Session: 159. Pediatric Bacterial Diseases: Diagnosis and Management
Friday, October 4, 2019: 12:15 PM

Background. Daptomycin (DAP) is lipopeptide that frequently is used to treat infections caused by Staphylococcus aureus in adult patients. There are limited data on the efficacy of daptomycin in pediatric patients for the treatment of osteomyelitis caused by S. aureus. This study’s objective is to describe pharmacodynamic (PD) target attainment of daptomycin in pediatric patients with osteomyelitis.

Methods. Pharmacodynamic (PD) target attainment was determined using Monte Carlo simulation. A single-dose regimen was administered to patients. PD target attainment with daptomycin was calculated with the PSIM software.

Results. Among 23 patients treated with DAP for a total of 25 cases of osteomyelitis, 21 patients (87.0%) were included for analysis. Of the 21 evaluable patients, 20 (95.2%) had >50% of the peak drug concentration (Cmax) and area under the curve (AUC) ratios above 2:1, 3 (14.3%) had <2:1, and 8 (38.1%) had < Cmax: AUC. The overall PD target attainment in percentages is listed in Table 1 below in Tables 1 and 2 and are separated by age groups of patients.

Conclusion. The studied DAP doses did not reach any PD target attainment at the CLSI breakpoint of 1 mg/L. Based on these data, DAP should not be empirically used to treat SA osteomyelitis unless the exact MIC is known. Furthermore, modern pediatric pharmacokinetic studies of DAP for pediatric osteomyelitis are warranted.

Disclosures. All authors: No reported disclosures.

1508. Carbapenem vs. Non-carbapenem as Empiric Regimens for Bacteremia Caused by ESBL Producing Escherichia coli and Klebsiella pneumoniae in Children: Preliminary Study
Saera Park, Bachelor’s Degree; Jina Lee, Doctor’s Degree, PhD; Asan Medical Center, Seoul, Seoul-t’ukpyolsi, Republic of Korea
Session: 159. Pediatric Bacterial Diseases: Diagnosis and Management
Friday, October 4, 2019: 12:15 PM

Background. The clinical efficacy of non-carbapenem for the treatment of extended-spectrum β-lactamase (ESBL) bacteremia in children with underlying comorbidities is controversial. We aimed to compare clinical and microbiological outcomes between pediatric patients receiving carbapenem and non-carbapenem as empiric regimens for bacteremia caused by ESBL producing E. coli and K. pneumoniae. We selected patients who had empiric therapy with a carbapenem to those who had empirical therapy with a non-carbapenem.

Methods. Pediatric patients aged <19 years who hospitalized between January 2014 to Jun. 2018 at Asan medical center with monomicrobial ESBL producing E. coli and K. pneumoniae bacteremia were included. Patients were excluded if they did not receive a carbapenem after ESBL production was identified. We compared outcomes between patients who had empiric therapy with a carbapenem to those who had empirical therapy with a non-carbapenem.

Results. RD and C. pneumoniae bacteremia, 46 (28.6%) fulfilled the criteria, of which 25 (54.3%) were caused by E. coli and 21 (45.7%) by K. pneumoniae. The most common underlying diseases were hematopoietic malignancies (47.8%) and prematurity (23.9%). The main sources of bacteremia were vascular catheter (37.0%) and necrotizing enterocolitis (10.9%). 25 cases were treated with empiric carbapenem, and the remaining 21 cases with non-carbapenem agents. The all-cause 30-day fatality in the carbapenem group was 32% (8/25) and 5% (1/21) in the non-carbapenem group (P < 0.001). Microbiological cure rate at 3 days after the first culture positive day was 33% in the carbapenem group and 89% in the non-carbapenem group (P = 0.046). However, adjusting initial presentation with septic shock, the choice of initial empiric antibiotic was not a risk factor for the 30-day fatality and microbiological cure rate at 3 days (aHR 4.82, 95% CI 0.59–39.231; aHR 0.648, 95% CI 0.333–1.259, respectively).

Conclusion. For the medically fragile pediatric patients with bacteremia caused by ESBL producing E. coli and K. pneumoniae, the impact of empiric antibiotics on clinical and microbiological outcomes was not significant if early transition to definitive carbapenem regimen is possible when susceptibility is proven. A large-scale multicenter study will be needed to select the most appropriate empiric antibiotics and minimize the spread of antibiotics resistance.

Disclosures. All authors: No reported disclosures.

1509. Outcomes of Empirical Antimicrobial Therapy for Pediatric Community-Onset Febrile Urinary Tract Infection in the Era of Increasing Antimicrobial Resistance.
Worawit Kantamalee, MD; Chonnamate Techasaensiri, MD; Nopporin Apiwattanakul, MD, PhD; Sophida Boonathorn, MD, MSc; Pawaree Sansawat, MD; Pitak Santanirand, PhD; Ramathibodi Hospital, Mahidol University, Ratchathewi, Krung Thep, Thailand
Session: 159. Pediatric Bacterial Diseases: Diagnosis and Management
Friday, October 4, 2019: 12:15 PM

Background. Urinary tract infection (UTI) is a common cause of fever in children. Since infections caused by extended-spectrum β-lactamase (ESBL)-producing organism in the community have increased, alternative empirical antimicrobials to current regimen have been studied. We conducted this study to compare clinical outcomes between group receiving empirical antimicrobials to which organisms were susceptible vs. non-susceptible in community-onset UTI.

Methods. We conducted a retrospective cohort study of pediatric patients with first-time community-onset febrile UTI caused by Escherichia coli, Klebsiella pneumoniae and Proteus spp. at Ramathibodi Hospital from 2011 to 2017. Patients were classified into group receiving empirical antimicrobials to which organisms were susceptible and non-susceptible. Medical records were reviewed to assess clinical outcomes in both groups.

Results. One hundred and fifty-one eligible patients were enrolled in this study. The most common causative organism was E. coli (86.96 and 96.2% in the group receiving susceptible and non-susceptible antimicrobials, respectively). Among causative organisms, 19.8% were ESBL-producing organisms. Ceftiraxone was used in 76.8% of our patients. There was no significant difference in clinical, microbiological, relapse, time to defervescence between two groups of patients. None of patients in both groups developed sepsis after receiving empirical therapy. However, length of stay was significantly longer in group receiving antimicrobials to which organisms were non-susceptible (5.13 ± 3.187 vs. 8.54 ± 5.186; P < 0.001).

Conclusion. This study found no significant difference in the treatment outcomes between pediatric patients receiving antimicrobials to which organisms were susceptible and non-susceptible for the treatment of UTI. In the era of increasing antimicrobial resistance, third-generation cephalosporins are still a good choice as an empirical antimicrobial for children with community-onset UTI.

Disclosures. All authors: No reported disclosures.

1510. Improving the Management of Pediatric Complicated Pneumonia
Andrew M. Nuipe, MD, MSCi; Van Tran, PharmD, BCPPS; Bekah E. Leverson, MD; Paul Swiacki, MD, MPA; Richarde F. Williams, MD, FACP; Rachel S. Hamdy, MD, MPH, MSCE; Inova Children’s Hospital, Falls Church, Virginia
Session: 159. Pediatric Bacterial Diseases: Diagnosis and Management
Friday, October 4, 2019: 12:15 PM

Background. Pneumonia is a leading cause of pediatric hospitalization in the United States. Our Antimicrobial Stewardship Program (ASP) recognized significant variation in the management of pediatric complicated pneumonia. We developed and implemented a quality improvement (QI) intervention to align the management of complicated pneumonia with national guidelines and compared the medical care and clinical outcomes between a pre-intervention period and two post-intervention periods.

Methods. We queried Webi Universe for all ICD-9 and ICD-10-related admissions for pneumonia at our facility from November 15, 2015 to February 28, 2019. Manual chart review was done to extract clinical points of interest and to ensure that all included patients met inclusion criteria. Our first intervention (period 1) consisted of education to providers to increase use of chest tubes instilled with fibrinolics and to decrease empiric antistaphylococcal therapy. Our second intervention (period 2) consisted of a care process model which codified the standardized management made by the first intervention, followed by several didactic sessions.

Results. 29 patients were identified in the pre-intervention period, 11 in post-intervention period 1, and 27 in post-intervention period 2. Streptococcal species were the most common pathogens recovered in all periods. Following our interventions the number of video-assisted thorascopic procedures to drain complicated parapneumonic effusions decreased three-fold in favor of chest tubes instilled with fibrinolics (P < 0.01). Our interventions also reduced empiric antistaphylococcal therapy within the first 48 hours of admission (P = 0.002) and decreased the use of empiric van, cefepime, ceftriaxon in three-fold (P = 0.01). Our interventions did not affect the median length of stay, frequency of pulmonary complications, number of 30-day readmissions, or duration of antimicrobial therapy. Our ASP’s QI intervention decreased surgical drainage of complicated parapneumonic effusions and decreased the use of empiric antistaphylococcal agents without an increase in complications or readmissions. Opportunities remain to decrease the use of multiple antimicrobial agents within the first 48 hours of admission and to decrease the empirical use of antistaphylococcal therapy.

Disclosures. All authors: No reported disclosures.

1511. Effect of Discharge Antibiotic Route on Clinical Outcomes in Children with Methicillin-Resistant Staphylococcus aureus (MRSA) Osteomyelitis with Bacteremia
Jared Olson, PharmD1; Rana F. Hanydi, MD, MPH, MSCE2; Alice J. Hsu, PharmD3; Pranita Tammam, MD, MHS3; Pranita Tammam, MD, MHS4; Jeffrey Gerber, MD, PhD5; Daniele Dona, MD, PhD; Adam Hersh, MD, PhD; University of Utah School of Medicine, Salt Lake City, Utah; Children’s National Medical Center, Washington, DC; The Johns Hopkins Hospital, Baltimore, Maryland; Children’s Hospital of
Children with osteomyelitis transitioned to oral step-down therapy experience similar outcomes to those treated with outpatient parenteral antibiotic therapy (OPAT). Compared with OPAT, oral therapy has lower costs and avoids catheter complications. However, few studies have specifically compared patient outcomes between those receiving oral therapy vs. OPAT for osteomyelitis with associated bacteremia caused by MRSA.

Methods. We performed a retrospective cohort study comparing early oral therapy (EOT), defined as transition to oral therapy at or prior to discharge vs. use of OPAT at discharge. We identified hospitalized children <19 years of age with MRSA osteomyelitis with bacteremia between 2007 and 2014 from three children’s hospitals. The primary outcome was treatment failure within 6 months of discharge, defined as unplanned change in antibiotic after discharge, development of chronic osteomyelitis, need for an operative procedure after discharge, or recrudescence of bacteremia. The secondary outcome was treatment-related events, defined as documented adverse drug events in the medical record and/or central venous catheter complications. Between-group comparisons were made using Fisher exact test for binomial distributions and the Wilcoxon rank-sum test for continuous variables.

Results. We included 61 patients with MRSA osteomyelitis with bacteremia. Twenty-five patients (41%) received EOT and 36 (59%) received OPAT. Duration of bacteremia and hospital length of stay was similar between groups (Table 1). Clindamycin was the most commonly used antibiotic in both the EOT (24/25, 96%) and OPAT (23/36, 61%) groups. Clinical failure occurred in 1/25 (4%) children receiving EOT and in 5/36 (14%) in the OPAT group (95% CI of difference: −29 to 6%; P = 0.38, Table 1). Treatment-related adverse events occurred in 1/25 (4%) children receiving EOT compared with 9/36 (25%) receiving OPAT (95% CI of difference: −29 to −7%; P = 0.04, Table 1).

Conclusion. Children receiving EOT for MRSA osteomyelitis with bacteremia did not experience higher rates of clinical failure and had fewer treatment-related complications compared with OPAT. Oral step-down therapy can be considered for children with MRSA osteomyelitis with bacteremia.