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Case Report

Chryseobacterium indologenes

A Rare Case of Chryseobacterium Indolegens Bacteremia in A Preterm Infant In A Tertiary Care Hospital In Bangalore

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Multi-drug resistant organisms are very common worldwide. Bloodstream infection by Chryseobacterium indologenes is one of the healthcare-associated infections which is resistant to most antibiotics. It is usually seen in preterms, patients on immunosuppressive drugs or having malignancy and patients with indwelling devices. It causes various types of infections, such as bacteremia, pneumonia, meningitis, and artificial shunt infection, especially with harbouring invasive devices and indwelling catheters. Management of C.indologenes in neonates is not adequately documented leading to under-reporting in India. In our hospital, we had a preterm baby of 31 weeks weighing 1.36kg, who presented with respiratory distress syndrome with an umbilical vein catheterization with signs of sepsis. The blood culture yielded C.indologenes with resistance to most of the group of antibiotics.

Keywords: Chryseobacterium indologenes, bloodstream infection, preterm, healthcare-associated infection

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Introduction

Chryseobacterium indologenes is one of the emerging multi-drug resistant nosocomial pathogens which is a non-motile, gram-negative rod, aerobic, non-lactose-fermenting, catalase and oxidase-positive bacillus belonging to the genus Chryseobacterium belonging to the family of Flavobacteriaceae [1]. They can survive chlorinated water and can be present in hospital environments. They have been recovered from water systems and humid surfaces and these act as a reservoir of infection. Infections caused by Chryseobacterium indologenes are rare, but have been reported as a cause of serious infections in adult immunosuppressed patients and also pediatric patients with risk factors like low birth weight, preterm, presence of any indwelling devices or any other condition compromising the immune status of the patient. The purpose of publishing this case report is that Chryseobacterium indologenes should also be considered as one of the important nosocomial pathogens.

Case Report

A female preterm baby was born at 31 weeks and 4 days by caesarean section with a birth weight of 1.36kg. The baby presented with subcostal retraction and tachypnoea. The ECHO showed the presence of 1mm PDA and also the NSG showed periventricular flair. Baby was put on CPAP and was given a dose of surfactant. An umbilical vein catheterization was done on day 1 itself. Upon suspecting clinical sepsis the baby was put on I.V antibiotics like Ampicillin and Netilmycin, before the antibiotics were given blood culture was sent. Samples were taken in Becton Dickinson (BD) pediatric blood culture bottles and sent for culture. It was signalled on the 3rd day. Gram stain of positive blood culture bottle showed Gram-negative bacilli. Sub-cultures were done on routine Sheep Blood agar and MacConkey agar. After 24 hrs of incubation, smooth, circular, yellow-pigmented colonies were grown on sheep blood agar. In addition to 1 drop of 10% KOH solution, the colour of the colonies changed from yellow to red which indicates the presence of flexirubin pigment. The isolate was catalase and oxidase positive, indole weakly positive and urease negative and was loaded to an automated system which was identified as Chryseobacterium indologenes.

For the antibiotic sensitivity with the interpretation refer to Table 1. The sensitive drugs were trimethoprim-sulfamethoxazole and levofloxacin.

Table 1: Antibiotic sensitivity of the isolate from Blood

S. N	Antibiotics	MIC value	Interpretation
1.	Amikacin	>32	Resistant
2.	Aztreonam	>16	Resistant
3.	Ciprofloxacin	>2	Resistant
4.	Gentamycin	>8	Resistant
5.	Imipenem	>8	Resistant
6.	Meropenem	>8	Resistant
7.	Pipericillin/Tazobactum	>64	Resistant
8	Ceftazidime	>16	Resistant
9	Levofloxacin	<2	Sensitive
10	Trimethoprim/sulfamethoxazole	<2/38	Sensitive

Discussion

Chryseobacterium indologenes are not a part of the normal flora of humans. It is commonly present in water, soil and plants. Widespread presence of these bacteria in the environment, especially on the wet surfaces of hospitals and water systems and advances in intensive care has contributed to the development of infections by these bacteria [2-4].

The majority of reported infections have been hospital-acquired, and the vast majority of patients had undergone invasive procedures with underlying conditions, such as neoplasms, diabetes mellitus, stem cell or solid-organ transplantation, or prolonged use of antibiotics. Reported infections include bacteremia, ventilator-associated pneumonia, cellulitis, peritonitis, indwelling device–associated infection, urinary tract infections, biliary tract infection, lumbo-peritoneal shunt infection, and ocular infections, central nervous system infection, and surgical and burn wound infections. Infections have often been associated with a high mortality rate. [5-10]. With Colistin and Tigecycline increasing usage against many of the multidrug-resistant organisms, Chryseobacterium species have become a significant pathogen in a critical healthcare setting.

[11,12]. with the increasing incidence of healthcare-associated infection with C. indologenes selection of antibiotics is very important as it is intrinsically resistant to carbapenems and cephalosporins due to its production of molecular class A β-lactamase and class B carbapenem-hydrolyzing

B-lactamase[13]. In the literature, there have been very less cases reported below 3 months of age as most of the paediatric cases reported were more than 3 months of age.

In 2007, Bayraktar et al. [14]. reported a bloodstream infection in a five-month-old baby and another case was reported by Al-Tatari et al. [15] in a 13yr old boy with lumbo-peritoneal shunt infection with congenital hydrocephalus which was successfully treated with trimethoprim-sulfamethoxazole and rifampicin. Cascio et al. [16]. also reported a case of a two-year-old boy with type 1 diabetes mellitus who developed bacteremia. The only medical device present was a peripheral catheter. The patient received antimicrobial treatment with ceftriaxone and recovered after two days.

In the case, we reported the patient was a preterm neonate with a weight of less than 1.5kg and also had an umbilical catheter and was on CPAP. These might have acted as the risk factors which led to the corynebacterium indologenes bacteremia. but early diagnosis and appropriate treatment helped in the successful treatment of the baby. Early isolation and identification are very important and also the careful interpretation of antimicrobial susceptibility is the need of the hour. Also, proper environmental surveillance to trace the source and implementation of infection control measures are required. accurate diagnosis of infection by this rare bacterium is crucial to guide therapy as it is resistant to the common empirical antibiotics of suspected gram-negative sepsis.

Conclusion

Chryseobacterium indologenes must be considered in neonates with risk factors and also should be considered in pediatric nosocomial device-associated infections. This also emphasizes on the proper practice of hand hygiene and other infection control measures.

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