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A Fatal Case of Infant Congenital Cytomegalovirus and Neonatal Herpes Simplex Virus Infections Type 1 and 2

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Introduction: Cytomegalovirus (CMV) is an essential and most frequent vertically transmitted infection from mother to fetus through the placenta. Neonatal Herpes simplex virus (HSV) enters a child by physical contact with its mother's potentially infected vaginal secretions. There are many case reports where the newborn is infected with either CMV or HSV, but only one case of a 67-year-old Chinese male with the coinfection of CMV and herpes simplex virus type II (HSV-II) 11 was found. We report a rare case of newborns with congenital infection by CMV and herpes simplex who succumb to multiorgan failure.
Case Report Presentation: 8 weeks male infant came in our hospital complaining of not feeding and not gaining weight, abdominal distension, diarrhea, and jaundice. As narrated by the mother, the baby was delivered vaginally at 36 weeks of gestation, and the birth weight was 1880 grams. Mother was not recommended blood test for TORCH (toxoplasmosis, rubella cytomegalovirus,

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herpes simplex, and HIV, syphilis) by her obstetricians. TORCHES profile was favorable in the baby. Newborns succumb to treatment and die due to multiple organ failure.
Conclusion: Torch's panel test is used to help diagnose infections that could harm the unborn baby during pregnancy and have fatal consequences after birth; therefore, it should be mandatory in each pregnancy.

Keywords: Vertical transmission; neonatal immunity; fetal immunity; varicella rash; high-risk pregnancy; seroprevalence.

1. INTRODUCTION

Cytomegalovirus (CMV) is a significant, most frequent vertically transmitted infection from mother to fetus through the placenta, accounting for up to 3% of births [1,2]. Many types of presentation of congenital CMV are possible and commonly associated in babies whose mothers contracted it during the antenatal period. The Uniqueness of presentation is rarely found in around 20% of babies born to mothers having primary CMV infection. It may be in the form of intrauterine growth restriction (IUGR), small size skull, skin and subcutaneous evidence of bleeding, liver and splenic enlargements, chorioretinitis, raised bilirubin levels, pancytopenia. CMV induced liver injury is not an uncommon finding in early life, especially a few months ago, and it leads to cholestatic jaundice [3].

Neonatal Herpes simplex virus (HSV) got its entry in a baby in three ways: during parturition as the child has physical contact with its mother's potentially infected vaginal secretions. Second mode of transmission is a uired post-natally due to direct contact with persons affected by HSV. The third way is like CMV through the placenta, which results in congenital presentation [4]. HSV classified in two variants, type 1 (HSV-1) and type 2 (HSV-2). HSV-1 is responsible for lesions around lips, and the second variant leads to affections of private parts (genitals). HSV infection is relatively rare, around 20 in one lakh births [5]. Infants with acquired herpes infection present clinically after an incubation period of 1 week to three weeks. Clinical presentation is may be varied, can enlist like inflammation of retina microcephaly, microphthalmia, skin scarring and abnormalities of extremities [6]. death toll is very high in an infant having multi-organ involvement, case fatality is around one third affected will not survive. Three of four affected babies have a central nervous system involvement [7]. Ementcentral nervous system infection is a predictor bad prognosis [8-10].

There are many case reports where the newborn is infected with either CMV or HSV, but only one case of a 67-year-old Chinese male with the coinfection of CMV and herpes simplex virus type II (HSV-II) [11] was found.

We report a rare case of newborns with congenital infection by CMV and herpes simplex who succumb to multiorgan failure.

2. CASE REPORT PRESENTATION

8 weeks male infant came into our hospital complaining of not feeding and not gaining weight, abdominal distension, diarrhea, and jaundice. As narrated by the mother, the baby was delivered vaginally at 36 weeks of gestation, and birth weight was 1880 grams; immediately, the baby was shifted to NICU for low birth weight and respiratory distress; the patient was kept under phototherapy due to jaundice. The patient was not feeding well, so intragastric feeding was started. The patient was kept for five days under phototherapy and was later discharged. After 2days of discharge mother noticed that baby was icteric and not feeding properly. Once again, the baby was admitted to NICU for 5-6 days and discharged.

There is a history of admission of the baby's mother at 20 weeks of gestation due to fever and vaginal discharge, for which she was given symptomatic treatment. The previous two pregnancies delivered were vaginal, full-term normal newborns. There was no history of recurrent abortion. Her obstetricians did not recommend her blood test for TORCH (toxoplasmosis, rubella cytomegalovirus, herpes simplex, HIV, syphilis).

Clinical examination on admission showed that patients were not active, conscious, 2.6kg, length was 47 cm, pallor, jaundice was present. Respiratory rate was 50/min, and heart rate was 150—155 bpm. abdominal distension with the umbilical hernia was seen. Per abdomen showed enlarged liver and spleen. The patient had microcephaly (head circumference was 32.3 cm), no facial and limb abnormalities were seen. The patient had impaired neuromotor development

for his age and showed absent head control, absent social smile, and a history of not recognizing his mother.

Patient saturation was 92 in the room, 100% after giving oxygen. Investigation showed hepatic disease with alkaline phosphatase 626, aspartate transaminase (AST) 82 U/L, alanine transaminase (ALT) 20 U/L] and, total bilirubin 17.5mg/dl, conjugated bilirubin-5.5mg/dl, unconjugated bilirubin 12 mg/dl, globulin 2.2, gamma-glutamyl transferase (GGT) 252I U/l, activated partial thromboplastin time (APTT) was 43(APTT-Control-30). Prothrombin time-17.60.Abdominal ultrasound showed hepatosplenomegaly. TORCHES profile showed,toxoplasma gonidia, rubella was negative but cytomegalovirus IgG Antibody 2.45 s/co units(>1.3:positive), herpes simplex virus 1 and 2 IgG -1.57 s/co UNITS(>1.2:positive). Fundus examination showed no sign of chorioretinitis. Neonatal sepsis was ruled out by blood tests, urinalysis, and negative blood cultures. The patient received albumin, fresh frozen plasma(FFP), and packed cells during the admission for anemia and hypotension. intravenous ganciclovir administration (15 mg/kg/day).

The newborn has subsequently presented a reappearance of jaundice and petechiae and bleeding per rectum on six the day of admission, decreased urine output, was unconscious, abdominal distension was increased, was not responding to pain. laboratory data showed: Hb 9g/dl, white cell count 24,850/DLL, platelet at 73000/µL, ALT(SGPT)44, AST(SGOT)212, total protein-6.2,albumin-2.8,total bilirubin 27,bilirubin conjugate-25, bilirubin unconjugated 2 , globulin-3.4 . urea-189,creatinine was 2.4,sodium was 170, potassium 4.9. APTT was 70(APTT control-30), prothrombin time 18.1(prothrombin time control-12.5). . USG abdomen showed hepatomegaly with mild ascites, abdominal wall oedematous, dilatation of bowel loop. The patient was given a blood transfusion, ionotropic drugs were started for hypotension, kept on a ventilator as he went into respiratory depression and was not maintaining oxygen saturation and Unfortunately, the newborn succumbed to treatment and died as a result of a multiple organ failure.

3. DISCUSSION

In our case child did not present with petechia, chorioretinitis, and inguinal hernia, prematurity, intrauterine growth retardation, which is a common clinical finding seen in CMV. Kenneson et al. [12] showed that petechiae, prematurity, intrauterine growth retardation are the most common presenting features in CMV, which was not seen in the present case.

The present case had no microphthalmia ,retinitis, skin scarring and limb abnormalities which is seen commonly in HSV. James SH et al. [13] in there study showed children with congenital HSV infection who present with combinations of microphthalmia, retinitis, skin scarring and limb abnormalities which was not seen in present case.

Blood test for TORCHS test or amniotic viral PCR is not recommended routinely by Obstetrician. Only when the risk of abnormalities like fetal hydrops, fetal anomalies, brain lesions, or USG markers of infection are noted in foetus or if pregnant woman shows the development of non-vesicular rash with fever in first trimester or when a pregnant woman has been known to be in contact with affected patient, or any history of recurrent abortion in previous or present pregnancy. It is also advised when previously mother is positive for TORCHS group of infection and definitive diagnosis of fetal infection is only possible by amniotic PCR [14]. In present case mother has no history of infertility or abortion. She was third gravida with two previously born normal female child without any congenital anomalies and therefore she was not investigation for TORCHES group . Amanda Carlson et al. [15] in there studies showed that in cases where maternal CMV infection is suspected by previous history and recent clinical symptoms and on investigation then mother should be screened for TORCHES group. Brenna L Hughes et al. [16] in their studies also recommend that for women suspected of having primary CMV infection in pregnancy should be screened for TORCHES group of infection.

Our case study shows CMV and Herpes simplex in infant which is very rare. There are many cases where either neoborn is affected by CMV or Herpes simplex [17,18,19,20,21] but we found only one case of inflammation of brain (encephalitis) due two viral infections (herpes simplex virus type II and cytomegalovirus)in an old gentleman reported by Chaobiao Xue et al. [11]. he was a 67-year-old Chinese presented with both infections (CMV and HSV type II). He was having clinical features of acute psychosis with delirium and having decrease level of

consciousness. On his careful clinical examination found to have all vital parameters were normal. His pulse rate ,blood pressure, temperature and respiratory rate were normal. No clinical signs suggestive of meningitis were present. He was not having history of accidental injury or psychological disorder. on investigation found to have positive for anti-CMV IgG and anti-HSV-II IgM. He was treated with acyclovir and haloperidol with good control on his psychiatric symptoms but unfortunately, he succumbs after 4 months of unknown cause except of severe loss of weight.

Torch's panel test is used to help diagnose infections that could harm the unborn baby during pregnancy and fatal consequences after birth and therefore it should be mandatory in each Pregnancy.

4. CONCLUSION

Torch's panel test is used to help diagnose infections that could harm the unborn baby during pregnancy and have fatal consequences after birth; therefore, it should be mandatory in each pregnancy.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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