

STENOTROPHOMONAS MALTOPHILIA PNEUMONIA IN A PREMATURE INFANT*

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Stenotrophomonas (Xanthomonas) maltophilia is an aerobic, non-fermentative, Gram-negative bacillus that is generally considered an opportunistic pathogen. Infections due to *S. maltophilia* have become increasingly important in the hospital environment. Patients compromised by debilitating illnesses, surgical procedures or indwelling vascular catheters are most prone to *S. maltophilia* infections. To our knowledge, we report the first case of *S. maltophilia* pneumonia in a premature infant of 31 weeks gestational age. Although the therapy of choice for severe infections caused by *S. maltophilia* remains to be decided, this patient was successfully treated by amikacin.

Key words: newborn, nosocomial infection, *Stenotrophomonas maltophilia*.

Stenotrophomonas maltophilia (*S. maltophilia*) has emerged as a causative agent of serious nosocomial infections. *S. maltophilia* is an aerobic, nonfermentative, Gram-negative bacillus, originally referred to as *Xanthomonas* or *Pseudomonas maltophilia*^{1,2}. This organism is mainly associated with postoperative wound infections, septicemia and urinary or respiratory tract infections. *S. maltophilia* is also a rare cause of endocarditis, ocular infections, meningoencephalitis and cholangitis in immunocompromised patients³⁻¹⁰.

The rate of isolation is increasing and it is often resistant to antimicrobial agents that are commonly used initially to treat Gram-negative infections³⁻⁵. However, no well documented case of nosocomial pneumonia with this organism has been reported in newborn babies.

Case Report

The case was one of twins born at 31 weeks of gestation after spontaneous rupture of membranes. Her mother was 26 years of age and healthy. The patient was admitted to our newborn unit at the 12th hour postnatally with Apgar scores

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of three at one minute and four at five minutes. Her mother had no infection in her pregnancy, but had used ritodrine as prescribed at the 12th week of pregnancy due to risk of abortion. On physical examination, her length was 41 cm (50th-75th percentile), weight was 1600 g (50th-75th percentile) and head circumference was 29.3 cm (50th percentile). She was hypothermic, tachycardic and tachypneic. Because her chest x-ray showed grade IV respiratory distress syndrome (RDS) and blood gases revealed acidosis, she received surfactant therapy followed by mechanical ventilation. Sulbactam-ampicillin and cefotaxime combination was started empirically. She recovered successfully and her chest x-ray findings became normal after three days of ventilation. Antimicrobial treatment was stopped at the fifth day because there was no growth in her blood culture. Total parenteral nutrition (TPN) which was started on the third day was gradually stopped by the 25th day. Grade III intracranial hemorrhage (ICH) was seen in the cranial ultrasonography (USG) on the third day. Because of the development of hydrocephalus in the serial USG and computed tomography controls, a postnatal ventriculo-peritoneal shunt was implanted on the 25th day. Vancomycin and ceftriaxone were given as prophylaxis. Respiratory distress symptoms appeared when she was 29 days old. Chest x-ray demonstrated interstitial pneumonia. *S. maltophilia* 10⁵ CFU/ml (colony forming unit) was isolated from tracheal aspirate culture. As the oxidase test was negative and catalase and motility tests were positive, the isolate was identified as *S. maltophilia*. Disk diffusion test was performed according to National Committee for Clinical Laboratory Standards (NCCLS). According to culture results, *S. maltophilia* was sensitive to sulbactam-ampicillin, imipenem, and amikacin; was intermediately sensitive to ceftriaxone; and resistant to cefuroxime. Accordingly, ceftriaxone was stopped and amikacin was started. Vancomycin was continued because of the shunt operation. After 10 days, her respiratory distress signs and chest x-ray findings resolved. She was discharged when her weight reached 1780 g.

Discussion

S. maltophilia has emerged as a causative agent of serious nosocomial infections. It is isolated from a wide variety of clinical sources, including blood, the respiratory tract, urine, wounds, spinal fluid and from environmental sources such as hospital water supplies, faucets, sink drains, respirators, prosthetic heart devices and disinfectant solutions⁵⁻¹⁴.

Incidence of nosocomial infection is 20-33 percent in newborn intensive care units, increasing with length of hospital stay and degree of prematurity. Most common agents are: coagulase-negative staphylococcus, Gram-negative bacilli (*Klebsiella pneumoniae*, *E. coli*, *Salmonella*, *Campylobacter*, *Enterobacter*, *Citrobacter*, *Pseudomonas aeruginosa*, *Serratia*), *Enterococcus*, *S. aureus* and

Candida spp.¹⁵ Drews et al.¹⁶ reported that among 229 neonates, the infection rate was 27.2, the infection proportion 20.2 and the incidence density 21.9 infections per 1,000 patient days in the neonatal intensive care unit. Major sites of infection were pneumonia (32.4%), blood stream infections (27.5%), infections of the skin and surgical site infections (11.4% each). The predominant pathogen was *Staphylococcus aureus* (24.7%) whilst Gram-negative bacteria accounted for 22.8 percent of the total. On the other hand, Gray et al.¹⁷ reported that coagulase-negative staphylococcus was the most common pathogen noted in blood cultures in very low birth weight neonates. Recently, NICHD Neonatal Research Network¹⁸ reported that the majority (73%) of late-onset infections in very low birth weight (VLBW) neonates were caused by Gram-positive organisms, with coagulase-negative staphylococci being the most common. Gram-negative pathogens accounted for 18 percent of late onset infections. Enterobacter species, *Escherichia coli* and *Klebsiella* were the most frequent Gram-negative pathogens. There was no case of *S. maltophilia* sepsis in series of 7,861 VLBW neonates¹⁸.

When the neonatal literature was reviewed retrospectively, no case infected with this organism was reported. This case shows that *S. maltophilia* can be a causative agent of serious nosocomial infections in premature infants as in immunocompromised adult patients. The mode of transmission of this organism is not well known. Risk factors for colonization and infection by this organism in premature babies may include longer hospitalization, catheterization, administration of anti-pseudomonal antibiotics, and the use of hospital water supplies and disinfectant solutions contaminated with this organism.

Our case was successfully treated with amikacin, although *S. maltophilia* is usually considered resistant to multiple antibiotics, including beta-lactam agents, quinolones, aminoglycosides and carbapenems¹⁹.

S. maltophilia is a causative agent of serious nosocomial infections. To our knowledge, we report the first case of neonatal pneumonia due to *S. maltophilia*. *S. maltophilia* may become one of the important opportunistic pathogens in premature babies in the near future.

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