American Journal of Clinical Case Reports

Case Report

Early onset Streptococcal Pneumoniae Infection: An Unusual and Fatal Case

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Abstract

Streptococcal Pneumonia Infection In Neonates (SPIN) though rare still is a cause of neonatal sepsis and can mimic Group B streptococcus infection. The case fatality is much more than GBS and hence we cannot ignore this organism as the important cause of mortality in neonates. The cases have decreased in post vaccination era, however have not completely vanished. We present a very fatal case of SPIN who had intrauterine CNS insult and presented as intractable status epilepticus.

Keywords: Streptococcal; Pneumoniae; Congenital neonatal case

Introduction

Streptococcal infection causes neonatal sepsis in1-11% [1-6]. Proven isolation of SP bacteria is required to define SPIN. SPIN causes morbidity and mortality, even when antibiotic and vaccines is available. We present an unusual case of SPIN which had early CNS involvement never described in literature.

Case Presentation

Term baby born at 37 weeks gestation to non-consanguineous parents with 2 living issues, with uneventful antenatal follow-ups and was delivered vaginally. Baby was born limp required intubation and IPPV at birth. Respiratory efforts improved after the initial resuscitation, but baby continued to have poor sensorium and had multiple episodes of apnea suggestive of seizures within the first 12 hours of life. He was started on empirical antibiotics and loaded with antiepileptic's. CT brain was done which showed bilateral cystic spaces replacing the white matter of both cerebral hemispheres with increased densities in periventricular white matter as well as thalamus suggestive of multicystic encephalomalacia with periventricular mineralization suggestive of intrauterine infection (Figure 1a and 1b). Lumbar puncture was done which showed high proteins. Fundus examination was done and was normal. CSF showed no growth which was done after the antibiotics were started. The blood culture grew Streptococcus pneumonia. The same organism with similar antimicrobial sensitivity pattern was isolated from a high vaginal swab done from the mother post-delivery. Mother did not have any sign of fever, sore throat, chorioamnionitis. Antenatal ultrasound at 32 weeks was absolutely normal suggesting the infection occurred in later part of last trimester. Baby had refractory seizures requiring multiple antiepileptic's and ventilation. In spite of best efforts baby died on day 5 of life with intractable seizure and encephalopathy.

Citation: Kaushal M. Early onset Streptococcal Pneumoniae Infection: An Unusual and Fatal Case. Am J Clin Case Rep. 2020;1(1):1011.

Publisher Name: Medtext Publications LLC

Manuscript compiled: Nov 03rd, 2020

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Discussion

Streptococcal pneumonia is an uncommon cause of neonatal sepsis [1-6]. It usually presents as late onset sepsis and rarely as early onset sepsis. Early onset sepsis is supposed to be fatal when accompanied by maternal bacteremia [7]. It has a higher fatality rate than the group B streptococcus [8-10]. A systematic review and meta-analysis by Billings et al. [10] showed that in pre pneumococcal vaccine era the SPIN incidence was 36.0 per 100,000 (95% CI: 20-64.7 2/1000,0000). There was no statistically significant association between neonatal SPIN and neonatal mortality rate. With the use of vaccine, the incidence has reduced but not eradicated. This may be due to non-vaccine serotype contributing to the neonatal SPIN [11-13]. Another study by Hoffman et al. [14], which collected data of 8 years from 8 pediatric hospitals, identified 29 cases of SPIN The age of presentation was 18 (+- 8.2 days) and presentation was meningitis, bacteremia, pneumonia, arthritis or osteomyelitis and otitis media. 14.3% of them died, and all deaths occurred within 36 hours of presentation. Our baby had signs and symptoms soon after birth and died after 5 days. The CT scan of the baby also suggested of intrauterine infection by the streptococcus penumoniae. Arfi in a case control study showed DP contributed to 2.2% of cases of meningitis [9]. The case reports on Streptococcal Pneumonia Infection In Neonates (SPIN) in literature do show that it may be the cause of meningitis, death and disability and cannot be distinguished from Group B streptococcus. Hoffman et al. [14] have shown that the case fatality is quite high (50%) as compared to GBS (13%). The case fatality

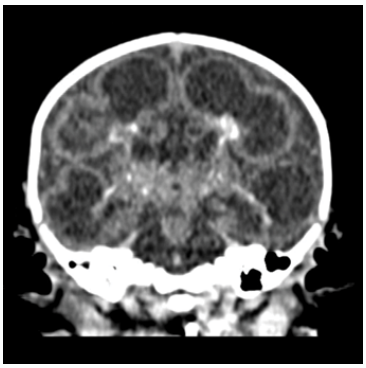

Figure 1a: Coronal section CT brain showing cystic lesion with periventricular hyper densities.

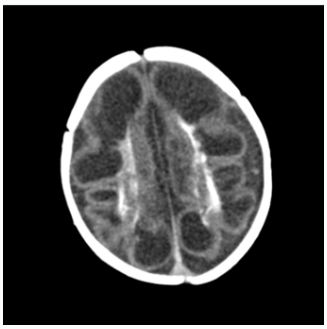

Figure 1b: Sagittal section CT brain showing cystic lesion with periventricular hyper densities.

rate was higher in SPIN in another study by Arfi et al. [6] (22.2% vs. 15.5%). Most of the cases were late onset sepsis, suggesting infection acquired from siblings or other family member's nasopharyngeal flora. Early onset sepsis is possible through transmission of infection vertically form colonized vagina [15,16]. There is less female genital colonization but higher infection colonization ratio than GBS. Our case suggested the possibility of vertical transmission and hence much severe manifestation of disease. Westh et al. [17] reviewed and showed 30.4% of mothers of neonates with SPIN had clinical signs of infections like endometriotic and meningitis. Sheffeild et al. [18] also showed relation between maternal pneumonia, meningitis and endometriotic and ammonites during labor as significant risk factor for SPIN. In our case none of the risk factors were present. In another case report where baby died of SPIN, the vaginal culture was negative though collected 4 days after the baby became symptomatic [19]. There was another case report where the SPIN was seen in preterm with mother having leaking for more than 4 days, but no maternal vaginal swabs were taken [20]. We could not come across any case report showing the cystic encephalomalacia type changes that suggest early intrauterine infection which means that the organism reached the fetus transplacentally secondary to maternal bacteremia. We ruled out TORCH infection that could have caused similar findings in CT scan. The antenatal ultrasound at 32 weeks was absolutely normal suggesting the infection was acquired later. Cerebral infarcts were noted with SPIN in the survival of meningitis in study by Hoffman [14]. Other case reports also did not show fulminant CNS insult [21-23]. This case is different in that there were no obvious risk factors for early onset sepsis, and the presentation was quite early unlike most of the other reported cases, there was no pneumonia, sepsis or septic shock. The limitation of our case was that no antigen testing was done for SP in CSF and serotyping was not possible in our lab in blood and vaginal culture. We also could not do a MRI scan.

Conclusion

- Infants can develop signs of SPIN soon after birth which may have started affecting fetus in utero.
- Genital colonization of SP is rare but suggests high penetration to colonization ratio in neonates this suggests that the SP in the vaginal swabs of mother should not be ignored and need to be treated with intrapartum prophylaxis as GBS swab is treated.
- The case highlights the question whether routine screening of SP should be offered to all antenatal mothers.
- We also suggest offering pneumococcal vaccination to antenatal mothers.

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