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CASE REPORT

Neonatal Sepsis in a Term Infant after Prolonged Rupture of Membranes Caused by Globicatella Sanguinis: A Rare Case Report

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Abstract

Globicatella sanguinis is a catalase-negative, alpha-hemolytic, gram-positive coccus, a facultative anaerobe, meaning it can grow in both aerobic and anaerobic conditions, while globicatella species are considered part of the normal human flora, they typically causes infection when the normal barriers of the body are disrupted or in individuals with compromised immune systems. Neonatal sepsis caused by Globicatella sanguinis is exceedingly rare, with limited cases described in the literature. Here, we report a neonate with G. sanguinis bacteremia presenting with respiratory distress, metabolic acidosis, and sepsis. Prompt initiation of empiric antibiotics led to a favorable outcome, underscoring the importance of considering atypical pathogens in neonatal infections.

Keywords: Sepsis; Neonates; Globitella sanguinis; Respiratory distress

Introduction

Neonatal bacteremia is a critical condition associated with high morbidity and mortality, necessitating prompt diagnosis and management. While common pathogens include Group B Streptococcus and *Escherichia coli*, rare organisms like *Globicatella sanguinis* are emerging as occasional causes of neonatal infections.

Globicatella sanguinis is a catalase-negative, alpha-hemolytic, Gram-positive coccus first described as a distinct genus in 1992.Although considered part of the normal human flora,

G. sanguinis has been associated with invasive diseases such as bacteremia, meningitis, endocarditis, and urinary tract infections, primarily in adults [1,2]. Its clinical relevance in the neonatal and pediatric population remains poorly understood, with only a handful of cases reported in the literature [3-6].

Accurate identification of *G. sanguinis* is challenging due to its phenotypic resemblance to viridans group streptococci, leading to frequent misidentification by conventional diagnostic methods. Additionally, accurate identification is vital due to its atypical antimicrobial susceptibility profile. Such challenges underscore the importance of advanced diagnostic techniques for accurate identification [1, 2].

Here, we present the case of a neonate with Globicatella sanguinis bacteremia, highlighting the clinical presentation, diagnostic process, and therapeutic approach. This report aims to contribute to the limited literature on this uncommon pathogen, raise awareness of its potential role in neonatal infections, and emphasize the importance of considering atypical bacteria in the differential diagnosis of neonatal sepsis. Given the limitations of conventional diagnostic methods in sensitivity, specificity, and turnaround time, molecular and advanced culture-based techniques are increasingly utilized for more rapid and accurate pathogen identification, aiding in timely diagnosis and appropriate management. This case highlights the need for heightened awareness and advanced diagnostics in neonatal sepsis.

Case Presentation

A 32-year-old female, G2 P0 AB1, delivered a neonate at 40+3 weeks of gestation following approximately 19 hours of prolonged rupture of membranes. The labor was complicated by the presence of thick meconium in the amniotic fluid, requiring amnioinfusion. The neonate was delivered with poor tone and respiratory effort and was promptly transferred to the radiant warmer and CPAP of +5 cm H2O and 30% oxygen was started immediately. At 1.5 minutes of life, the neonate had bilateral breath sounds with poor air movement, low oxygen saturation, continued work of breathing and poor but improved tone with FiO2 increased to 40%. At 7-8 minutes of life, an attempt to wean the neonate off CPAP was made which resulted in nasal flaring and chest retractions. The APGAR scores at 1 and 5 minutes were 7 and 7, respectively. The neonate was transported to the NICU for continuous cardiopulmonary monitoring on CPAP +5 cm H2O and 30% FiO2.

Birth weight was 3.36 kg (53.47 percentile), birth length was 52.0 cm (84.70 percentile) and birth head circumference was 33 cm (10th percentile). Chest X-ray revealed small right- sided and trace left-sided pneumothorax, with bilateral haziness and streakiness suggesting neonatal respiratory distress syndrome. Given the clinical findings and the high risk of infection in neonates, a broad differential diagnosis was considered, including neonatal sepsis, pneumonia, and viral infections. Neonatal sepsis was strongly suspected due to the nonspecific symptoms and respiratory findings, which could indicate either bacterial or viral etiology. The standard antibiotics (ampicillin and gentamicin) were initiated for the next 48 hours starting on day of life (DOL) 1. Blood culture was positive for Gram-positive cocci in pairs and chains, likely group B streptococcus. Ampicillin dose was increased to 100 mg/kg/dose for meningitis coverage, both antibiotics were continued for 7 days via slow IV push. Initially, due

to respiratory distress, the neonate was administered 10% dextrose at 60ml/kg/day via peripheral IV access.

On DOL 1, the neonate was transitioned from CPAP to high-flow nasal cannula (HFNC) at 4 L/min with an oxygen requirement ranging from 21% to 28% with intermittent tachypnea but otherwise looked stable. Blood gas (CBG) results obtained showed a pH of 7.32, pCO2 40 mmHg, the bicarbonate (HCO3-) level 21 mEq/L, the pO2 less than 60 mmHg, and base excess was -5 supporting the presence of metabolic acidosis. Chest X-ray showed persistent bilateral ground-glass infiltrates with stable small right pneumothorax. The Immature-to-Total neutrophil ratio (I:T) and C-reactive protein were 0.78 and 5.4, respectively, suggestive of neonatal sepsis. The antibiotics were continued as planned followed up with repeat blood cultures. On DOL 2, the chest X-ray improved with the neonate stable on HFNC of 4L/min. The I:T went down to 0.55 and C-reactive protein down to 2.4.

On DOL 3, the neonate was doing well being weaned to HFNC at 2L/min with occasional tachypnea and tolerated expressed bread milk feeds at 50 ml/kg/day, along with breastfeeds three times a day. The blood culture from DOL 1 was positive for *Globicatella Sanguinis,* and a request for sensitivity to drugs was made while continuing the current antibiotic regimen.

On DOL 4, the neonate was clinically improving, tolerating increased oral feeds and was smoothly weaned off HFNC at 2L/min to room air with occasional tachypnea and stable oxygen saturations.

By DOL 8, the neonate was breastfeeding on demand every 2–3 hours, supplementing with erm formual or expressed breast milk, and remained stable in room air with comfortable work of breathing. The infection fully resolved after a 7-day course of ampicillin and gentamicin, with no bacterial growth to date. Although culture sensitivities were never received, the infant showed an excellent response to the higher dose of ampicillin, and a repeat blood culture was negative. With the baby being clinically well, they were discharged home with instructions to follow up with the pediatrician.

Discussion

This case highlights the importance of prompt recognition and initiation of empiric therapy for neonatal sepsis. The clinical presentation, including respiratory distress, metabolic acidosis, and elevated inflammatory markers, was consistent with neonatal sepsis. Early initiation of ampicillin and gentamicin was crucial to achieving a favorable outcome. The resolution of symptoms and the lack of subsequent culture growth demonstrated the efficacy of the empiric regimen, even in the absence of specific sensitivity data. Sepsis caused by Globicatella sanguinis in neonatal and pediatric populations is not well established, with only a limited number of cases documented in the literature. [3-6].

Conclusion

This case underscores the challenges of diagnosing and managing infections caused by uncommon bacteria, emphasizing the importance of considering atypical organisms in neonatal bacteremia, especially when routine pathogens have been ruled out or cultures show unusual findings. Further research and case reports are essential for better understanding its clinical relevance, antimicrobial susceptibility patterns, and optimal management strategies.

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