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Background. The febrile neutropenia (FN) is a common morbidity among cancer patients and effective initial antimicrobial therapy is associated to low mortality.

Methods. The aim of this study was to analyze the impact of colonization by multidrug-resistant Gram-negative bacteria (MDRGNB) in risk of developing MDRGNB infection during a neutropenia period. We retrospectively assessed all patients that came to the hospital with FN from July 2012 to September 2016. We performed a matched case–control study. Case was defined as a patient with FN and positive blood culture for ESBL-producing Enterobacteriaceae or carbapenem-resistant GNB. For each case, two controls were chosen and were paired by period of hospitalization, one of them with positive blood culture by sensitive bacteria and the other one without an isolated agent. Independent variables analyzed were related to patient characteristics, MDRGNB colonization and FN features. Statistical analysis was performed for univariate analysis by McNemar's chi-square or Wilcoxon test and for multivariate analysis by conditional logistic regression.

Results. A total of 21 cases and 42 controls were analyzed. Hematological malignancies were present in 24 (38.1%) patients. The most common agent isolated in FN from the above cases was ESBL-producing *E. coli* (6–27.3%), followed by carbapenem-resistant *K. pneumoniae* (5–22.7%). The majority of FN had no site was identified; the most common site among cases was pneumonia (7–33.3%). Overall 15 (23.8%) patients were colonized by MDR GNB on hospital admission, among those 6 developed infection by the same agent by which he/she was colonized. The only risk factor for bacteremia by MDR GNB identified in multivariate analysis was previous MDRGNB colonization (OR 6.19 $P = 0.007$). Overall 30-day mortality rate was 30.2% in controls vs. 81.0% in patients with bacteremia by MDRGNB ($P = 0.02$).

Conclusion. Colonization by MDRGNB increases the risk of infection by those agents during neutropenia period and MDRGNB infection is associated with a higher mortality compared with those with non-MDRGNB infection.

Disclosures. **All authors:** No reported disclosures.

2368. Breakthrough Bacteremia with Meropenem-resistant *Pseudomonas aeruginosa* in Hematologic Malignancy Patients Receiving Levofloxacin Prophylaxis

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Background. Fluoroquinolone (FQ) exposure has been reported to induce *Pseudomonas aeruginosa* cross-resistance specifically to carbapenems (CP) *in vitro* but *in vivo* data are lacking. The purpose of this study was to determine the impact of FQ prophylaxis for high-risk neutropenia on the emergence of CP-resistant *P. aeruginosa* infections.

Methods. We conducted a retrospective review of *P. aeruginosa* bacteremia in adult patients with hematologic malignancies at Oregon Health and Science University (OHSU) between January 01, 2015 and May 01, 2017. Levofloxacin was administered as prophylaxis during neutropenia (absolute neutrophil count (ANC) <500 cells/mL) except when contraindicated due to allergy, severe intolerance, or other reasons. When levofloxacin could not be used, another agent or no prophylaxis was used at the discretion of the medical team. Categorical variables were analyzed using the Fisher exact two-tailed test. The study was approved by the OHSU institutional review board.

Results. ***Twenty-seven*** episodes of *P. aeruginosa* bacteremia occurred in 25 patients. Eleven (40.7%) episodes of bacteremia occurred in patients receiving levofloxacin; the remainder of patients were receiving no antibiotics ($N = 9$) or non-FQ antibiotics ($N = 7$). Isolates from patients receiving FQ prophylaxis were less likely to be CP- sensitive than from patients receiving non-FQ or no prophylaxis (27% vs. 81%, $P = 0.01$). Susceptibility to anti-pseudomonal β-lactams was not affected and FQ prophylaxis did not affect CP susceptibility among *E. coli* isolates from the same patient population. FQ prophylaxis at the time of bacteremia ($P = 0.01$) and any FQ exposure within 90 days of bacteremia ($P = 0.02$) were the only host factors associated with CP non-susceptibility in univariate analysis.

Conclusion. FQ exposure *in vivo* results in *P. aeruginosa* cross-resistance specific to CPs. Limitations of our study include its retrospective, single-center design and relatively small number of isolates. CPs are recommended as a first-line option for the empiric management of febrile neutropenia based on studies performed prior to the routine use of FQ prophylaxis. Confirmation of our results in larger studies should prompt re-assessment of this recommendation in patients receiving FQ prophylaxis.

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2369. Risk factors for Drug-resistant of Gram-negative Bloodstream Infection in Patients with Hematological Malignancies

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Background. Bloodstream infections (BSI) are significant causes of morbidity and mortality in patients with hematological malignancies. Antimicrobial resistance may be increasing among Gram-negative bacteria in this population, with implications for empirical treatment and preventive strategies.

Methods. We performed a retrospective study of patients with hematological malignancies and Gram-negative bacillus bloodstream infection (GNB-BSI) at the Tel Aviv Medical Center, a 1,200-bed teaching hospital, from 2009 through 2015. Bacteremia was defined as breakthrough if the patient received >48 hours of systemic antibiotic treatment at the time of culture. Patient demographics, disease status and antimicrobial exposure within the previous 90 days were analyzed as potential risk factors for drug-resistant GNB-BSI using bivariate analyses and logistic regression.

Results. Three-hundred thirteen episodes of GNB-BSI occurred in 198 patients during the study period. Enterobacteriaceae accounted for 236 (75%) episodes (*E. coli*, $n = 117$; *Klebsiella pneumoniae*, $n = 92$; 35% ESBL producers) and nonfermenters accounted for 71 (22%) episodes. Susceptibility rates were: Piperacillin/Tazobactam, 75%; Ceftazidime, 66%; Ciprofloxacin, 68%; and Imipenem, 93%. Medical tourism was associated with GNB-ESBL infection (odds ratio 1.5; $P = 0.03$). Neutropenia and breakthrough infection were risk factors for resistance to Piperacillin/Tazobactam (OR 2.1; $P = 0.02$). The use of quinolones prophylactically was associated with resistance to ciprofloxacin (OR 2.0; $P = 0.002$) but not to other agents. Breakthrough GNB-BSI was associated with 35% carbapenem resistance (OR 7.8; $P < 0.0001$). Crude 30-day mortality was 27.9%. Resistance to carbapenems was the only independent predictor of death (OR 2.3, $P = 0.0008$).

Conclusion. Breakthrough infection was the dominant risk factor for resistant GNB-BSI, and was linked with significantly increased mortality. Resistance rates to most first-line antibiotics were high, suggesting that a policy of deescalation should be considered.

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2370. Risk Factors and Prognosis for Multidrug-resistant *Acinetobacter baumannii* infection in Lung Transplantation Recipients

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Background. Infection complication is an important cause of poor outcome of lung transplantation (LT). Multidrug-resistant (MDR) *Acinetobacter baumannii* (*A. baumannii*) is most problematic due to limited therapeutic option. However, there were a few studies about MDR *A. baumannii* infection in LT recipient. Thus, we aimed to reveal epidemiology and risk factor of MDR *A. baumannii* in LT recipients.

Methods. The patients who aged ≥18 years and received LT in Severance hospital in South Korea from October 2012 to April 2016 were enrolled in this retrospective cohort study. Risk factors for MDR *A. baumannii* infection and 90-day mortality were analyzed.

Results. Fifty-one patients were infected by *A. baumannii*, and 45 patients were uninfected among total 96 LT recipients. The infected group showed significantly higher 90-day mortality rate compared with the uninfected group (2.2 vs. 19.6 %, $P = 0.009$). In the analysis of risk factors for *A. baumannii* infection, lower preoperative serum albumin (odds ratio [OR], 0.230, $P = 0.014$), higher preoperative serum BUN (OR, 1.138, $P = 0.033$), and longer operation time (OR, 1.577, $P = 0.050$) were statistically significant. Additionally, moderate to severe thrombocytopenia (hazard ratio [HR], 5.900, $P = 0.009$), longer operation time (HR, 1.344, $P = 0.013$), higher preoperative serum creatinine (HR, 5.662, $P = 0.024$), and higher American Society of Anesthesiologists score (HR, 9.167, $P = 0.038$) were significant risk factors for 90-day mortality.

Conclusion. Preoperative lower serum albumin, BUN, and long operation time were independent risk factors for *A. baumannii* infection in LT recipients. A preoperative moderate to severe thrombocytopenia, and higher serum creatinine, longer operation time, and higher American Society of Anesthesiologists score were significant risk factors for 90-day mortality. Further studies are needed to demonstrate the independent risk of *A. baumannii* infection as the LT cases increase.

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2371. Vancomycin-resistant Enterococci: Differing Rates and Patterns of Colonization in Liver vs. Non-Liver Solid Organ Transplant

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Background. Vancomycin-resistant enterococci (VRE) colonization in liver transplant recipients is associated with negative outcomes such as VRE infection, longer hospitalizations, and death. Less is known about VRE colonization in non-liver solid organ transplant (SOT) recipients. The purpose of this study was to describe the