

2400. Are Multiple Clostridioides difficile Infections in Pediatric Oncology Patients Related to Recurrence of the Same Isolate or Re-infections with Different isolates?

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Background. Pediatric oncology and hematopoietic stem cell transplant patients (POTP) are at increased risk for *Clostridioides difficile* infection (CDI) and recurrence. It is unknown whether recurrent CDI is related to the same *C. difficile* strain as the initial CDI. We describe genomic relatedness of *C. difficile* strains in patients with multiple CDI using whole-genome sequencing (WGS).

Methods. This was a retrospective cohort study of CDI in POTP in 2016. CDI cases were identified by electronic medical record search for positive *C. difficile* toxin PCR tests. Patients with multiple CDI episodes were identified. CDI episodes were classified as incident, duplicate or recurrent using National Healthcare Safety Network (NHSN) definitions. Retrieved residual stool specimens were cultured anaerobically, toxin-producing *C. difficile* isolates were determined using a cell culture cytotoxicity assay with neutralization and WGS was performed followed by core genome MLST (cgMLST). Variability of the isolates was summarized by strain type (ST), and a minimum spanning tree was constructed, defining genomically related isolates as those with <7 allele difference.

Results. Eighteen patients had 51 positive *C. difficile* samples. CDI were classified as incident in 31 (61%) episodes, recurrent in 18 (36%), and duplicate in 2 (3%). Isolates from 47 (92%) samples were sequenced, identifying 14 different strain types (ST) in 41 (87%) isolates. Of the 31 incident CDI, 13 (42%) episodes occurred 8 weeks or more after the initial incident CDI. Among those 13 incident CDI, 7 (54%) had prior CDI due to a related isolate. Of the 18 recurrent CDIs, 10 (55%) were due to an isolate related to the previous incident CDI and 5 (28%) were due to an isolate unrelated to the incident CDI. The relatedness of the remaining 3 recurrent episodes could not be evaluated because no isolate was available for sequence analysis.

Conclusion. CDI classification of incident vs. recurrent infection using NHSN definition might be not applicable in POTP. WGS showed that more than half of CDI episodes classified as incident were actually a recurrence of a previous *C. difficile* strain. Similarly, some CDI episodes classified as recurrent were actually re-infection with a different strain.

Disclosures: Randall Hayden, MD, Abbott Molecular: Advisory Board; Quidel: Advisory Board; Roche Diagnostics: Advisory Board

2401. Epidemiology of Clostridium difficile Infection in Intestinal and Multivisceral Transplant Patients at a Single Transplant Center

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Background. *Clostridium difficile* infection (CDI) is the leading cause of infectious diarrhea in the healthcare setting. Solid-organ transplant (SOT) recipients are at increased risk compared with the general hospitalized population (7.4–20% vs. 0.9%). Our center recently expanded its intestinal and multivisceral transplant (IMVT) program, providing the opportunity to examine the epidemiology of CDI in this vulnerable population.

Methods. We conducted a retrospective study of all IMVT recipients between 2009 and 2018. CDI was defined as presence of diarrhea with a positive polymerase chain reaction (PCR) test for the toxin B gene. Early CDI constituted an episode of CDI within the first 6 months post-transplant. Data were collected on demographics, transplant characteristics, CDI episode, and outcomes.

Results. We identified 86 patients who underwent a total of 94 transplants: 60 (64%) isolated intestinal transplants, 21 (22%) intestine/liver/pancreas, 10 (11%) intestine/pancreas, two (2%) intestine/liver/pancreas/kidney, and one (1%) intestine/kidney transplant. All but three patients received perioperative metronidazole. Four patients (5%) had CDI prior to transplant, but none of them recurred in the first 6 months post-transplant. Five patients developed a total of seven mild-moderate episodes of early CDI (attack rate = 5.9%). Three patients (60%) with early CDI developed rejection, similar to the incidence (70%) in patients without CDI. Two patients with early CDI developed recurrence; both underwent intestinal re-transplantation. One-year mortality was similar among patients with and without early CDI (20% vs. 23%).

Conclusion. CDI is associated with allograft loss, rejection, and mortality in some SOT recipients. Although limited by sample size, we observed that early CDI was not associated with those outcomes in our population. Multicenter studies are merited to explore risk factors for CDI and associations with outcomes in IMVT.

Table 1. Stakeholders in daily conference calls related to ongoing contact investigation.

Stakeholders
Administrative Leadership
Adult Infectious Disease Staff
Pediatric Infectious Disease Staff
Occupational Health Representatives
Infection Control Nurses
Hospital Epidemiologist
Risk Management Representatives
Ombudsmen
Corporate Communications Representatives

Table 2. Rings of Exposure: Results of contact investigation for HCW with untreated LTBI at our institution.

HCW: Healthcare Worker; LTBI: Latent Tuberculosis Infection; PICU: Pediatric Intensive Care Unit

Ring of Exposure	Individuals Included	Number of Individuals
I	HCW's immediate family (husband)	1
Ia	PICU children directly cared for by HCW	13
Ib	PICU children on whom HCW charted	20
Ic	All other PICU children admitted during exposure period	230
III	PICU Visitors	
IV	PICU HCWs	

Table 3. Exposed children deemed "high-risk" and selected to receive prophylactic isoniazid.

PICU: Pediatric Intensive Care Unit; HCW: Healthcare Worker

Category
All children directly cared for by the HCW
All children admitted to the PICU under the age of 5 years
All children admitted to the PICU post-transplantation
All visitors to the PICU under the age of 5 years

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2402. Clinical Outcomes Associated with an Emerging Clostridioides difficile Ribotype 255 in Texas

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Background. PCR ribotyping of *Clostridioides difficile* strains is commonly used to describe the epidemiology of *C. difficile* infection (CDI). Certain ribotypes (RT) have been associated with more severe disease and clinical outcomes, such as RT 027, while others are considered less virulent, such as RT 014-020. Texas statewide surveillance identified the emergence of a rarely-described RT 255 beginning in 2015, which now represents the fifth most common ribotype across the state. Here we describe clinical outcomes associated with an emergent RT 255 in Texas.

Methods. A retrospective cohort study was conducted including patients from two tertiary care centers in Houston, Texas. Patients infected with *C. difficile* strains of either RT 255, 014-020, or 027 between 2016–18 were included. The primary outcome was disease severity as classified by the 2017 IDSA guidelines. Multivariable logistic regression analysis was done to control for other patient factors. Results were significant at $P < 0.05$, and all statistical analyses were completed using SPSS, version 25.

Results. A total of 150 patients were included (50 patients infected with each RT). Overall, 53% of the patients had severe or fulminant disease most commonly due to RT 027 (80%) followed by RT 014-020 (40%) and RT 255 (38%). Patients infected with RT 255 or 014-020 had a 75% relative reduction in the odds of severe disease compared with RT 027 after controlling for patient age and serum albumin level (OR, 0.25; 95% CI, 0.86–0.74; $P = 0.12$). No differences were seen in the rates of 30- or 90-day recurrence between RTs.

Conclusion. Although RT 255 is becoming increasingly common across Texas, it does not appear to be associated with more severe disease when compared with other common ribotypes. Further studies are warranted to determine contributing factors for its increasing prevalence.

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2403. Clostridium difficile ribotypes and human microbiota differ in Taiwan and the United States with respect to diarrheal patients

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