CORPUS PUBLISHERS

Corpus Journal of Case Reports (CJCR)

ISSN: 2833-4388

Volume 6 Issue 1, 2025

Article Information

Received date : February 27, 2025

Published date: March 06, 2025

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DOI: 10.54026/CJCR/1033

Case Report

First Ever Case of Early Onset Neonatal Sepsis by Salmonella Typhi in the Special Care Newborn Unit of a General Hospital

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Abstract

Salmonella typhi is a rare cause of sepsis in newborn with symptoms ranging from asymptomatic to life-threatening consequences. We present a case of early-onset neonatal sepsis caused by Salmonella typhi in a term newborn at Kurmitola General Hospital in Dhaka, Bangladesh. This was the first case of Salmonella typhi in this SCANU. This male newborn was admitted with perinatal asphyxia hypoxic ischaemic encephalopathy stage 2 and early-onset neonatal sepsis. The diagnosis was made through blood culture. We treated the patient with Ceftazidime, Amikacin, and Phenobarbitone, to which he reacted well and was discharged with advice.

Introduction

Salmonella typhi is an obligate anaerobe, rod-shaped, motile, gram-negative bacillus of the family Enterobacteriaceae. [1] Literature review shows that the mode of transmission of neonatal Salmonella typhi is still uncertain and has been postulated to be both vertical and horizontal. Though rare, Salmonella infection can be passed from the pregnant woman to the fetus during pregnancy and through breast feeding. In most cases, breastfeeding does not need to stop if the mother who is breastfeeding has Salmonella [2]. Neonates affected with Salmonella typhi present in the same way as other gram-negative organism in this age group. Babies born with Salmonella typhi can present with signs and symptoms of sepsis and meningitis within 72 hrs of birth [3]. We describe a case of early onset neonatal sepsis caused by Salmonella typhi in the Special Care Newborn Unit (SCANU) of Kurmitola General Hospital, Dhaka, Bangladesh.

Case Presentation

Our patient was a term male newborn weighing 2700g. He was born to a 25-year-old lady, who was on irregular antenatal check-up and immunized against tetanus. She used to drink non-purified water and occasionally took street food. Her pregnancy period was uneventful up to 37 weeks, then she developed prolonged rupture of membrane. Liquor was foul smelling. The baby was delivered at 37 weeks by vaginal delivery at home. Delivery was conducted by a local dai in unhygienic condition. The baby cried approximately 2 minutes after birth. Birth weight was not measured. The baby didn't receive any essential newborn care; prelacteal feeding was given, and he has not been feeding well since birth. At 24 hours of age, the baby developed fever, lethargy, and generalized tonic-clonic convulsion. With this complain, they visited a local traditional healer, but as the condition was not improving, they admitted the baby at 42 hours of postnatal age in our SCANU. On arrival, the baby's reflex activity was poor, anterior fontanel was normal, febrile and hypertonic. There was respiratory distress in the form of tachypnea; other vital signs were within normal limits as per postnatal age. The baby was kept NPO; respiratory support was given by oxygen through nasal cannula at the rate of 2 l/min, and treated with the antibiotics Ceftazidime & Amikacin and the anticonvulsant Phenobarbitone according to unit protocol. Laboratory evaluations showed a white blood cell count of 18,730/cmm, a neutrophil count of 14,970/cmm, a platelet count of 318,000/cmm, and a CRP of 12 mg/L. The chest radiograph was normal. CSF analysis was done, which revealed appearance clear, protein 160 mg/dl, sugar 66 mg/dl, WBC count: 03 cells/cmm, and all cells were lymphocytes. No organism was seen in the Gram stain, and the CSF culture revealed no organism. The diagnosis was made by blood culture. The blood culture was done in the Microbiology Department of the Armed Forces Institute of Pathology. It is a third-level laboratory with trained personnel to avoid the errors in isolating the microorganisms associated with the environment. They used differential culture media and automated systems for isolating the organisms. We continued the same antibiotics as it was sensitive to Salmonella according to the culture and sensitivity report. The newborn had a convulsion on admission day, which was controlled with Phenobarbitone. Reflex activity was improved, and fever subsided gradually. Feeding was started by OG tube on day 4, and breastfeeding was established by day 7. Oxygen was weaned gradually on day 5. We were able to discharge We were able to discharge the patient after 14 days with good neurological examination. This sporadic infection due to Salmonella typhi in our SCANU was controlled by the timely information given to the clinician, implementation of infection control measures such as hand washing, screening of the staff in SCANU, disinfecting thermometers, sterilization of instruments, and isolation of infected newborns.

Discussion

Salmonella typhi is usually spread by the faecal-oral route in the pediatric age group, causing fever, abdominal pain, diarrhoea, and hepatitis. It's a major public health problem, especially in low- and middle-income countries. But in newborn populations, the incidence of Salmonella sepsis is very low unless the baby is fed by contaminated milk. There are few case reports of early-onset sepsis by Salmonella. Sharan et al. presented two cases of Salmonella infection in newborns. The first newborn presented at 60 hours of age with fever, lethargy, and refusal to feed. Septic screening was positive, and the blood culture report showed Salmonella typhi. The baby responded to Cefotaxime. Mother's blood culture report also shows Salmonella typhi [4]. In

our case, the baby presented with the same symptoms along with convulsion. The baby responded to Ceftazidime, which was also sensitive according to the blood culture report. Blood culture of the mother revealed no growth. The second case presented on day 7 with abnormal posturing, refusal to feed, jaundice, and septic shock treated with Ceftriaxone. Both cases were discharged with a good outcome. Another case report described a case of early-onset neonatal sepsis by Salmonella typhi in a premature baby presenting with apnoea, respiratory distress, feeding intolerance, bloody diarrhoea, and fever. Feeding was stopped and treated with Ampicillin, Amikacin, and Metronidazole. Blood CS as well as stool CS revealed Salmonella typhi. In this case, maternal stool CS was positive [5]. Shrestha et al. reported a case of early-onset neonatal sepsis by Salmonella typhi in 2018. The baby was delivered by NVD at the hospital and is doing well up to 13 hours of postnatal age. Thereafter, the baby developed respiratory distress and was treated with Ceftriaxone and Amikacin. Blood culture of the mother was sterile, and this finding is consistent with our case [6]. Systematic literature review showed that the proportion of S. Typhi detection was 61% and 96% for blood and bone marrow culture, respectively [7]. A cross-sectional study done in Bangladesh showed Salmonella as the 2nd leading cause of neonatal sepsis (22.03%). Among 13 Salmonella isolates, six (46.15%) were Salmonella typhi. The study concluded that Salmonella should be considered as a cause of neonatal sepsis [8].

Conclusion

Although rare, Salmonella sepsis should be considered in the differential diagnosis of early-onset neonatal sepsis in regions where typhoid fever is endemic.

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