

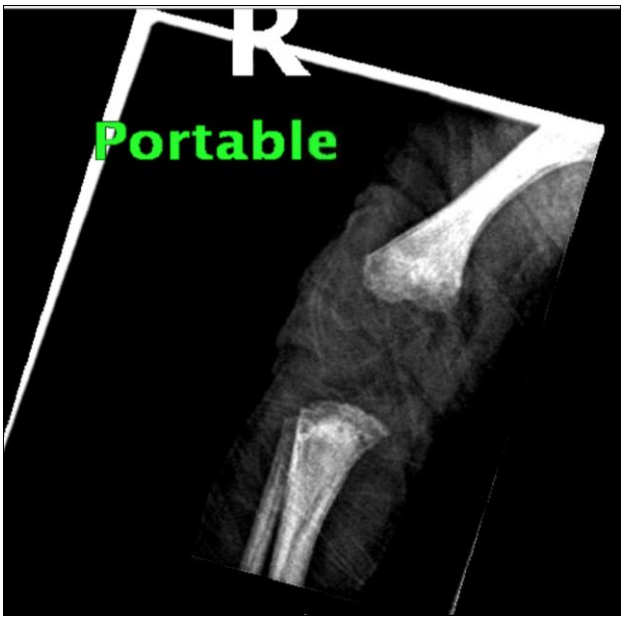

Fig 2: Rt Knee There is an abnormal appearance of both lower extremities with periosteal reaction and lucency and irregularity of the metaphysis of the distal femur and proximal tibia. In the proper clinical setting, the findings are consistent with congenital syphilis

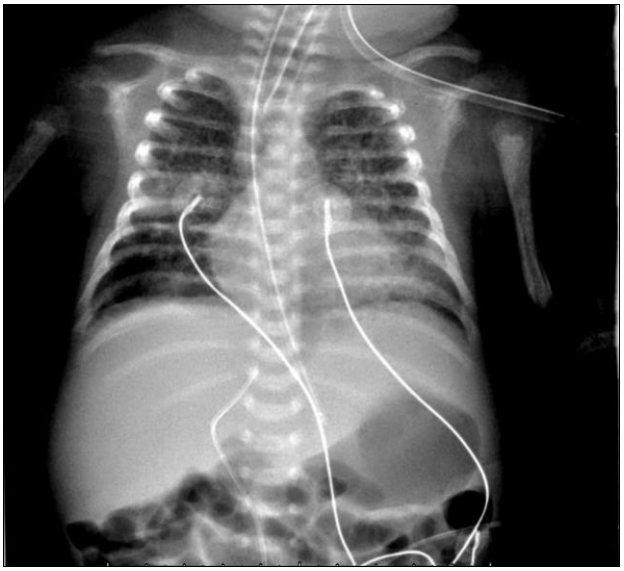

Fig 3: Extensive airspace consolidation throughout both lungs; This may represent RDS and/or bilateral pneumonia.

Review

Epidemiology

Syphilis is one of the most common sexually transmitted infections globally, with approximately 6 million new cases each year. New estimates published in 2019 show that there were more than half a million (around 661,000) total cases of congenital syphilis in 2016, resulting in over 200,000 stillbirths and neonatal deaths [8]. CDC estimates indicate about 20 percent of the U.S. population - approximately one in five people in the U.S. - had an STI on any given day in 2018, and STIs acquired that year will cost the American healthcare system nearly $16 billion in healthcare costs alone [7, 9]. If a pregnant woman who is infected does not receive early and effective treatment, she can then transmit the infection to her unborn infant. This is known as 'congenital syphilis', which is often fatal. It can also cause low birth weight, prematurity, and other congenital deformities [7, 8]. Congenital syphilis (CS) is the second leading cause of preventable stillbirth globally. Global decrease but cases remains high, causing 200 000 stillbirths and newborn deaths every year [8]. The number of CS cases declined in the United States during 2008-2012 from 446 to 334 cases (10.5 to 8.4 cases per 100,000 live births), reflecting trends in rates of P&S syphilis among women, which decreased from 1.5 to 0.9 cases per 100,000 women [9-12]. During this period, all regions of the United States experienced a decrease in CS rates except the Midwest, where the rate increased 62% (from 4.2 to 6.8 cases per 100,000 live births) [11, 12]. The increase in CS in the Midwest was attributed primarily to increases in CS rates in Illinois and Ohio, which occurred 1-2 years after observed increases in P&S syphilis among women in these states [9-12]. Substantial declines occurred in all other regions (51% in the Northeast, 46% in the West, and 16% in the South), leading to an overall national decline in CS rates to the lowest level since 2005 [9-12]. Racial disparities in CS rates between non-Hispanic blacks (blacks) and non-Hispanic whites (whites) increased during 2008-2012 because relative decreases in rates of CS were greater among whites (21%) than blacks (11%). As has been observed previously, the majority of CS cases (57%) in 2012 continued to be among infants whose mothers were black [9-12].

Mother-to-child transmission/pathophysiology

CS is transmitted from pregnant women to their unborn infant in more than half of all cases, mostly in the earlier stages of the disease when women are more likely to be asymptomatic. Undiagnosed syphilis in mothers and babies can have catastrophic consequences, such as early fetal death, stillbirth, preterm delivery, low birth weight, neonatal death, and syphilis in the newborn [8, 13]. CS can be acquired at any time during pregnancy or birth, transplacental transmission commonly occurs during the early fetal period of development (14-16 weeks of gestation), a time when *T. pallidum* spirochetes that are transmitted across the placenta can pass through the chorionic layers of the amniotic sac and infiltrate the circulation of the developing fetus, resulting in spirochetemia with widespread dissemination to almost all organs [8, 13]. Later when fetal infection occurs, pervasive spirochetal dissemination can affect and damage multiple organ systems [13]. The clinical manifestations result from the inflammatory response approximately 21% to 40% of untreated or inadequately treated maternal syphilis cases result in fetal death [8, 12]. It is mainly caused by placental infection and the eventual decrease in placental blood flow [12]. Vertical transmission occurs when the mother transmits the bacteria to the infant during birth; although less common, transmission is possible if the infant comes in contact with an infected lesion when passing through the birth canal [8, 12]. Babies born with congenital syphilis can have bone damage, severe anemia, enlarged liver and spleen, jaundice, nerve problems causing blindness or deafness, meningitis, or skin rashes [7].

Contributing Factors for Resurgence of Syphilis in the United State

In 1999 the CDC developed a national plan to eradicate syphilis but the rates have increased in the 2000s. From 2013 to 2017 the incidence of primary and secondary syphilis have increased by 72.2% [12]. The increase in women is problematic because it is accompanied by a concomitant increase in congenital syphilis [14, 15]. The number of congenital syphilis cases rose from 2013-2018 even though penicillin-based treatment regimens that target maternal syphilis and are initiated at least 30 days before delivery can prevent infection [14, 15]. Several factors have

contributed to this resurgence, including missed prevention opportunities, epidemiological factors, and high-risk behaviors. Ethnic disparities, low socioeconomic status, and inadequate treatment during pregnancy, and access to medical care have all contributed to the resurgence of syphilis [12, 15]. Certain North American regions have partial or no prenatal care due to limited access to medical care; these regions are positively associated with increased risk for syphilis infection during pregnancy [13]. Host-associated factors that drive the re-emergence and spread of syphilis include high-risk sexual activity, migration and travel, and economic and social changes that limit access to health care [16]. Advancements in technology that facilitate anonymous sexual encounters through internet chatrooms and dating applications such as Tinder have also led to increased rates of syphilis. These advancements have created a virtual landscape of social-sexual networks that are complex, difficult to identify, and potentially increase risky sexual behavior [14]. Another behavioral factor that has led to the increase in syphilis cases is the use of drugs, which can lead to altered judgment, decreased inhibition, an increase of impulsive behavior, and enhanced sexual pleasure, all culminating in the potential increased number of sexual partners and high-risk sexual encounters [14]. Syphilis also continues to have high co-infection rates in persons who live with HIV disease; the immunosuppression caused by HIV may aid in the ability of *T. pallidum* to evade host defense mechanisms [14]. The fact that in recent years effective drugs have been developed that can both treat and prevent HIV also brings a concern of "risk compensation" reducing the use of STI preventative behaviors, such as the use of condoms, especially among the younger generation. The stigma and discrimination associated with sexually transmitted infections have also been damaging. They cause at-risk females to be deterred from seeking appropriate prenatal care [13]. Clinicians also play a role in the resurgence, as inconsistent maternal syphilis screening during pregnancy contributes to missed diagnostic and curative opportunities, fetal infection, and resultant mortality and morbidity risks [13]. Regional clinical and demographic differences in the mothers of infants with congenital syphilis indicate that different populations are at increased risk and might require different interventions. The high proportion of mothers with early syphilis in certain regions signals recent heterosexual transmission and the potential for future increases in congenital syphilis cases if no intervention occurs. The high proportions of symptomatic and stillborn infants in certain regions might be related to early syphilis among their mothers, given that higher rates of vertical transmission and worse infant outcomes are associated with early syphilis during pregnancy [7, 8].

Clinical manifestations

The disease may manifest in 2 categories: early congenital syphilis (ECS) and late congenital syphilis (LCS) [8, 13]. Early Congenital Syphilis ECS is usually identified by 3 months of age, but symptoms may present as late as 2 years of age. Typical features seen in ECS include organomegaly, jaundice, anemia, thrombocytopenia, mucocutaneous lesions, generalized edema, and abnormalities of the eyes, ears, and nose [4, 8, 13]. Hepatomegaly presents in nearly all infants, while splenomegaly presents in approximately half of cases [3]. Jaundice occurs due to direct hyperbilirubinemia with elevated serum transaminase and alkaline phosphatase concentrations as a result of syphilitic hepatitis and hemolytic anemia [3]. The presence of petechial lesions may be a result of thrombocytopenia from abnormal spleen and liver functions [3]. Mucocutaneous involvement may present at birth or within the first few weeks of life as small copper-red maculopapular lesions on the body, with the hands and feet being the most likely and most severely affected areas. Mucocutaneous lesions and the associated discharge are highly infectious and contain a large amount of the spirochete [3]. Rhinitis with bloody mucus discharge (snuffle) may be present during the first week of life or as late as 3 months of age [4, 13]. Ocular and vestibular involvement, although rare in the early stage, may include chorioretinitis, glaucoma, uveitis, cataracts, eyelids lesions, and hearing loss [3]. Ulceration of the nasal mucosa may spread to the nasal cartilage, causing a saddle nose deformity, or collapse of the nasal bridge [3]. Late Congenital Syphilis Untreated ECS may lead to LCS, which is diagnosed any time after 2 years of age [3, 4, 7, 13]. Its symptoms include syphilitic rhinitis, syphilitic vasculitis, interstitial keratitis, and neurological and musculoskeletal abnormalities [4, 13]. Syphilitic rhinitis can affect the central portion of the face, causing deformities of the nose, cartilage, and maxilla [3]. Syphilitic vasculitis is responsible for dental abnormalities such as peg-shaped, wide-spaced teeth known as Hutchinson's teeth; mulberry molars, which are characterized by hypertrophy and pitting of the enamel; and increased risk of cavities [13]. A classic finding is the perforation of the hard palate [13]. Interstitial keratitis is usually manifested as secondary glaucoma or corneal clouding and may not present until the second decade of life [3]. On the other hand, Neur-osyphilis which is neurological involvement can result in hydrocephalus, seizure disorders, developmental delays, deafness, blindness, and juvenile general paresis [3]. Musculoskeletal manifestations are rare at this stage but may include frontal bossing, a bulging of the forehead; saber shin, bowing of the tibia; osteochondritis and periostitis at the epiphysis and metaphysis, resulting in lucent epiphyseal bands. Higoumenakis' sign, a unilateral enlarging of the clavicle; and Clutton's joints, a bilateral swelling and/or inflammation of the elbows and knees [3, 4, 13]. Of note, early diagnosis is important to prevent progression to LCS and severe, long-term complications.

Diagnostic tests

Syphilis can be diagnosed through a combination of serological tests. More recently, new point-of-care (POC) tests have been introduced, which can use whole-blood samples from a finger prick [3]. The easy transfer of immunoglobulin (Ig) G antibodies across the placenta to the fetus makes the diagnosis of CS challenging in the fetal and early neonatal period, as it can complicate the interpretation of serologic tests in the neonate. Prenatal testing for CS can also be complicated by the inability to successfully culture the *T. pallidum* bacteria [7, 9]. Direct visualization of the spirochete and serologic testing continue to be the gold standard for diagnosing the infection due to these perplexities, with serologic testing the more common due to cost-effectiveness, ease of use, and reliability [3]. Imaging studies and percutaneous umbilical cord blood sampling can also aid in the diagnosis [13]. The American Academy of Pediatrics and the CDC recommend that all infants born to mothers who were inadequately treated during pregnancy should be further evaluated with complete blood counts and cerebrospinal fluid analysis for protein, cell count, and quantitative VDRL [7, 9]. Other diagnostic tests include eye examinations to assess for structural abnormalities; chest and long bones radiography, which may show radiolucency, osteochondritis, periostitis, bone destruction, and opacities; and liver function tests [13].

Role in Early Identification and Treatment

In a 2018 CDC report, researchers identified missed opportunities to prevent congenital syphilis 2018 using case report data from the National Notifiable Disease Surveillance System from all 50 states and the District of Columbia. The results were placed into four mutually exclusive categories of missed opportunities and the results were as follows: Lack of adequate maternal treatment despite the timely diagnosis of syphilis during pregnancy (30.7%), lack of timely prenatal care, and syphilis testing (28.2%), late identification of seroconversion during pregnancy (11.2%), and lack of syphilis testing despite receipt of timely prenatal care (8.9%) [15]. These results highlight the importance of the clinician in the prevention, identification, and treatment of congenital syphilis. Primary syphilis presents characteristically with a chance, which is a painless, ulcerative lesion often appearing in the genital area. In females, the most common sites at which a chancre appears are within the vaginal canal or on the cervix. Primary chancres tend to heal spontaneously within 3 to 6 weeks, even without any treatment, and are accompanied by painless inguinal lymphadenopathy [5]. Given that these common chancre sites are not immediately apparent, and that the infection is painless, it is common for the primary infection to go undetected. Therefore, clinicians need to recognize that most pregnant women infected with syphilis will not be symptomatic at all, and the diagnosis will only be made by serologic screening. This once again emphasizes the importance of regular screening throughout pregnancy. Current recommendations issued by the CDC and the American College of Obstetricians and Gynecologists state that all pregnant women should be screened for syphilis infection at their first presentation to care, with repeat screening between 28 and 32 weeks of gestation and at birth, for women living in areas with a high prevalence of syphilis and/or with any of the aforementioned risk factors [13]. Prenatal screening results in decreased fetal mortality and is the rationale for serologic testing in the early trimesters. Positive maternal serologic testing during any stage of pregnancy is concerning for ECS, mandating neonatal testing. The presence of *T. pallidum* in amniotic fluid or fetal blood can confirm the diagnosis in utero. Prenatal ultrasounds may also reveal features that are suggestive of CS including hepatomegaly, splenomegaly, placentomegaly, and fetal growth restriction. Prenatal screening allows for prompt treatment and reduction in the sequelae of CS, highlighting the importance of serologic screening at different stages of pregnancy. The variability in clinical features of CS can make the diagnosis seem difficult. When the neonate is born, the assessment should begin with a thorough physical examination for skin lesions, jaundice, mucous membrane fissures or patches, and thick or bloody nasal discharge. After the inspection, detailed palpation should occur to assesses for organomegaly. All infants suspected of having CS should be tested with the same nontreponemal tests that were performed on the mother, and the results should be analyzed for the difference in titers [13]. Given that providers may be unfamiliar with the prevalence of syphilis in their area, and that patients may acquire or develop infection later on in their pregnancy, researchers have begun to investigate the feasibility of universal third-trimester screening. While the cost-effectiveness of such a protocol is disputed, recent studies suggest that it may result in a substantial decrease in adverse maternal and fetal outcomes [5]

Follow-up

Parenterally administered penicillin G is the only known effective antimicrobial to treat maternal syphilis and prevent the maternal transfer to the fetus or newborn [7, 9]. The efficacy of intramuscularly administered benzathine penicillin G against syphilis is credited to its slow release into the body tissues [13]. The infant diagnosed with CS should have structured follow-up that includes nontreponemal serologic testing every 3 months until the tests are nonreactive or the titers are less than fourfold [13]. In uninfected and successfully treated infants, nontreponemal antibody titers are usually nonreactive by 6 months. Passively acquired treponemal antibodies may be present for longer, perhaps 15 months. If VDRL or RPR remain reactive past 6 to 12 months of age or titers increase, the infant to be reevaluated (including lumbar puncture for CSF analysis, and complete blood count with platelet count, long-bone x-rays, and other tests as clinically indicated) [17].

Prevention

CS is prevented by a serologic screening of mothers during the prenatal period and penicillin treatment of infected women, their partners, and their newborn infants [13]. As we mentioned above, All pregnant women should have a serologic test for syphilis performed at the first prenatal visit in the first trimester, and in high-risk areas, again at 28-32 weeks' gestation and delivery [13]. No mother or newborn should leave the hospital without the maternal serologic status documented at least once during the pregnancy, and preferably again at delivery if in a high-risk area [7, 9]. Infants with suspected or proven congenital syphilis are cared for with standard precautions only. If the infant has cutaneous lesions or mucous membrane involvement, then contact precautions with gloves should be instituted until 24 hours of treatment has been completed. All cases of syphilis must be reported to the local public health department so contact investigation can be performed with identification of core environments and populations. The public health impact of syphilis in pregnancy and infancy remains substantial, and only via optimal pre-natal healthcare services will stop the maternal-to-child transmission of syphilis [17, 18].

Case Discussion

Despite the ease of treatment and prevention, congenital syphilis remains a significant cause of preventable stillbirth and continues to have a potentially devastating impact on the health of those infected, whether it is seen immediately or years later. Congenital syphilis can lead to spontaneous abortion, intrauterine growth retardation, nonimmune hydrops fetalis, stillbirth, prematurity, and perinatal death, as well as severe sequelae and even mortality in some live-born infants [4]. For those that do survive, the concern lies with early and late congenital syphilis. Early congenital syphilis has an onset of clinical manifestations before 2 years of age while late congenital syphilis has clinical manifestations after 2 years of age, often manifesting around the time of puberty [13]. The United States and other developed countries such as those in Europe have seen a resurgence due to several epidemiological factors as well as technological advancements that have led to risky sexual behavior [14]. On the part of the clinician, a pregnant woman must be screened for congenital syphilis throughout the pregnancy. The difficulty lies in the pregnant woman who does not seek prenatal care. The CDC recommends that pregnant women who were not screened during pregnancy should be tested at delivery, allowing for prompt identification and treatment of the infected newborns [7, 9]. Reported rates of primary and secondary syphilis infections, as well as congenital syphilis infections, are more elevated among women who

identify as Black, American Indian/Alaska Native, and/or Hispanic [7, 9]. Congenital infections in the United States are correlated with a lack of prenatal care, which has been similarly linked with racial and socioeconomic disparities, as well as with untreated mental health and substance use disorders and recent immigration to the United States [5]. It is critical, especially for clinicians who regularly work with patients in these communities, to be aware of these vulnerable populations and to provide. The mother of our patient who was diagnosed with congenital syphilis had not received any prenatal care. She presented for a fetal echocardiogram due to the presence of congenital heart disease in the sibling of the patient. The patient experienced contractions and went into labor. The baby was admitted to the NICU for management of prematurity and was found to have thrombocytopenia and high CRP levels. A lumbar puncture revealed an elevated count of leukocytes in the CSF and nontreponemal serological tests were positive in the mother and neonate; the levels were respectively RPR 128 and RPR 264. X-ray examination of the neonate's long bones revealed signs of syphilitic osteochondritis in all the bones and periosteal reaction was seen in the left humerus and the forearm. Approximately ten days after birth, the neonate was found to have additional manifestations of congenital syphilis. The neonate had developed a severe rash, hepatosplenomegaly, and severe congenital syphilitic pneumonia. The neonate was placed on a ventilator. The consequences of foregoing prenatal care and regular screening for syphilis throughout pregnancy are devastating. It is important to provide proper patient education, provide screening, and be aware of especially vulnerable patients.

Conclusions

Congenital syphilis, a disease caused by the *T. pallidum* bacterium, continues to persist in the United States despite being preventable with appropriate prenatal screening and adequate penicillin treatment. Syphilis if untreated during pregnancy poses the greatest risk of severe irreversible complications and/or fetal, neonatal, and infant death. Observed prenatal and at delivery screening, treatment of the infected mother during pregnancy, careful assessment of the newborn, and immediate initiation of treatment with benzathine penicillin G when indicated, along with appropriate follow-up post-discharge, are extremely important in reducing the incidence of CS and constraint of negative complications.

Acknowledgments

None.

Conflict of Interest Statement

No conflict of interest statement will be added.

Funding

No source of funding

Abbreviation

CS	:	Congenital syphilis
CDC	:	Disease Control and Prevention (CDC)
EGA	:	Estimated gestational age
HR	:	Heart Rate
STIs	:	sexually transmitted infections
PPV	:	Positive pressure ventilation
HB	:	Hemoglobin
P/E	:	physical examination
VDRL	:	Venereal Disease Research Laboratory
CSF	:	Cerebrospinal fluid
CMV	:	Cytomegalovirus
GGT	:	gamma-glutamyl transferase
TORCH	:	Toxoplasmosis, rubella cytomegalovirus, herpes simplex, and HIV
CBC	:	Complete Blood Count
ALT	:	Alanine Aminotransferase
AST	:	Aspartate Aminotransferase
CRP	:	C-reactive protein
RPR	:	Rapid plasma regain
SIMV	:	Synchronized intermittent mandatory ventilation
HC	:	hematocrit
HFOV	:	High frequency oscillatory ventilation
U/S	:	ultrasound
ID	:	Infectious Diseases
CPAP	:	Continuous positive airway pressure
ENT	:	Ear, Nose, and Throat.
HIV	:	Human immunodeficiency virus
LCS	:	LATE Congenital syphilis
ECS	:	Early Congenital syphilis

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