Early Onset Neonatal Sepsis due to *Morganella morganii*

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Two neonates, both 32-weekers, developed Morganella morganii sepsis on the first day of life. They presented within a day of each other, primarily with respiratory signs. In both cases there was a history of spontaneous premature rupture of membranes, exposure to a single dose of ampicillin ante-partum, and similar antibiograms. No common source could be identified.

Key words: *Morganella, Neonate, Sepsis.*

Early onset *Morganella morganii* sepsis in newborn babies is a rarity. We encountered two cases of early onset *Morganella morganii* sepsis within days of each other. In this article we report these two cases and review the literature.

Case Reports

Case 1

This 1470 g male infant was delivered at 32 weeks gestation. The antenatal period was uncomplicated. The mother was immuno-competent, had no infections during pregnancy and was not exposed to prolonged antibiotics. Her membranes ruptured spontaneously at 32 weeks and labour pains started an hour later. She received a dose of dexamethasone and ampicillin and delivered vaginally after 8 hours of rupture of membranes. There was no perinatal asphyxia. The gastric aspirate was full of neutrophils. He developed respiratory distress and was administered early rescue surfactant. The chest *X*-ray showed evidence of pneumonia and the sepsis screen was suggestive of sepsis. The serum C-Reactive Protein (CRP) was elevated and there was leucocytosis (39,000/cu mm) and neutrophilia (13,065/cu mm). The blood culture drawn soon after birth grew *Morganella morganii*, sensitive to third generation Cefalosporins, Aminoglycosides and Ciprofloxacin and resistant to Ampicillin. The cerebrospinal fluid (CSF) examination was normal. Maternal amniotic membrane culture was non-contributory. He was started on intravenous Cefotaxime and Amikacin soon after birth. He was administered inotropes for the management of shock and CPAP for respiratory distress. The mother had no signs of infection. Her blood culture, high vaginal swab culture and urine culture, sent immediately after the baby's culture report, were sterile.

Case 2

This baby was delivered by emergency LSCS for uncontrolled hypertension and spontaneous premature rupture of membranes at 32 weeks gestation, just one day after the above case was delivered. She weighed 1100 g and was disproportionately small for gestational age. The mother was immuno-competent and had not received any antibiotics during pregnancy. She received one dose of antenatal dexamethasone and ampicillin before delivery. She developed respiratory distress soon after birth, and the

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chest *X*-ray showed pneumonia. The sepsis screen showed a positive CRP, TLC 21,300 and ANC 10,500. The blood culture drawn soon after birth grew *Morganella morganii*, which showed an identical antibiogram. The CSF analysis showed no abnormal findings. She was started on Cefotaxime and Amikacin. On day 2 she developed shock, metabolic acidosis and thrombocytopenia. Antibiotics were emperically changed to Ciprofloxacin and Netilmycin, but she continued to deteriorate and died on day 8. The mother had no signs of infection. Maternal cultures had not been sent.

Discussion

Morganella morganii is a gram-negative enteric bacterium, within the Enterobacteriaceae family. It has most commonly been described as a nosocomial pathogen in immunocompromised adults or those with chronic urinary catheterization. *M. morganii* typically has an inducible beta-lactamase and is resistant to multiple antibiotics.

Our index cases developed early onset *Morganella morganii* sepsis within a day of each other, but we were not able to establish a common source. Given the rarity of the infection, the probability of the 2 cases occurring concurrently as a chance phenomenon is remote and colonization after admission to our unit seems more likely.

The mothers of the 2 babies were unrelated and had not visited a common health facility prior to their coming to our hospital. Here, they were looked after by the same set of physicians and nurses in the delivery rooms complex. No baby had grown *Morganella morganii* in our unit for a period of two years before the birth of these two infants and none has been isolated for over 12 months after their birth. Environmental cultures were taken from the labour room area and from the neonatal unit and from the personnel working there, but these did not grow *Morganella morganii*. We had managed another case of early onset *Morganella morganii* sepsis two years prior(1). This baby was born to an immunocompetent primigravida mother by spontaneous vaginal delivery at 34 weeks. The membrane culture and the baby's blood culture both grew *Morganella morganii*.

Our cases were all premature, had congenital pneumonia, and blood cultures drawn soon after birth were positive. Apart from spontaneous premature onset of labour in 2 cases, none of the other recognized risk factors of early onset sepsis were present. Sepsis screens consistently showed leucocytosis and neutrophilia. The antibiograms of the 3 isolates were identical, with resistance to Ampicillin. In none of the cases was there a risk for colonization with an unusual organism. There was no prolonged hospitalization, prolonged administration of broad-spectrum antibiotics or clinical evidence of immunodeficiency. However, a single dose of Ampicillin and Dexamethasone had been given in all instances. In our perinatal unit, there is a common practice to administer Ampicillin to mothers with threatened premature delivery, because we deal with a large population of unbooked and inadequately supervised mothers who arrive late in pregnancy. This practice may lead to the emergence of unusual Ampicillin-resistant organisms.

Early onset *Morganella morganii* neonatal sepsis has been an infrequently reported infection in literature(2-7). Most cases were associated with evidence of maternal chorioamnionitis(2-4,6,7). All reported cases were premature, with antenatal exposure to Ampicillin being reported in several cases(2-7). Resistance to Ampicillin, though common, was not universal. There is an unusual case of

a one-day-old neonate presenting with necrotizing fasciitis caused by *Morganella morganii* acquired post-natally following a fall into the toilet bowl during a domestic delivery(5).

We conclude that *Morganella morganii* is an unusual cause of early-onset neonatal sepsis. Affected babies are usually delivered premature, with no consistent history of risk factors. The use of prophylactic antibiotics in pregnancy (particularly Ampicillin) may play a role in vaginal colonization with such unusual organisms.

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REFERENCES

1. Maheshwari A, Dutta S, Kumar P, Narang A. Early onset mixed Morganella and Klebsiella sepsis in a neonate. Indian J Pediatr 2001; 68: 671-672.
2. Ranu SS, Valencia GB, Piecuch S. Fatal early onset infection in an extremely low birth weight infant due to *Morganella morganii*. J Perinatol1999; 19: 533-535.
3. Rowen JL, Lopez SM. Morganella morganii early onset sepsis. Pediatr Infect Dis J 1998; 17: 1176-1177.
4. Johnson JR, Feingold M. Case of chorio-amnionitis in an immunocompetent woman aused by *Morganella morganii*. J Matern Fetal Med 1998; 7: 13-14.
5. Krebs VL, Koga KM, Diniz EM, Ceccon ME, Vaz FA. Necrotizing fasciitis in a newborn infant: a case report. Rev Hosp Clin Fac Med Sao Paulo 2001; 56: 59-62.
6. Boussemart T, Piet-Duroux S, Manouana M, Azi M, Perez JM, Port-Lis M. *Morganella morganii* and early onset neonatal infection. Arch Pediatr 2004; 11: 37-39.
7. Casanova-Roman M, Sanchez-Porto A, Casanova-Bellido M. Early onset neonatal sepsis caused by vertical transmission of *Morganella morganii*. Scand J Infect Dis 2002; 34: 534-535.