2669. Evaluation of Post-Operative Acute Kidney Injury with Piperacillin–Tazobactam Combined with Vancomycin for Lung Transplant Prophylaxis

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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 vancomycin or less than 3 doses PT (less than 24hours) were deemed to be in the alternative regimen group. AKI was defined as either an increase in serum creatinine (SCr) by ≥0.3 mg/dL within 48 hours or increase in SCr to ≥1.5 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 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.

Table1: Baseline characteristics and results

	PT/VAN (N=44)	AR (N=42)	P-value
Age, mean years	58	55	0.42
Male, n (%)	27 (61)	23 (55)	0.52
Underlying lung disease, n (%)			
IPF	10 (23)	11 (26)	0.8
ILD	14 (32)	6 (14)	0.07
COPD	10 (23)	10 (24)	1.0
CF	1 (2.3)	4 (9.5)	0.2
Other or combination	9 (20)	12 (29)	0.46
Induction agent, n (%)			
Simulect	42 (95)	37 (88)	0.16
Thymoglobulin	2 (4.5)	6 (14)	0.16
Tacrolimus level >15 within 7d post-transplant, n (%)	4 (9)	4 (9.5)	1.0
Duration of antibiotics, mean days			
Initial regimen	7.1	8	0.82
Vancomycin only	7	7.2	0.61
AKI, n (%)	24 (54)	15 (36)	0.08
Patients with AKI that required HD or CVVHD within 7 days post-transplant, n (%)	2 (4.5)	6 (14)	0.16
LOS, mean days	31.2	32.5	0.8
All Cause Inpatient Mortality, n (%)	6 (13.6)	3 (7)	0.5

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2670. *Clostridioides difficile* Infection (CDI) in Solid-Organ (SOT) and Hematopoietic Stem Cell Transplant (HCT) Recipients: A Prospective Multinational Study

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Background: CDI is an important cause of morbidity and mortality in SOT and HCT patients (pts). In retrospective single-center analyses, severe disease and relapse were common. We undertook a multicenter prospective observational study to evaluate outcomes of CDI among both SOT and HCT patients.

Methods: Adults with a first episode of CDI, defined as 3 liquid stools/24 h with the detection of *C. difficile* toxin in stool, within the first 2 years of SOT or HCT were recruited from 12 centers internationally in the INSIGHT network. At enrollment, demographics, comorbidities, medication histories and outcomes were collected prospectively over 90 days to assess clinical cure, recurrences and complications and to define baseline risk factors for clinical cure and recurrent CDI.

Results: 132 patients (81 SOT, 51 HCT (32 allogeneic)) were enrolled: median age 56 years, 62.1% were males, 97% were hospitalized. 80.3% were diagnosed by DNA assay. CDI occurred a median of 20 days post transplant (IQR: 6–133). 108 patients were on PPIs. 98.5% were on antibiotics before CDI. 1st line treatment regimen was oral vancomycin in 66 patients (40 SOT, 26 HCT), metronidazole in 48 patients (27 SOT, 21 HCT), both drugs in 14 (10 SOT, 4 HCT), fidaxomicin (3) and linezolid (1). Rejection within 60 days before CDI was uncommon (6.2% SOT) as was GVHD (27.5%). 110 patients (83%, 95% CI: 46–89)) (65 SOT, 45 HCT) had clinical cure; 18% (95% CI: 11–27) had recurrent CDI, 2 were admitted to the ICU due to CDI, 11 (8.3%) died (2 HCT related to CDI). Among baselines variables, only first-line regimen was associated with a higher rate of clinical cure ($P = 0.003$), most notably for SOT. Factors that did not have a statistically significant negative impact on clinical cure included sex, age > 60, race, country, transplant type, steroids, diabetes, CMV viremia/disease, WBC > 15,000, creatinine > 1.5 mg/dL, or specific antibiotic given prior to CDI. Higher recurrence rates were associated with metronidazole-only regimen (OR: 4.6, 95% CI: 1.6–12.8; $P = 0.004$) and a history of CMV after transplant (OR: 5.2, 95% CI: 1.7–15.7; $P = 0.003$).

Conclusion: Despite their immunosuppressed state, recurrence, ICU admission and mortality occurred in a minority of SOT and HCT with CDI. Initial use of metronidazole and CMV viremia/disease were associated with higher recurrence rates.

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2671. Outcomes of Clostridium difficile Infection in Solid-Organ Transplant Patients: Nationwide Inpatient Sample 2015–2016

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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 measurements and the effort of antibiotic stewardship, the recent study show improvement of mortality in hospitalized CDI; however, there is still lack of such 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, lung, liver, intestinal, kidney, pancreas, or at least one of these organs transplanted in our definiton of SOT. History of organ tranplants 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 were collected. Confounding includes 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. All reported CIs were two-sided 95% intervals, and tests were done at the two-sided 5% significance level. Stata v14.2 (Stata Corp, College Station, Texas) was utilized for all analyses.

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 history of liver tranplants was the second most common (19%) among our population. The incidence of CDI was 3,626 (3.37%) among SOTs. Factors associated with CDI include age (4% increasing of odds for 10-year increment in age), female (OR 1.2; 95% CI 1.16–1.34), history of heart transplant (OR 1.28; 95% CI 1.11–1.48), kidney transplant (OR 0.98; 95% CI 0.82–0.97), UTI (OR 1.65; 95% CI 1.50–1.81) and pneumonia (OR 1.24;; 95% CI 1.122- 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 complication (OR1.67, 95% CI 1.50–1.87, $P < 001$) 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 compare 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.