Congenital Syphilis as A Cause of Hydrops Fetalis: A Case Report

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ABSTRACT

Congenital syphilis remains a significant public health problem worldwide and there is a global rise in frequency. It also remains one of the leading causes of fetal and neonatal death globally. Affected newborn infants may be asymptomatic or present with the involvement of many different organs. Non-immune hydrops fetalis is also one of the clinical manifestations. In this article, a case diagnosed with congenital syphilis, which was examined for non-immune hydrops fetalis, was published to share its rarity and difficulties in its management.

Keywords: Congenital syphilis, hydrops fetalis, newborn

Congenital syphilis (CS) is an important public health problem that occurs when *Treponema pallidum*, a spirochete, infects the fetus. Despite CS being well known and optimal prevention strategies, it remains one of the main causes of fetal and neonatal death globally [1]. CS can result in preterm delivery, organ dysfunction, hydrops fetalis, or a wide variety of clinical manifestations. Most cases occur because women of childbearing age are not screened, or treated effectively for syphilis before or during pregnancy [2].

Hydrops fetalis is a clinical condition characterized by fluid accumulation in at least two of the serous spaces such as the peritoneum, pleura and pericardium, accompanied by diffuse skin edema. It may occur due to an immune cause as a result of alloimmunization of red blood cells, or non-immune causes. The causes of non-immune hydrops fetalis include congenital heart diseases, arrhythmias, chromosomal anomalies, syndromes, metabolic and other hematological diseases and infections [3]. In this article, a case diagnosed with congenital syphilis, which was examined for non-immune hydrops fetalis, was published to share its rarity and difficulties in its management.

CASE

Twenty-seven years old pregnant woman was referred to the perinatology clinic due to hydrops fetalis at 32nd gestational week. Her Venereal Disease Research Laboratory (VDRL) test performed at the 25th gestational week was positive. However, she had not been medicated. Her indirect coombs test was negative. Her serological tests for parvovirus, TORCH, human immunodeficiency virus, hepatitis B and hepatitis C viruses were also negative. No structural or rhythm anomaly was detected in fetal cardiological examination. *Treponema pallidum* hemagglutination (TPHA) test of the moth-

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er was reactive as 1/5120. VDRL negative detected.

Following her first pregnancy she delivered a baby boy at 32 weeks' gestation via cesarean section with Apgar scores of 5 and 7 in the first and fifth minutes, respectively. His birth weight was 1800 g (50-90th percentile), length was 41 cm (< 10th percentile), and head circumference was 27 cm (10–50th percentile). The baby with generalized skin edema was admitted to the neonatal intensive care unit with non-invasive respiratory support. He had massive ascites, and hepatosplenomegaly (Figure 1).

Laboratory tests revealed anemia (hemoglobin 9 g/dL), thrombocytopenia (17000/µL), conjugated hyperbilirubinemia (1.35 mg/dL), and high C-reactive protein level (40 mg/L). His direct coombs test was negative. Pleural effusion on chest x-ray, pericardial fluid accumulation on echocardiographic examination, diffuse ascites and hepatosplenomegaly on abdominal ultrasonography were detected. The VDRL test was positive and the TPHA test was 1/320 reactive. Cerebrospinal fluid examination revealed 1/128 positive syphilis indirect hemagglutination (IHA) and VDRL positive. The patient's CSF protein level was high (230 mg/dL) and he was diagnosed as neurosyphilis. In other tests for non-immune hydrops fetalis, TORCH and parvovirus antibodies, metabolic tests (Tandem, blood amino acids and urine organic acids) were normal. Cranial magnetic resonance imaging was evaluated as normal.

The patient was started on benzylpenicillin and

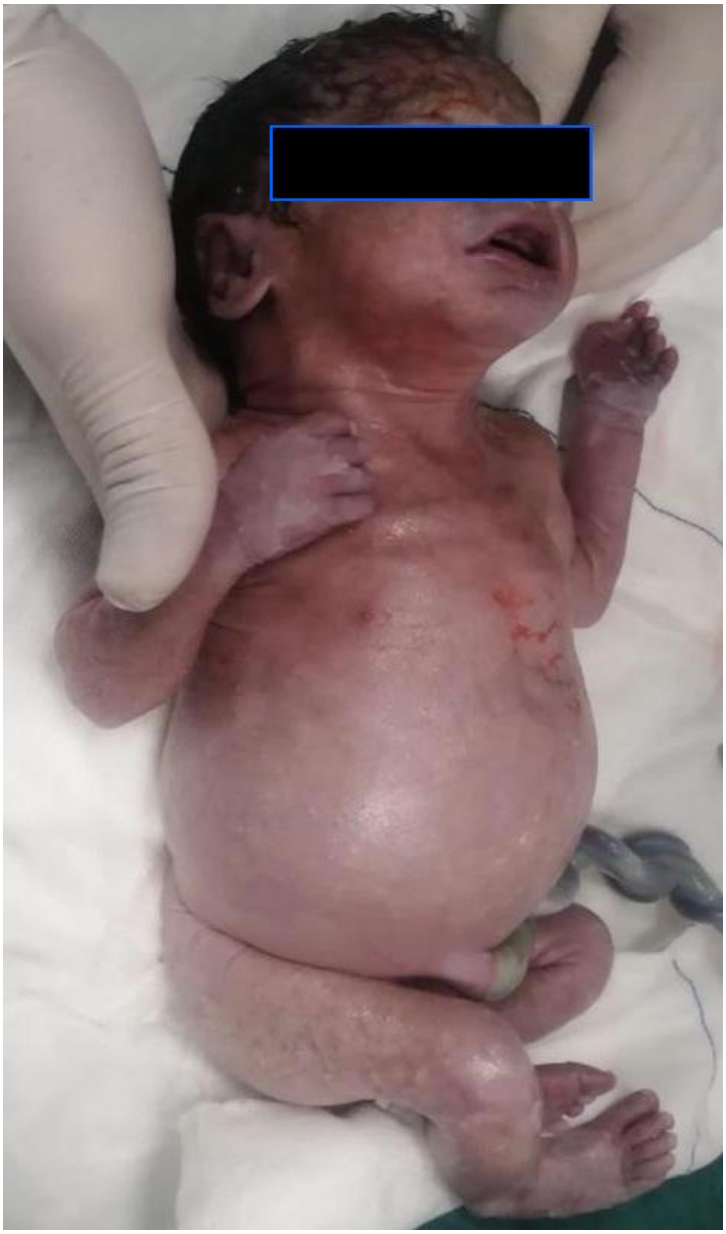

Figure 1. The appearance of the baby immediately after birth, significant abdominal distension due to ascites draws attention

gentamicin treatments. He underwent erythrocyte and thrombocyte transfusion. Paracentesis was performed because massive acid increased respiratory distress. Caffeine treatment was started for apnea.

During the follow-up of the patient, maculopapular rashes were observed. Repeated transfusions and paracentesis were required. He needed intubation for 3 days, and non-invasive respiratory support for 23 days. Penicillin treatment was continued for 30 days. The hepatosplenomegaly regressed. The patient was discharged on the 40th day with oral feeding and weighing 2290 g. He is being followed up in the neurology and infection outpatient clinics.

DISCUSSION

In this article, a case of congenital syphilis who was delivered at 32 weeks of gestation due to the development of heart failure and fetal stress after non-immune hydrops fetalis and was discharged after a successful neonatal management is shared.

CS remains a public health problem around the world. There are even publications stating that its frequency has increased in recent years [2, 4, 5]. According to CDC data, neonatal mortality rate was reported as 1.16% [6]. It has also been reported that most of these deaths occurred among infants born to mothers with untreated or inadequately treated syphilis. In our patient, VDRL test for syphilis was detected positive at 25th gestational week, but no adequate treatment protocol was applied to his mother.

Intrauterine infection occurs after maternal spirochetemia. It has been reported that *T. pallidum* is detected in fetal fluids in 74% of pregnant women with early syphilis [7]. Although the risk of intrauterine infection increases as the gestational week increases, it can occur at any time of pregnancy [2].

In infants with prenatal clinical suspicion, the diagnosis of CS can be made by IgM increase in fetal serums and the demonstration of *T. pallidum* in amniotic fluid [2]. In addition, making the diagnosis of CS by RNA gene sequencing in amniotic fluid is another prenatal diagnosis method [8].

Affected newborn infants may be asymptomatic or present with the involvement of many different organs. In the series reported by Liu *et al*, the most common clinical and laboratory abnormalities were reported as anemia (75%), hepatomegaly (72%), thrombocytopenia (58%), abnormal CSF findings (81%), rash (55%), splenomegaly (52%), and elevated CRP (68%) [9]. In our patient, anemia requiring transfusion, thrombocytopenia, hepatosplenomegaly, liver function disorders, rash that developed in the follow-up, and protein elevation in CSF were observed. In addition, as in our patient, prematurity and related complications are common in newborn cases with CS reported in the literature. Deall H *et al*. reported a case born to a seronegative mother during pregnancy with atypical liver lesions [10].

Aleem *et al*. reported that CS may be associated with hypoxic-ischemic encephalopathy, persistent pulmonary hypertension, and disseminated intravascular coagulation [4]. They reported that all 7 babies with CS were intubated at birth, and one baby was born with hydrops fetalis and died in the delivery room [4].

In cases diagnosed after the neonatal period, pathological findings on long bone radiographs, long-term results of CNS involvement, rhagades, teeth, and eye findings occur, apart from the findings mentioned [11].

Although congenital syphilis can lead to pregnancy loss or life-threatening organ dysfunction, it is a preventable and treatable disease. Pregnant women with syphilis should treat with the penicillin regimen. Screening pregnant women for syphilis is important for the prevention of CS and its complications. With successful screening and treatment of pregnant women in the UK, only 17 CS newborn cases were detected between 2010 and 2015 [12]. However, the prozone phenomenon is an important problem for screening. It may cause false negative results in the tests performed during pregnancy [13]. The same is true for the diagnosis of postnatal babies [5, 14].

Our patient was successfully treated with benzylpenicillin for 4 weeks. While 10 days of penicillin treatment is usually sufficient, treatment can be applied for up to 3-4 weeks in infants with continuing clinical and serological findings. In addition, *T. Pallidum* is also sensitive to other beta-lactam antibiotics, so cefotaxime can be used successfully in the treatment [10].

CONCLUSION

Since clinical findings are nonspecific, congenital syphilis should be considered in the differential diagnosis in cases of unexplained hydrops fetalis. For the prevention of CS, screening of pregnant women for T. pallidum and appropriate treatment if necessary is the most important precaution to be taken.

Authors' Contribution

Study Conception: BAD, ZS, SEB,; Study Design: BAD, ZS, SEB,; Supervision: SEB,; Materials: ZS, BAD,; Data Collection and/or Processing: ZS, BAD,; Statistical Analysis and/or Data Interpretation: SEB,; Literature Review: ZS, BAD,; Manuscript Preparation: ZS, BAD and Critical Review: SEB.

Conflict of interest

No potential conflicts of interest relevant to this article were reported.

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