Evaluation of Post-Operative Acute Kidney Injury with Piperacillin-Tazobactam Combined with Vancomycin for Lung Transplant Prophylaxis

Natalia N. Pettig, PharmD; Cynthia T. Nguyen, PharmD;
Lisa Potter, PharmD; Jennifer Pisano, MD; University of Chicago Medicine, Chicago, Illinois

Session: 273. Transplant ID: Bacterial Infections
Saturday, October 5, 2019: 12:15 PM

Background: Several studies have identified that the addition of vancomycin (Van) to piperacillin-tazobactam (PT) is associated with a higher incidence of nephrotoxicity when compared with other antibiotic regimens. Beginning in June 2017, our lung transplant antibiotic prophylaxis regimen was modified from PT monotherapy to Van and PT.

Methods: All adult lung transplant patients between January 1, 2015 and November 10, 2018 were included. Patients were excluded if acute kidney injury (AKI) was present prior to transplant. Rates of AKI within 7 days of transplant were compared between those who received prophylaxis with PT and Van vs. those receiving alternative regimens (AR). Patients receiving less than 1 dose of Van or less than 3 doses PT (less than 24 hours) were deemed to be in the alternative regimen group. AKI was defined as either an increase in serum creatinine (SCr) by ≥ 26.7 μmol/L or increase in SCr to ≥ 21.5 times baseline (within 7 days post-transplant). Secondary outcomes included duration of initial prophylactic antibiotic regimens, hospital length of stay (LOS), and all-cause inpatient mortality.

Results: Eighty-six patients were included, 44 (51%) patients received PT/Van. Baseline characteristics and results are shown in Table 1. Of those receiving PT/Van for prophylaxis, 24 (54%) developed AKI within 7 days of transplant while 15 (36%) of 42 patients receiving AR developed AKI (P = 0.08).

Conclusion: A larger proportion of patients that received PT/Van for transplant antibiotic prophylaxis experienced AKI within 7 days. Although the difference did not reach statistical significance, a 19% higher incidence of AKI warrants need for further investigation.

Table 1: Baseline characteristics and results

| Characteristic                  | PT/Van (N=44) | AR (N=42) | P-value |
|--------------------------------|---------------|-----------|---------|
| Age, mean years                | 53            | 54        | 0.42    |
| Male, %                        | 27 (63)       | 14 (33)   | 0.52    |
| Underlying lung disease, %     | 10 (23)       | 12 (29)   | 0.8     |
| COPD                           |               |           |         |
| CF                             | 10 (23)       | 10 (24)   | 1.0     |
| Other or combination           | 1 (2.3)       | 9 (20.9)  | 0.45    |
| Induction agent, %             | 42 (95)       | 45 (105)  |         |
| Other or combination           |               |           |         |
| Transplant level ≥15          | 24 (54)       | 25 (59)   | 0.82    |
| Transplant vs. CCI             | 7             | 7         | 0.69    |
| Duration of antibiotics, mean days | 7             | 7         |         |
| Initial regimen Van only       | 7             | 7         |         |
| AKI, %                         | 24 (54)       | 25 (59)   | 0.82    |
| Patients with AKI that required HD or CCI within 7 days | 24 (54) | 25 (59) | 0.82 |
| LOS, mean days                 | 31.2          | 32.5      | 0.65    |
| All-cause inpatient mortality  | 6 (13.6)      | 7 (16.6)  | 0.72    |
| Mortality only                 | 3 (6.8)       | 4 (9.5)   | 0.69    |

Disclosures. All authors: No reported disclosures.

2670. Clostridiods difficile Infection (CDI) in Solid-Organ Transplant Patients: Nationwide Inpatient Sample 2015–2016

Rattanaporn Mahatanadan, MD, Tangphong Chairopornpong, MD; Harvard T.H. Chan School of Public Health, Skowhegan, Maine

Session: 274. Transplant ID: C. diff
Saturday, October 5, 2019: 12:15 PM

Background: Clostridium difficile infection (CDI) is a leading cause of morbidity and mortality in a hospitalized patient. The incidence and severity of nosocomial CDI have increased significantly since the year 2000. Solid-organ transplant recipients (SOT) are at high risk for CDI for multiple reasons including impaired defense mechanisms from immunosuppression, perioperative antibiotic use, and organ failure. For the past decade, there has been the advance modality of diagnosis and treatments for CDI including early detection of toxin, novel antibiotics, and fecal microbiota transplantation. With the innovative measures and the effort of antibiotic stewardship, the current study show improved mortality in hospitalized CDI; however, there is still lack of sufficient evidence among SOT patients. Therefore, it would be beneficial to scrutinize the prevalence and outcomes of CDI among SOTs with the most current available nationwide database.

Methods: Our study utilized the 2015 and 2016 National Inpatient Sample (NIS). It is the largest publicly available all-payer inpatient healthcare database in the United States, yielding national estimates of hospital inpatient stays. Patients with history or undergoing SOT transplant procedure who were hospitalized in 2015 and 2016 NIS database were included in our study. We included heart, liver, lung, intestinal, kidney, or at least one of these organs transplanted in our definition of SOT. History of organ transplants and CDI were extracted by using ICD-9-CM and ICD-10-CM from discharged diagnosis. Baseline characteristic include age, gender, race, median household income, comorbidities which were calculated into charlson comorbidity index (CCI) and discharge diagnosis of pneumonia and urinary tract infection. Primary outcomes include in-patient mortality, hospital length of stay and total hospital charges. Secondary outcomes include transplant failure or rejection, colectomy and disposition of patients. Multivariable logistic regression was used for the adjusted analysis of the primary and secondary outcomes include all confounders and significant covariates.

Results: A total of 107,461 discharges of SOTs in 2015–2016 NIS database were included in our study. The mean age was 53 years (SD 17) and 45,666 (42%) were female. History of kidney transplant was found to be the most common (55%) and followed by heart (20%) and lung (11%) transplant recipients (CTR). The incidence of CDI was 3,626,337% among SOTs. Factors associated with CDI include age (4% increasing of odds for 10-year increment in age), female (OR 1.2; 95% CI 1.1-1.34), history of heart transplant (OR 1.28; 95% CI 1.1-1.48), kidney transplant (OR 0.98; 95% CI 0.82-0.97), UTI (OR 1.65; 95% CI 1.5-1.81) and pneumonia (OR 1.24; 95% CI 1.12-1.38). CDI associated with higher inpatient mortality (OR 1.85, 95% CI 1.56-2.20, P < 0.01), longer length of hospital stay (mean difference 5.07 days, 95% CI 4.43-5.71, P < 0.01) and higher total hospital charges (mean difference 43,958 dollars, P < 0.01). Furthermore, SOTs with CDI had higher risk of transplant complications (OR 1.67, 95% CI 1.50-1.87, P < 0.001) and increase risk of colectomy (OR 2.36, 95% CI 1.50-3.72). Those who had CDI were less likely to be discharged home when compared to non-CDI (OR 0.53, 95% CI 0.49-0.58, P < 0.01).

Conclusion: Our study found that CDI associated with significant overall worse outcomes among hospitalized solid-organ transplant patients. Multicenter prospective study is considered as a future direction to evaluate the impact to healthcare. Despite the improvement of overall mortality of CDI in general population in the United States from prior study, CDI in SOTs remains problematic. More attention is needed in this particular field.
Disclosures. All authors: No reported disclosures.

2672. Clostridioides difficile Infection Among Bone Marrow Transplant Recipients: Findings From a Single Institution
Christine Thomas, DO1; Patrick Hagen, MD2; Elizabeth Henry, MD2; Cara J. Joyce, PhD, MS2; Stephanie Berg, DO2; Loyola University Medical Center, Maywood, Illinois; Loyola University Chicago, Maywood, Illinois
Session: 274. Transplant ID: C. diff
Saturday, October 5, 2019: 12:15 PM

Background: Clostridioides difficile infection (CDI) is increasingly common among hematopoietic stem cell transplantation (HSCT) recipients and efforts to define CDI risk have shown variable results. The primary objective of this study was to further characterize CDI incidence and risk factors in HSCT recipients.

Methods: All allogeneic and autologous HSCT recipients at Loyola University Chicago between January 2011 and May 2017 were retrospectively reviewed for development of CDI within 6 months prior to 2 years following HSCT. Collected data include comorbid conditions, statin or proton pump inhibitor (PPI), and antimicrobial use. HSCT baseline information was also obtained and include underlying malignancy, prior chemotherapy, graft type, conditioning regimen consisting of total body irradiation (TBI) use, and donor source (matched related or unrelated and umbilical cord blood). Among those with diagnosed CDI data pertaining to CDI severity, treatment, and recurrence was collected. Logistic regression analyses were performed to estimate odds ratios for factors associated with development of CDI.

Results: Six hundred eighty-nine patients met our inclusion criteria. Of these, 367 (53%) underwent autologous HSCT and 322 (47%) allogeneic HSCT. Among all patients, 132 (19.1%) had CDI of which 26 (19.7%) had recurrence within 60 days. In univariable analysis, any type of leukemia was associated with increased odds of CDI compared with lymphoma (OR = 2.44, 95% CI: 1.49–4.00, P < 0.01) as was allogeneic HSCT compared with autologous (OR = 2.51, 95% CI: 1.63–3.88, P < 0.01 for matched and OR = 3.96, 95% CI: 2.31–6.79, P < 0.01 for cord blood) and use of TBI (OR = 1.63, 95% CI: 1.10–2.40, P < 0.05). Exposure to any cephalosporin or intravenous vancomycin within 100 days of HSCT was associated with CDI (OR = 1.55, 95% CI: 1.03–2.32, P < 0.05 and OR = 1.75, 95% CI: 1.19–2.58, P < 0.01 respectively). No significant differences in the odds of developing CDI were identified by patient comorbidities, statin or PPI use.

Conclusion: In our population there was a 19% incidence of CDI. Underlying leukemia, TBI exposure, and allogeneic HSCT appear to be risk factors for CDI and further research is needed to evaluate whether exposure to cephalosporin or vancomycin may be modifiable risk factors.