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Poster Session V

Infections in transplant recipients

EPIDEMIOLOGY AND RISK FACTORS FOR BLOOD STREAM INFECTIONS IN SOLID ORGAN TRANSPLANTS OVER A TEN-YEAR PERIOD

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Objectives: We sought to determine the risk factors associated with blood stream infections (BSI) and the types of BSI in solid organ transplant patients.

Methods: A database of all solid organ transplants done at the University of Alberta Hospital in Edmonton, Alberta was used to identify transplant patients and their demographics, transplant date, and CMV status. This database was cross-referenced with an infection prevention and control database consisting of all nosocomial bloodstream infections. The National Healthcare Safety Network Guidelines (U.S.A) were used to define the source and type of BSI. All transplants and BSIs occurring from January 1, 2003 to December 31, 2012 inclusive were included in our analysis. Associations between variables were calculated using odds ratios and statistical significance was determined by Fischer's exact or chi-squared test (GraphPad Prism v6.0, GraphPad Software, Inc).

Results: A total of 2257 transplants were performed with a BSI rate of 6.96% and an incidence of 1.39 BSIs per 100 person-years. Liver and multivisceral transplants were associated with a higher risk of BSI (OR 2.25 (1.62-3.12), $p < 0.0001$ and 14.08 (3.49-56.86), $p = 0.0013$, respectively). The most common pathogens were *Enterococcus* spp. (24.8%; 20.5% of which were vancomycin-resistant Enterococci), Enterobacteriaceae (16.6%), coagulase-negative *Staphylococcus* (15.3%), and *Staphylococcus aureus* (12.4%; 36.8% of which were methicillin-resistant *S. aureus*). Heart transplant was associated with an increased risk of *Candida albicans* BSI (OR 7.362 (2.25-76.28), $p = 0.0052$) and lung transplants with methicillin-resistant *S. aureus* BSI (OR 13.1 (1.54-35.1), $p = 0.0004$). The most common sources of BSI were: Central lines (31.2%), non-endoscopic gastrointestinal (15.3%), organ space/deep surgical site infection (15.3%), pneumonia (12.7%), and urinary tract infection (8.92%). Kidney transplant was associated with urinary tract as a source of BSI (OR 10.58 (3.25-34.43), $p = 0.0002$) and primary blood stream infection (OR 13.1 (2.25-76.28), $p = 0.0052$). Liver transplant was associated with organ space as a source of BSI (OR 4.18 (1.45-12.06), $p = 0.0086$). Coagulase-negative *Staphylococcus* and *C. albicans* were associated with central lines as the source of BSI (OR 7.67 (2.92-20.14), $p < 0.0001$ and 32.43 (1.787-588.5), $p = 0.007$, respectively). Patients with a CMV positive donor had an increased risk of developing a BSI (OR 1.83 (1.32-2.55), $p = 0.0003$).

Conclusions: This study outlines some important epidemiological information on the nature of BSIs in all types of solid organ transplants. Notably, we demonstrate that central lines, CMV donor positive status, multivisceral transplants and liver transplants are major risk factors for developing a BSI.