586. Multidrug-Resistant Organisms from Three Pediatric Inpatient Units in the Dominican Republic

David De Luna, MD, MSC1; Alfredo J. Mena Lora, MD2; Yori Roque, MD, MSc2; Michelle Lis Pérez Franchescini, MD2; Maria del Carmen Pérez, MD3 and Lizamire Cabán, BCh4; Pontificia Universidad Católica Madre y Maestra (PUCMM)/Hospital Metropolitan de Santiago (HOMS), Santiago, Santiago de los Caballeros, Dominican Republic; University of Illinois at Chicago, Chicago, Illinois; Pontificia Universidad Católica Madre y Maestra (PUCMM), Santiago, Dominican Republic

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Background. Multidrug-resistant organisms (MDRO) are a major global public health threat. Antimicrobial consumption and resistance in low- and middle-income countries (LMICs) are rising. This trend can be consequential for vulnerable populations such as children who have high rates of febrile illnesses. The aim of our study is to assess the burden of MDRO in hospitalized pediatric patients in the Dominican Republic (DR).

Methods. Retrospective review of all positive cultures in patients ages 0–17 at three tertiary referral centers in Santiago, DR. Culture-positive cases from January 2016 to December 2017 were reviewed. Repeat cultures from the same patient were excluded. Phenotypic susceptibility data were collected from automated susceptibility testing systems using WHOnet interface.

Results. A total of 1,584 cultures were reviewed, of which 1,041 (65%) were Gram-negative and 514 (32%) Gram-positive. The most common microorganisms were E. coli (23%) and S. aureus (11%). Sample were obtained from stool (26.9%), blood (23.5%), urine (16.2%), secretions (5.4%), and central line catheters (7.2%). Phenotypic resistance consistency with extended-spectrum β-lactamase (ESBL) and carbapenem-resistant Enterobacteriaceae (CRE) was found in 524 (50.3%) and 179 (17.2%) of Gram-negatives, respectively. MDRO rates by organism are in Figure 2. A total of 72 (21.0%) S. aureus isolates were methicillin resistant (MRSA) and 62 (18%) showed suspected inducible resistance to clindamycin (Figure 3).

Conclusion. Data from automated culture systems suggests a high prevalence of ESBL and CRE in this city-wide cohort from three pediatric facilities. Prospective confirmatory studies with manual susceptibility testing may help clarify the true prevalence of MDRO. Further studies are needed to understand the epidemiology and risk factors for pediatric patients colonized or infected with MDROs in LMICs and in the DR.

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587. Risk Factors for Nosocomial Methicillin-Resistant Staphylococcus aureus (MRSA) Colonization in a Neonatal Intensive Care Unit (NICU): A Case–Control Study

Archana Balamohan, MD; Joanna Beachy, MD PhD1; Nina Kohn, MBA, MA2 and Lorry G. Rubin, MD3; 1Cohen Children’s Medical Center of New York, Northwell Health, Glen Oaks, New York; 2Cohen Children’s Medical Center, New Hyde Park, New York; Feinstein Institute for Medical Research, Northwell Health, Manhasset, New York; 3Cohen Children’s Medical Center of NY, New Hyde Park, New York

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Background. Staphylococcus aureus (SA) is a leading cause of nosocomial infections. Colonization is a prerequisite for most SA infections. Previously recognized risk factors for colonization include the length of stay (LOS), multiple gestation, low birth weight, Caesarean delivery and multibed location. The objective of this study was to determine risk factors for MRSA colonization in a Level IV NICU independent of LOS and gestational age (GA) in the context of a circulating MRSA clone.

Methods. Weekly MRSA colonization cultures were performed from April 2017 through March 2018. Case–control study. Cases: Infants with newly acquired MRSA colonization and at least one previous negative culture. Controls: Infants with negative surveillance cultures, matched 1:1 with cases by GA and LOS. Factors compared: (a) neonatal demographics; (b) maternal factors; (c) neonatal factors since admission including antimicrobial therapy; (d) neonatal factors during the week prior to MRSA acquisition, including bed location, number of location changes, presence of central line, respiratory support, NICU census, ATP surface bioburden testing pass rate, MRSA colonization pressure.

Results. 50 case infants were matched with controls. Forty-five of the 50 isolates were mucopein-resistant and related by pulse-field gel electrophoresis. On matched univariate analysis, the following were significantly associated with a risk for MRSA acquisition: (a) Newborn Bed location in acute area (P = 0.003). (2) Presence of any level of respiratory support during the week prior to MRSA detection (P = 0.04). (3) Higher ATP pass rate during the week of and week prior (P = 0.01). (4) Higher MRSA colonization pressure during the prior week (P = 0.002). (5) Not having a hearing test during the time between the previous negative culture and MRSA acquisition (P = 0.01). A multivariable conditional logistic regression model (that excluded ATP pass rate) found that only colonization pressure was associated with acquisition of MRSA colonization.

Conclusion. Independent of LOS and GA, MRSA colonization pressure, ATP pass rate and higher patient acuity, reflected by location within the acute area and requiring respiratory support, are significantly associated with MRSA acquisition in the NICU; only colonization pressure remained associated in a multivariable model.

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588. Are Poplethial Vein PICCs safe for Neonates?

Harold J. Lochner, MD1 and Mobeen H. Rathore, MD2; 1University of Florida Jacksonville, Jacksonville, Florida; 2University of Florida, Jacksonville, Florida

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Background. Peripherally inserted central catheters (PICCs) have been used as an alternative to central venous catheters ever since first described in 1975. Concerns were voiced at our institution about safety of peripheral vein PICCs (P-PICCs) in neonates. There are no published data on the use of P-PICCs in neonates.

Methods. Retrospective review of records of all neonates admitted to an urban Neonatal Level III NICU (P-PICCs) between January 1, 2017 and December 31, 2018 who had PICCs placed. Records were reviewed for demographic data, number of days with PICC (dwell time), and complications. Complications included infectious such as bacteremia, insertion site infection; and mechanical such as occlusion, leakage, infiltration/edema, inadvertent dislodging, tip malposition, and catheter breakage. Chi-square (C), non-paired independent-samples t test (T), or Mann–Whitney U test (MW) was used for statistical analysis. IRB approval was obtained from University of Florida (teaching institution) and Baptist Health (patient location).

Results. 830 PICCs inserted in 522 neonates were identified. 100 (12.0%) were P-PICCs and 730 (88.0%) were NP-PICCs. Of the NP-PICCs, 700/730 (95.8%) were 3F and 30/730 (4.2%) were 4F PICCs. There were 830 PICCs inserted in 522 neonates. 100 (12.0%) were P-PICCs and 730 (88.0%) were NP-PICCs. Of the NP-PICCs, 700/730 (95.8%) were 3F and 30/730 (4.2%) were 4F PICCs. There were 830 PICCs inserted in 522 neonates. There were no published data on the use of P-PICCs in neonates.

Conclusion. Independent of LOS and GA, MRSA colonization pressure, ATP pass rate and higher patient acuity, reflected by location within the acute area and requiring respiratory support, are significantly associated with MRSA acquisition in the NICU; only colonization pressure remained associated in a multivariable model.

Disclosures. All authors: No reported disclosures.