Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/11824
DOI URL: http://dx.doi.org/10.21474/IJAR01/11824

ISSN NO. 2320-5407

RESEARCH ARTICLE

ELIZABETHKINGIA MENINGOSEPTICA BACTEREMIA IN A NEONATE: A RARE CASE REPORT FROM A TERTIARY CARE CENTRE OF TRIPURA

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Manuscript Info

Manuscript History
Received: 05 August 2020
Final Accepted: 10 September 2020
Published: October 2020

Abstract

Blood from a two day old male baby with history of respiratory distress and meconium aspiration was sent to the Department of Microbiology for culture. Blood culture yield non haemolytic small colonies of 1-2 mm on Blood agar and no growth on MacConkey agar.Based upon the colony characteristics, biochemical reactions, antimicrobial susceptibility pattern and identification by conventional and Vitek 2 Compact system, the isolate was identified as Elizabethkingia meningoseptica which is a rare cause of bacteremia in neonates.

Introduction:-

Elizabethkingia meningoseptica is a non-fermentative, non-motile, catalase positive, oxidase positive, Gram-negative bacillus that is ubiquitously found in hospital environments, soil, water etc.[1] It was first reported by Elizabeth O King in 1959 and was placed in the genus Elizabethkingia in 2005, named after the discoverer.[2] It has been reported to be pathogenic in severly immunocompromised individuals, premature infants and newborns, causing severe manifestations like meningitis, bacteraemia, endocarditis, cellulitis and wound infections which lead to increased mortality and morbidity among these patients.[3]

E. meningoseptica has a unique antibiotic susceptibility pattern, being inherently resistant to β lactams owing to production of Ambler class A Extended spectrum beta lactamase and class B Metallo beta lactamase.[3] Due to this reason, treatment has been a challenge in this organism.[4] Paradoxically, they are highly susceptible to quinolones, cotrimoxazole, clindamycin, erythromycin, vancomycin generally used to treat Gram-positive bacterial infections. This often leads to inappropriate selection of antibiotics for initial empirical therapy posing a challenge to treat often leading to treatment failures.[4]

We are reporting a case of bacteraemia caused by Elizabethkingia meningoseptica in a preterm infant presenting with features of respiratory distress and sepsis in a Tertiary care hospital in Tripura, North Eastern India.

Case Report:

A two days old male baby was referred from a peripheral Community Health Centre (CHC) to the Tertiary Care Centre of Tripura with chief complaints of respiratory distress, poor feeding and history of meconium aspiration. The baby was delivered through normal vaginal delivery at 33 weeks of gestation with meconium stained liquor and delayed cry. Baby's APGAR score was 6 at birth.[5] Birth weight was 2.0 kg. There was no history of any congenital

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abnormality. Maternal obstetric history reveals that she was multigravida ($G_3P_2L_2A_0$). No history of adverse obstetric outcomes or maternal systemic illness was there.

The baby was diagnosed as a case of pre- term low birth weight infant with respiratory distress due to meconium aspiration and sepsis. On examination, baby's Pulse rate (PR) was 146/min, regular, Respiratory Rate (RR) was 89/min, capillary refill time (CRT) <3 seconds, Skin pinch<2 seconds. Cyanosis, icterus, pallor was absent. SPO2 was 88% without oxygen measured from right arm.

Laboratory investigations revealed Hb% level of 16g/dl with leucocytosis (TLC- 13,000/mm^3) and neutrophilia (76% in DLC). C-reactive protein was 5mg/dl and serum Procalcitonin level was 4.8 ng/ml. Total bilirubin was 2.7 mg/dL and direct bilirubin was 0.1 mg/dL. Blood urea and creatinine was 44 mg/dL and 0.6 mg/dL respectively. Sodium was 145 mEq/L and potassium was 4.2 mEq/L. Chloride and calcium was 122 mEq/L and 8.5 mg/dL respectively. Random blood sugar was 88mg/dl. Peripheral smear study showed normocytic normochromic red blood cell.

Baby was admitted in the neonatal intensive care unit (NICU) and was started on Injection Amikacin 30 mg IV once daily and Injection Cefotaxime 100mg IV twice daily.

Two sets of blood cultures, each comprising of two bottles, were collected as per protocol followed in the Department. One set was collected before initiation of antimicrobial therapy and the second set was collected before administration of second dose of antibiotic.[6] Blood culture was incubated in BACT/ALERT 3D (Biomerieux) as per manufacturer's protocol.[7] Positive signal was given after 48 hours of incubation from 2 bottles of first set and one bottle of second set. Subculture was performed after positive signal in the automated system in Blood agar and MacConkey agar plates. Gram stain was performed from the blood culture bottles which showed gram negative bacilli. Gram stain report was communicated to the physician over telephone. After 24 hours of aerobic incubation at 37^oC, smooth, circular, non haemolytic, small colonies of 1-2mm size, with regular margin and entire edge were isolated on all three blood agar plates. There was no growth on MacConkey agar plates. On Gram staining from colonies of Blood agar, gram negative bacilli were seen and the organism was non-motile. Organisms were identified based on conventional biochemical tests[8]and by Vitek 2 Compact automated identification and AST system as per manufacturer's protocol.[9]

Fig 1:- Growth of smooth, circular, non haemolytic, small colonies of E. meningoseptica.

The Antimicrobial sensitivity tests were performed using both Vitek 2 Compact system and micro-broth dilution method as per CLSI protocol M45, 3rd edition.[10] The isolate was sensitive to Cefoperazone/sulbactam (minimum inhibitory concentration[MIC]≤8), Cefepime (MIC 2), Ciprofloxacin (MIC≤ 0.25), Levofloxacin (MIC≤ 0.12), Minocycline (MIC 2), Tigecycline (MIC≤0.5) Cotrimoxazole (MIC ≤2),but resistant to Imipenem (MIC>32), Meropenem (MIC>32) Aztreonam (MIC>=64), Amikacin (MIC>=64), Gentamicin (MIC>=16), and Colistin (MIC>32).

Further clinical outcome of the baby could not be recorded as the patient's party took Leave against medical advice(LAMA).

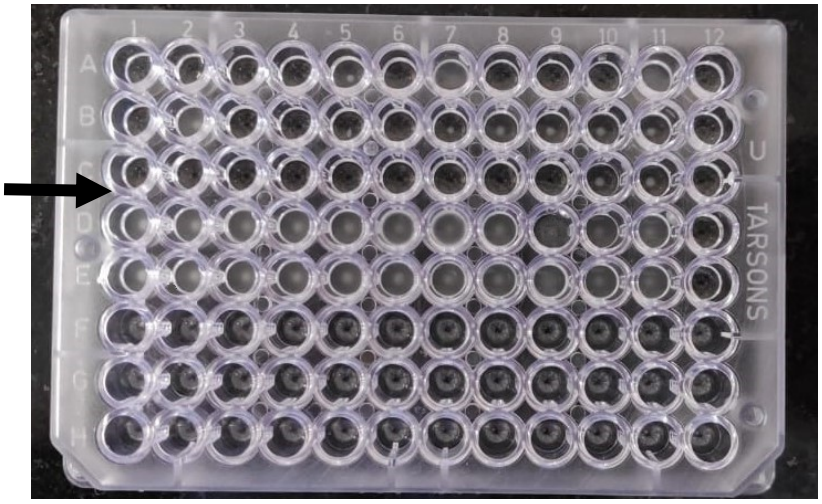

Fig 2:- Microbroth dilution method to detect MIC of Colistin. Arrow indicates the isolated E. meningoseptica strain (MIC>32).

Discussion:-

Elizabethkingia meningoseptica is an emerging healthcare-associated infection, especially among premature, low birth weight neonates and immunocompromised individuals. Its unusual antimicrobial sensitivity and resistance patterns along with inherent resistance to colistin makes the organism difficult to treat, thus posing a great therapeutic challenge.[11, 12]

The infection caused by E. meningoseptica may be misdiagnosed and underreported because of lack of high index of clinical suspicion and difficulty in sample collection, as most cases occur in pre-term and newborn infants.It should be considered as a cause of sepsis and meningitis in premature low birth weight infants in any neonatal intensive care unit as several reports have been emerging about this infection.[13]

Recent studies reveal 283 published cases of E. meningoseptica, of which 35 cases were reported from India (12.4%).[13]Very high neonatal mortality was reported (37%) and about 1/3rd of survivors had long term sequelae like hydrocephalus.[13, 14] This shows the severity of infection and it's ability to cause significant mortality and morbidity among the patients, particularly in new-born and preterm infants.

Good communication between the clinicians and laboratory is important and also awareness among clinicians about this organism along with correct identification and sensitivity testing is required to prevent the morbidity and mortality.

Conclusion:-

Although Elizabethkingia meningoseptica infections have been recognised, detailed clinical data and Antimicrobial susceptibility data on E. meningoseptica remain very limited, with no established breakpoints by Clinical and Laboratory Standards Institute (CLSI). The organism is usually multidrug resistant to antibiotics usually prescribed for treating Gram-negative bacterial infections, which poses a serious challenge to the treating clinicians.

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