Multidrug Resistant *Acinetobacter baumannii* Causing Neonatal Sepsis

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The emergence of multidrug resistant *Acinetobacter baumannii* (MDR-AB) as a cause of hospital acquired infections (HAIs) in pediatric ICUs (PICU) has been reported by many authors [1, 2]. There are two article in this issue that have highlighted the emergence of MDR-AB as the leading cause of infections in PICU, although examining the data from other studies shows wide regional variations. Case in point, data from authors' center shows coagulase negative staphylococcus (*CoNS*) (25.5%), followed by *Candida spp.* (13.5%), *Klebsiella pneumoniae* (10.8%), *Staphylococcus aureus* (6.4%), and *Acinetobacter baumannii* (4.6%) as the most frequent organisms isolated from blood-stream infections (BSI) in PICU [3]. Central line was shown as a major risk factors for candidemia, and in its absence, gram-negative bacteria (GNBs) were the most common organisms. Among GNBs, prolonged ICU stay, intubation, and previous exposure to antibiotics was shown to be important risk factors for the acquisition of MDR-AB [1]. Therefore, spectrum of multidrug-resistant-organisms (MDROs) in an institute is multifactorial and it is important to undertake studies to understand the true causal relationship between various risk factors and organisms causing HAIs. This data along with the institute-specific antibiogram and antibiotic prescription auditing may be useful in designing interventional studies to stem the increase of MDROs. The most common site of infection of MDR-AB has been shown to be respiratory tract, followed by blood, pus, and urine in that order [2]. High prevalence of MDR-AB from respiratory specimen (read endotracheal aspirates) is due to its ability to survive for long periods in wet environs of closed circuits of ventilators and its further selection under antibiotic use. Therefore, surveillance of ventilator associated

pneumonia (VAP) incidence and its prevention play a pivotal role in decreasing MDR-AB infections in pediatric ICUs.

The poor outcome associated with *A. baumannii* infection can be attributed to its multidrug resistance rather than the virulence. The data from authors' center in neonatal ICU (NICU) also showed an increase in mean financial cost of treatment of sepsis by MDROs (Rs. 7,34,798) vs non MDROs (Rs. 2,50,558) [4]. Emergence of high resistance in *Acinetobacter spp.* to almost all the antibiotics except colistin has been shown in various studies. However, in the year 2020, on the basis of recent robust clinical outcome studies and pharmacokinetics/pharmacodynamics (PK/PD) data, sensitive category of colistin was withdrawn and only intermediate sensitive and resistant category retained in the updated 2020 clinical and laboratory standard institute (CLSI) guidelines [5]. This has effectively sounded the final death knell for the treatment algorithms of MDR-AB. Due to this scenario, it is going to be more prudent to channelize the resources in prevention of HAIs rather on its treatment. As shown in the previous studies, horizontal transfer of infection due to inadequate hospital infection control–practices has been shown to be the major cause of HAIs in NICU in developing countries, as opposed to vertical transfer in developed nations [3]. Therefore, it is a clarion call for immediate redressal by strengthening hospital infection control practices (HICPs). Unfortunately, allocating adequate resources for HICPs is a challenge and needs to be prioritized at the highest level of hospital management.

Compliance with Ethical Standards

Conflict of Interest None.

References

1. Mahich S, Angurana SK, Suthar R, Sundaram V, Munda VS, Gautam V. *Acinetobacter* sepsis among out-born neonates admitted to neonatal unit in pediatric emergency of a tertiary care hospital in

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- North India. *Indian J Pediatr*. 2020. <https://doi.org/10.1007/s12098-020-03460-3>.
2. Konca C, Tekin M, Geyik M. Susceptibility patterns of multidrug-resistant *acinetobacter baumannii*. *Indian J Pediatr*. 2020. <https://doi.org/10.1007/s12098-020-03346-4>.
 3. Wattal C, Goel N. Pediatric blood cultures and antibiotic resistance: an overview. *Indian J Pediatr*. 2020;87(2):125–31. Erratum in: *Indian J Pediatr*. 2020;87(6):486.
 4. Wattal C, Kler N, Oberoi JK, Fursule A, Kumar A, Thakur A. Neonatal sepsis: mortality and morbidity in neonatal sepsis due to multidrug-resistant (MDR) organisms: part 1. *Indian J Pediatr*. 2020;87(2):117–21. Erratum in: *Indian J Pediatr*. 2020;87(10):880.
 5. Clinical and Laboratory Standards Institute. Performance standards for antimicrobial susceptibility testing. 30th ed. Wayne: CLSI supplement M100 Clinical and Laboratory Standards Institute; 2020.

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