

Pneumococcal Septicemia: A Neonatal Case Report

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Abstract

Case Report

Pneumococcus or Streptococcus pneumoniae is a rare cause of neonatal sepsis, associated with significant morbidity and a very high mortality rate. The infection is generally acquired during pregnancy, from colonization of the maternal genital tract. Most affected newborns present with early symptoms, usually within 48 hours of birth, which is similar to other causes of neonatal sepsis. We report the case of a premature female neonate with fatal, early pneumococcal sepsis that appeared at D1 of life, with an unfavorable course that initially led to intubation and death after 24 hours of hospitalization.

Keywords: Blood culture, infectious history, newborn, pneumococcus, preterm, sepsis, infectious history.

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INTRODUCTION

Neonatal pneumococcal infection is an exceptional and serious infection associated with high neonatal morbidity. Its presentation in the neonatal period is rare, and can lead to septicemia, septic shock and death.

We report the case of a premature newborn admitted to the neonatal intensive care unit of CHU MOHAMMED IV, suffering from early-onset and fatal Pneumococcal septicemia.

CASE REPORT

Newborn female, hypotrophic with a birth weight of 1100g, from a 35-year-old mother, admitted to the gynecology-obstetrics department for premature delivery at 28SA+3J according to the date of the last menstrual period and 29 weeks of amenorrhea according to the FAAR score. No notion of taking corticosteroids. The delivery took place 24 hours after rupture of the membranes by vaginal delivery without incident, and the presentation was breech. The mother's infectious history was positive, with premature rupture of membranes and fever without figures in the 24 hours prior to delivery.

During the first hours of life, however, axial and peripheral hypotonia, a normotensive anterior fontanel, a sucking reflex and archaic reflexes were present. The newborn was pink, reactive and gesticulated

spontaneously, with respiratory distress of 4/10 according to Silverman's score, consisting of chest and intercostal indrawing and xiphoid funnelling.

On admission to our department, the newborn was placed on non-invasive ventilation. Biological tests showed leukopenia at 6550 with neutropenia at 2720, normal hemoglobin at 19g/dl and platelet count at 222000 on CBC, C-reactive protein at 3.35 mg/L, hypocalcemia at 68.4mg/l and bicarbonate acidosis at 9.98 mmol/L. Chest X-ray revealed an alveolar syndrome.

The neonate benefited from correction of hypocalcemia and probabilistic antibiotic therapy with C3G 50mg/kg/d and Genta 3mg/kg/d, as well as correction of acidosis.

Blood cultures isolated a STREPTOCOCCUS PNEUMONIAE strain sensitive to 3rd generation cephalosporins.

On the fourth day of hospitalization, the newborn presented with generalized sclerema, a grayish complexion, purulent secretions and desaturation.

Biological workup showed profound neutropenia at 740/mm³, with C-reactive protein rising from 3 to 17 mg/l, prompting initiation of treatment for

nosocomial infection with MÉROPENEM 20mg/kg/d and AMIKACINE 15mg/kg/d.

On the fifth day of hospitalization, the newborn presented with deep desaturations unimproved by either aspiration or ventilation, leading to intubation.

The evolution was unfavorable after one day of intubation, when the newborn presented a cardiorespiratory arrest unresponsive to resuscitation measures.

DISCUSSION

Neonatal infection with *Streptococcus Pneumoniae* is rare. Its estimated frequency fluctuates between 1 and 11%, with a high mortality rate of up to 60% [1, 2]. Contrary to earlier data, more recent reports have shown that most cases occur during the first week of life, mainly within the first 48 hours [3].

Early infections can be acquired via a colonized birth canal or, rarely, by transplacental hematogenous transmission, secondary to maternal bacteremia [4].

In our case, there was no documentation of colonization of the mother's genital tract, so the child can probably acquire the infection via the birth canal. *Streptococcus Pneumoniae* if not present in the vagina, colonization of the lower genital tract can occur through orogenital contact with a nasopharyngeal carrier or with a person suffering from acute pneumococcal upper respiratory tract infection.

Recognized risk factors for sepsis include prematurity, prolonged rupture of membranes and clinical chorioamnionitis (the mother reports fever in the last 24 hours).

Despite the rarity of vaginal carriage of *Streptococcus Pneumoniae*, Gomez *et al.* noted that in colonized mothers, all their children developed sepsis. This suggests a much higher rate of infection and mortality in colonized mothers, compared with *Streptococcus Agalactiae* [5].

Because of this risk, isolation of *Streptococcus Pneumoniae* from the maternal genital tract should be considered pathological and treated accordingly [6].

Clinical presentation varies according to the postnatal age of the newborn.

Pneumonia, leukopenia and shock are common manifestations. Meningitis, which is usually associated with late-onset infection, is, for unknown reasons, more frequent in cases of early-onset NSPS, as observed by Olarte *et al.*, [7].

As no lumbar puncture was performed in our patient, we do not know whether this complication was

present. Early sepsis is known to have a worse prognosis than late sepsis.

A study carried out by the Journal of American Academy Pediatrics showed that streptococcus pneumoniae infection is a serious infection that can lead to intubation, which is the same as in our case, and they found leukopenia and/or neutropenia present in 30% of newborns with invasive SPIN [5].

Bizzarro *et al.*, noted that, although PS was a more frequent cause of neonatal sepsis in the early years of the Yale-New Haven Hospital longitudinal study, no cases were observed between 1989 and 2003.

Hoffman *et al.*, reported 29 neonatal cases of SP infection out of 4428 episodes recorded in a multicenter surveillance program of pediatric pneumococcal infections, and noted a mortality rate of 14.3%. These infants mainly presented with late-onset disease (>7 days) (26 out of 29) [8].

By contrast, in 1999, Gomez *et al.*, 11 reported five cases and reviewed 114 other reports published since 1914. In 69% of the cases examined, the disease occurred before 48 hours of age, and more than half of the newborns were premature [5].

This is similar to our case, in which the symptoms appeared on day 1 of life.

CONCLUSION

Early-onset streptococcus pneumoniae bacterial infection is very rare, but very serious, as it can lead to death and early systemic damage, causing septicemia and even meningitis. In order to prevent and guard against this disease, several vaccination programs have been developed, notably for mothers to prevent transmission, and for infants.

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