1124. Effects of Co-infection on the Severity, Response to Treatment and Duration of Hospital Stay in Patients with Clostridium difficile Infection
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Background. According to the multicenter evaluation of the FilmArray® multi-plex gastrointestinal (GI) panel for etiologic diagnosis of infectious gastroenteritis, the GI panel detected at least one potential pathogen in 53.5% of the stool specimens that were collected. Out of the positive samples, 31.5% tested positive for more than one potential pathogen. The samples that were co-infected showed that Clostridium difficile infection (CDI) was present in 53.4% of them. This lead to the idea of our project to determine whether the presence of another GI infection affects CDI outcomes in terms of severity, treatment escalation, duration of hospital stay and recurrence.
Methods. Inclusion criteria: 18-year-old and above patients. Exclusion criteria are GI panel performed on outpatient basis, presence of any co-founder that had independent effect on the outcomes such as end-stage renal disease, cirrhosis, presence of non-GI infection (pneumonia, urinary tract infection, osteomyelitis etc.), and recurrent CDI. Out of the 2,576 GI panels performed from January 1, 2015 until December 31, 2016 only 235 patients were selected for retrospective chart review based on the above criteria.
Results. Out of 235 patients, 38 patients had co-infection (CDI + another GI infection = Group A) and the remainder had only CDI (Group B). Chi-square test, Fisher’s exact test (for severity, treatment escalation and recurrence) and Independent T-test (for duration of hospital stay) were used to compare Group A with Group B. Alpha criterion was 0.05.
Conclusion. All the results show co-infection is associated with more severe outcomes. As there were only 38 patients in co-infection group, it limits the ability to determine the effect of individual infectious agent on the outcomes of CDI.
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1125. Reduced Time to Pathogen Identification and Antibiotic Prescription Using Multiplex Molecular Testing for Gastrointestinal Infections
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Background. A variety of microbial pathogens causes diarrhea which remains a significant global concern. The ability to rapidly identify the pathogen impacts the decision to treat, to institute antimicrobial stewardship, and assists with infection control and prevention. The objective of the study was to compare the time it took for rapid identification of microbial pathogens via a stool-culture based testing vs. real-time PCR using a Verigene Enteric Pathogens (EP) test.
Methods. The study was performed at Virginia Mason Medical Center, a tertiary medical center in Seattle. A retrospective chart review included the diagnosis of microbial pathogen, antibiotics prescribed (if any), time of prescription, duration of antibiotic course and patients’ outcome if they were hospitalized. Stool specimens from 136 patients in 2015 were analyzed via a stoic culture based method. The results were compared with a molecular-based method used to study specimens from 225 patients in 2017. 2015 and 2017 were chosen as in 2016 the culture-dependent testing was replaced by culture independent. T-test was used to examine the difference in time to identification of the pathogen and time to prescription between 2015 and 2017. SAS 9.4 was used for the analysis.
Results. In 2015, 2,194 stool specimens were tested and 136 (6.2%) were positive. In 2017, 2,037 stool specimens were examined and 225 (11%) returned positive. The median time to prescription in 2015 was 53.84 hours in comparison to 21.96 hours in 2017 (P = 0.0001). The time to identification of the pathogen was 60.05 hours in 2015 vs. 22.53 hours in 2017 (P = 0.0001). The TAT (turnaround time), defined as the time from the specimen being received in the laboratory to the finalized result, was 167.92 hours vs. 156.35 hours, respectively (P = 0.75).
Conclusion. Multiplex PCR assays for enteric pathogens showed higher sensitivity when compared with standard culture-based methods. When the clinician felt antibiotics were indicated, there was a significantly shorter time to antibiotics prescription. Aside from a shorter time to microbial identification, molecular assays detect an increased number of pathogens from a single specimen that has an important impact on infection prevention and appropriate treatment.
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1126. Three Cases of Neutropenic Enterocolitis Following Midostaurin Administration
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Background. Neutropenic enterocolitis is a life-threatening inflammation of the colon with a mortality rate above 50% primarily seen in neutropenic patients on cytotoxic chemotherapy. The following cases illustrate three patients with this condition following midostaurin administration after standard induction chemotherapy with daunorubin/irubicin and cytarabine for acute myeloid leukemia (AML). Midostaurin is a multitargeted FMS-like tyrosine kinase 3 (FLT3) receptor inhibitor used in AML treatment after induction chemotherapy.
Methods. Review of records of three patients seen by the infectious disease service.
Results. In these cases, patients were diagnosed with AML with FLT3 mutation. All three were admitted and started on standard induction chemotherapy. Midostaurin was started on chemo and on day 8 at which time all patients were neutropenic. The patients developed fevers, abdominal pain, and diarrhea within 36 hours of starting midostaurin and had abdominal CT findings consistent with neutropenic enterocolitis. For two patients, midostaurin was discontinued and symptoms improved upon discontinuation. One patient completed the course of midostaurin with symptom resolution after its completion. Of note, all were started on appropriate prophylactic antibiotics at chemotherapy initiation and were started on broad-spectrum antibiotics at onset of fever and abdominal symptoms. Appropriate evaluation was also done for each patient to rule out other causes of abdominal pain. Study of Clostridium difficile was done for all three patients using real-time PCR.
Conclusion. These cases are significant because they illustrate individuals treated with standard induction chemotherapy for AML and started on midostaurin while neutropenic who began reporting symptoms of neutropenic enterocolitis within 36 hours of receiving midostaurin. This shows a possible increased toxicity when midostaurin is given after induction chemotherapy in the setting of neutropenia. Stone et al. showed increased intestinal symptoms with midostaurin, but no cases of neutropenic enterocolitis have been reported. With increased midostaurin use in the past year, further studies are warranted to establish and raise awareness of a possible direct association between midostaurin and gastrointestinal toxicity.
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1127. Genomic Analysis of Biofilm-Forming Enteroinvasive E. coli Emergent Pathogen
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Background. Enteroinvasive Escherichia coli (EIEC) are involved in dysenteric diarrhea among children in low- and middle-income countries. EIEC strains isolated in Colombia, South America were shown to form biofilms and to be invasive in vitro. The O96:H19 serotypes and biofilm formation (BF) are not common phenotypes in EIEC strains isolated in Colombia, South America were shown to form biofilms and to be invasive in vitro. With increased midostaurin use in the past year, further studies are warranted to establish and raise awareness of a possible direct association between midostaurin and gastrointestinal toxicity.
Disclosures. All authors: No reported disclosures.

Methods. WGS was performed on the BF-EIEC S. 51 strain using NextGen Illumina and Pacific Biosciences (PacBio) platforms. Publically available genomes from other EIEC O96:H19 and Shigella genomes previously published were analyzed using online available software and databases including NCBI, BLAST, Mauve, among others. This analysis was tailored to identify virulence factors from the virulence factor database (VFDB). BLAST was used to determine identical or similar sequences of gene encoding the Shigella virulence factors. EIEC and Shigella genomes were analyzed on a multicycle genome alignment software (Mauve) to verify results from BLAST and to determine pseudogenes.
Results. The genome of EIEC O96:H19 strain S. 51 was 5,193,449 bp in size, containing 5,050 coding DNA sequences (CDSs). O96:H19 strain S. 51 carries three plasmids, the invasion plasmid (pINV) contains all type 3 secretion system (TTSS) and TTSS effectors genes previously described for Shigella and EIEC O96:H19. CFA109278/Italian strain. Non-TTSS virulence genes were also identified, including long polar fimbrial gene (lpfA), enterotoxin (senB), and antibiotic resistance genes.
Conclusion. The EIEC O96:H19 strain S. 51 genome carries TTSS genes within a virulence plasmid, protein effector genes, and enterotoxin genes known to be
associated with EIEC virulence. The EIEC O96:H19 strain 52.1 is an emergent diarrheagenic pathogen likely derived from an E. coli O96:H19 strain that acquired a Shigella-like virulence plasmid by horizontal transfer.

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1128. Utility of Anaerobic and Fungal Blood Cultures in the Pediatric Oncologic Population

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Session: 134. Fungi and Parasites in Immunocompromised Patients

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Background. In our institution, a febrile or ill appearing oncology patient will often be evaluated with aerobic, anaerobic, and fungal cultures. This is especially true in patients with persistent fevers without a clear etiology on empiric antimicrobial therapy. It is common for all three cultures to be repeated multiple times per admission. Although this practice may seem sensible, there is to our knowledge little evidence to confirm its necessity in this population.

Methods. A record of all positive blood cultures originating from our institutions oncology ward was obtained from January 2010 to April 2017. Duplicate cultures (obtained on consecutive days with repeat organisms) were excluded. Each anaerobic and fungal culture was then evaluated for corollary positive aerobic cultures from the same time frame.

Results. A total of 10,950 blood cultures were evaluated for this study, including 2,391 anaerobic cultures and 1,980 fungal cultures. Forty-two unique anaerobic cultures (1.7%) were identified. The viridans group of Streptococcus was a large contributor with nine unique cultures. Only seven cultures of obligate anaerobes were observed: four cultures of Clostridial species, two Propionobacterium acnes, and one Peptostreptococcus species. Twenty-three unique fungal cultures (1.2%) were identified. Notably most of these isolates (14) were identified as having one colony present and regarded as probable contaminants. Penicillium, Cladosporium, and unidentified dermatophytes were present in greatest frequency.

Conclusion. Over a 7-year period of routinely obtaining anaerobic and fungal cultures for febrile oncology patients only 42 unique anaerobic and 23 unique fungal cultures were identified. Given the predominance of facultative anaerobes, this may simply reflect the findings of increased blood sampling rather than added utility of the cultures for febrile oncology patients only 42 unique anaerobic and 23 unique fungal cultures were identified. Given the predominance of facultative anaerobes, this may simply reflect the findings of increased blood sampling rather than added utility of the cultures.

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1129. Targeted Voriconazole Prophylaxis in Heart Transplantation Recipients

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Session: 134. Fungi and Parasites in Immunocompromised Patients

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Background. The use of antifungal prophylaxis, targeted or universal, remains controversial and unstudied. The goal of this study is to determine the role of targeted voriconazole prophylaxis (VORI) in prevention of invasive fungal infections (IFI) after heart transplantation (HT).

Methods. We conducted a single-center, prospective, observational cohort study of 276 HT recipients from June 2005 to April 2017 to characterize the incidence and outcome of IFI following targeted VORI. Starting in June 2013, HT recipients with thymoglobulin (ATG) treatment received VORI for 3 months. Probable/proven IFI were defined by EORTC/MSG criteria. Descriptive frequencies and univariate analyses were performed.

Results. Mean duration of follow-up post-HT was 1,165 days (0–3,152 days). 149 (54%) and 70 (25%) received basiliximab and thymoglobulin induction, respectively. Thirty-one (11%) received VORI, following use of ATG in the setting of induction (68%) or rejection (32%). VORI was started at median of 6 days (0–1,008 days) post-HT for a mean duration of 97 days (5–251 days). Overall, 23 IFIs occurred in 23 recipients (8%) at mean 283 days post-HT (range 2–1,579 days), including seven Aspergillus (one occurring after VORI completion), seven invasive Candida (five with candidemia), two Rhizopus, one Cunninghamamella, two histoplasma, two blastomyces, one Cryptococcus, and one multifocal cutaneous Alternaria.

Conclusion. Targeted VORI resulted in reduced incidences of both early and overall IFI after HT although this did not reach statistical significance. Since instituting this strategy, we have observed a single case of aspergillosis following VORI discontinuation. Overall and 1-year mortality were not impacted. The use of antifungal prophylaxis following HT requires continued investigation both to determine efficacy and toxicity in this patient population.

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1130. Low Risk of Pneumocystis jiroveci Pneumonia in Patients With Waldenstrom's Macroglobulinemia on Ibrutinib

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Session: 134. Fungi and Parasites in Immunocompromised Patients

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Background. Ibrutinib is an oral Bruton’s酪氨酸激酶 inhibitor that is approved for treatment of Waldenstrom’s macroglobulinemia (WM). While the incidence of Pneumocystis jiroveci pneumonia (PCP) is generally low in WM patients, patients on Ibrutinib may be at increased risk of PCP due to hematopoietic cells and CD4+ T cells being targets of Ibrutinib.

Methods. A retrospective chart review was conducted on WM patients seen at our institution from 2002–2017 on Ibrutinib. The incidence of PCP and other invasive fungal infections was recorded.

Results. A total of 67 WM patients were identified, 12 of whom had PCP. Ten of 12 patients with PCP were on Ibrutinib, versus 5 of 55 patients without PCP (p = 0.05), odds ratio of 4.65, 95% CI 1.27 to 16.63. No patients had other invasive fungal infections.

Conclusion. This prospective chart review of WM patients suggests that patients on Ibrutinib may be at increased risk for PCP, though this study may have been underpowered due to low patient numbers.

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