Coexistence of Congenital Syphilis and Cytomegalovirus Infection: A Case Report

A 22-year-old pregnant woman with an intravenous drug abuse habit delivered a girl in the 26th gestational week with a fetal length and weight of 38 cm/990 g (pc. 75-91). She did not participate in prenatal care that included screening for congenital diseases, syphilis, and human immunodeficiency virus (HIV) infection during the pregnancy. Laboratory examinations revealed positive rapid plasma reagin (RPR) (1:128), *Treponema pallidum* particle agglutination assay (TPPA) and TpELISA results. Immediately before delivery, labial herpes simplex virus-1 (HSV-1), *Streptococcus agalactiae*, and genital yeast infections were detected. Hepatitis B surface antigen (HbsAG), HIV, and hepatitis C virus (HCV) serology remained negative.

The preterm and immature newborn girl had mild jaundice, minimal edema, and gluteal hematomas with petechiae. The liver and spleen were extremely enlarged (reaching the plevic bones). Increased muscle tone and rigid elbow, knee, and hip joints were found (Figures 1, 2). Additionally, X-ray examination detected multiple jejunal atresia. Brainstem evoked response audiometry ruled out hearing loss.

In laboratory investigations anisocytosis, thrombocytopenia, elevated liver enzymes (ASAT: 3850 U/L, ALAT: 558 U/L, GGT: 292 U/L, ALP: 436 U/L), elevated lactate dehydrogenase (LDH) (38180 mmol/L), and creatinine kinase (CK) (7.1 U/L) with elevated bilirubin levels (87.9 µmol/L) were found.

In microbiology investigations a high CMV virus number was detected using a quantitative real-time polymerase chain reaction (PCR) method from the urine and blood. Syphilis serology was positive (RPR: 1:16 positive, TPPA, TpELISA, and *T. pallidum* IgM immunoblot positive). HSV PCR (in the oral mucosa, conjunctiva, and blood) remained negative.

Figure 1. Extreme hepatosplenomegaly and wrinkled, greyish skin.

Figure 2. Maculopapules on the sole.

Intravenous penicillin-G (100.000 IU/kg/dose for 10 days) therapy was administered. Intravenous ganciclovir was started, but was discontinued after 2 weeks because of progressive thrombocytopenia and elevating liver enzymes. The newborn underwent transfusion due to anemia and extreme thrombocytopenia. Blue light therapy was administered for 3 days because of jaundice. The multiple jejunal atresia was treated by operation (terminoterminal jejuno-jejunostomia and ileal stricturaplastica) in the Semmelweis University Pediatrics Clinic.

At the time of writing this report, the girl was 2 months old, growing and developing; her intestinal passage is satisfactory, but the liver enzymes are extremely high due to the CMV infection.

Congenital syphilis and congenital CMV are preventable diseases, but they are still the most common causes of perinatal mortality and morbidity worldwide (4,5).

Intravenous drug users and mothers of low socioeconomic status belong to the highest risk groups for vertical transmission of infections.

Congenital syphilis may induce jaundice, hepatosplenomegaly, wrinkled skin, thrombocytopenia, and anemia, with symptoms that are clinically similar to congenital CMV infection, making the differential diagnosis difficult (1,5,6). Although syphilis screening tests are mandatory in the first trimester of pregnancy in Hungary, at least one congenital syphilis case was observed yearly since the mid-nineties. Therefore, a second syphilis test is strongly recommended after the 28th gestational week or before delivery, particularly in high risk groups (7).

The prenatal diagnosis of fetal CMV infection is based on amniocentesis in the 21st gestational week, which is a risky and non-standard method. The widely used ultrasonography examination often yields a uncertain diagnosis (8).

Intravenous penicilline-G is effective treatment for congenital syphilis, but there is no gold standard therapy for CMV infection. Treatment with ganciclovir may prevent hearing loss later in life, but it has several severe side effects (neutropenia, anemia, thrombocytopenia, elevated liver enzymes) (9). Furthermore, studies on the effect of prolonged valganciclovir therapy are still ongoing (10). Prevention is the most effective method of reducing the prevalence of congenital CMV: pregnant women should avoid contact with the saliva of young children.

In our case, the mother of the newborn belonged to a high risk group and did not participate in the prenatal caring system; mandatory screening tests were not done, so congenital infections were diagnosed only at delivery. The treatment for congenital syphilis was effective, and resulted in decrease of RPR titers. Most of the clinical symptoms did not improve, and the liver enzymes were continuously increased, indicating that CMV infection was a major contributor in clinical manifestation. Further follow up is needed to evaluate the radiological findings of long bones.

Our case draws attention to the importance of early and effective prenatal diagnosis, adequate treatment of prenatal infectious diseases, and the necessity of a multidisciplinary approach to congenital infections.

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