

Presentation and outcomes of elizabethkingia meningosepticum an emerging pathogen in neonates

Jagan Mohan Varakala

Rainbow Children Hospital, India

Introduction: *Elizabethkingia meningosepticum* is a non-fermentative gram negative bacillus, ubiquitous in nature. *E. meningosepticum* causes meningitis, pneumonia, bacteremia, and sepsis in pneumonia, endocarditis, postoperative bacteremia, meningitis and endophthalmitis. Among the different infections, a high mortality and severe post infection sequelae including hydrocephalus, deafness, and developmental delay have been reported in neonates with meningitis due to *E. meningosepticum*. Infections caused by *E. meningosepticum* are difficult to treat because of its resistance to extended spectrum lactam agents and aminoglycosides (1–3). Peculiarity is that it behaves like gram positive on susceptibility pattern. The underlying host factors associated with *E. meningosepticum* meningitis in neonates is prematurity and low birth weight.

Materials and Methods: Case series of 14 neonates with *E. meningosepticum* across various centers in who presented to the Neonatal Intensive Care Unit of RAINBOW children's hospital Hyderabad, between January 2016 and June 2019, were included in the study.

Results: A total of 14 *E. meningosepticum* species identified using standard biochemical reactions and species identified by automated BD phoenix machine. Sample was collected using Bactec culture media for blood samples. 12 babies have survived with a survival rate of 85 % which is far better when compared to all existing survival rates across varies center. Among two Neonatal deaths (15%) one baby was preterm 26 weeks and other baby was term. There were 5 out of 14 Neonates were extreme preemies less than 27 weeks. Among them 2 were 25 weeks and 3 were 26 weeks. Among extreme preemies (<27weekers) 3 babies have survived. Isolates were from blood in 11 babies. 3 babies had both CSF and Blood positive. Isolated from ET culture in 3 babies. Among survivor's 7 babies had Neurological sequelae (50%) and 5 babies had hydrocephalus (35.7%), IVH in 1 neonate and Cerebral oedema in 1 baby. 6(42.7%) babies had Neonatal seizures. Other associations were Endophthalmitis in one case, pericardial effusion in one case, PPHN in one case. 4 neonates had hemodynamically significant PDA among them 2 babies were term.

Antimicrobial Susceptibilities: Among the *E. meningosepticum* isolates, 1 out of 16 was resistant to Vancomycin with high MIC (64). 100% were resistant to *piperacillin-tazobactam*, respectively, but only 23% were susceptible to fluoroquinolones. Although most of the species were susceptible to vancomycin, clinical response was not adequate. One neonate responded to Rifampin and cotrimoxazole, which were the promising drugs were we could see clinical response.

Discussions: The data on antibiotic susceptibility of *E. meningosepticum* is limited because it is rarely isolated from clinical specimen and there are no standard guidelines on antibiotic susceptibility testing and reporting and interpretation of the susceptibility data. Infection is associated with high mortality and Sequelae. This outcome is confirmed in the literature review which showed 57% mortality rate and 69% hydrocephaly rate in survivors. The antibiotic profile of *Elizabethkingia meningosepticum* is different from other Gram-negative rods. The bacterium is characterized by its inherent resistance to aminoglycosides, β -lactam agents, Chloramphenicol and Carbapenems, but also by its susceptibility to Rifampicin, Ciprofloxacin, Vancomycin and Trimethoprim–Sulfamethoxazole.

Conclusions: *Elizabethkingia meningosepticum* is an emerging infection and a nosocomial threat, with high risk for complications and mortality in premature neonates. The improvement of accuracy in bacterial identification and standardization of antibiotic susceptibility tests are essential for early diagnostic and etiologic treatment, in order to reduce mortality and neurological complications.. Active infection control in hospital environments, especially of water sources, is necessary to prevent *Elizabethkingia meningosepticum* epidemics.

Biography

Jagan Mohan Varakala is affiliated to Department of Neonatology and Microbiology Rainbow Children Hospital, Hyderabad, India. He is a recipient of many awards and grants for his valuable contributions and discoveries in major area of subject research. His international experience includes various programs, contributions and participation in different countries for diverse fields of study. His research interests reflect in his wide range of publications in various national and international journals.

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