

Session: 142. HAI, Device-Associated: Vascular Devices
 Friday, October 4, 2019: 12:15 PM

Background. Infections remain a frequent complication of patients (patients) with ventricular assist devices (VAD). We evaluated the epidemiology and outcomes of VAD infections at our center over a 10-year period.

Methods. We performed a retrospective cohort study of continuous-flow VAD recipients from July 2008-September 2018. VAD-specific and -related infections were characterized according to 2013 ISHLT definitions. Summary and comparative statistics were performed using IBM® SPSS Statistics version 25.0.

Results. 433 VADs were implanted into 375 patients. A total of 86 VAD infections occurred in 79 patients, with a mean incidence of 0.19 episodes/VAD and 0.20 episodes/pt. Patients with infections were predominantly male (73.3%) and Caucasian (54.6%), and had mean age of 52.7 years, nonischemic cardiomyopathy (58.1%), and VAD as bridge to transplant (53.5%, n = 46). Types of VAD included 43.0% axial (n = 37) and 57.0% centrifugal flow (n = 49). 78% of patients with infections were colonized with at least one multidrug-resistant organism (MDRO) such as MRSA (29%), VRE (73%), and ESBL (24%).

Notably, 15% of infections (n = 13) occurred within 60 d of VAD implantation, with mean time to onset 36 d (5–60 d) post-VAD. Early infections (<60d) involved driveline exit site (DLES) (n = 4), pocket (n = 3), and pump (n = 7) with 7 VAD-related blood stream infections (BSI), 6 infective endocarditis (IE), and 2 mediastinitis. Early infections involved Gram-positive (GP) bacteria (84.6%, n = 11), Gram-negatives (GN) (45.5%, n = 5), anaerobes (23.1%, n = 3), fungi (30.8%, n = 4), MDRO (61.5%, n = 8) and 32 pathogens (69.2%, n = 9). 85% of infections occurred late (n = 73) with mean time to onset 338 d (69–1215 d). In late infections (>60d), impacted sites included DLES (n = 38), pocket (n = 7), and pump (n = 40), with 42 BSI, 36 IE, and 2 mediastinitis. Pathogens were 68.5% GP (n = 50), 37.0% GN (n = 27), 2.7% anaerobes (n = 2), 2.7% fungi (n = 2), 17.8% MDRO (n = 13), and 26.0% polymicrobial (n = 19).

Conclusion. In this longitudinal retrospective cohort of patients supported with VADs, a majority of infections occurred >9 months post-implantation. GP pathogens predominated at all time-points. GN bacteria, including MDROs, anaerobes, and fungi are increasingly encountered. The vast majority of patients were colonized with ³¹I MDRO during the course of VAD implantation.

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1178. Cardiac Device Infection: Do We Follow the Guidelines?

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Background. Cardiovascular implantable electronic device (CIED) such as pacemaker (PPM) and automated implantable cardiac defibrillator (AICD) are commonly utilized in clinical practice. Definitions of device infection (DI) and guidelines for the work up and device extraction (DE) have been published by the American Heart Association and the Infectious Disease Society of America. Our objective was to evaluate whether the work up of DI as recommended was followed, and whether the device was extracted according to guidelines.

Methods. A retrospective review in a 680-bed tertiary care hospital. Adult patients (patients) >18 years, who were diagnosed as having a DI and had the device extracted between 2008 and 2017 were included. Data were collected on demographics, device duration, blood culture (BC), echocardiogram utilization, lead cultures (LC) and device pocket cultures, appropriateness of extraction as per guidelines.

Results. Ninety-five patients were included. Mean age 68 years (range 23–90). 67 (70%) were male. Devices included: AICD in 75 (79%), PPM in 20(21%). CIED was present <1 year prior to infection in 24(24%). Compliance with guidelines recommendation to draw blood cultures, obtain an echocardiogram and send lead cultures and device pocket cultures were seen in 100%, 90.5% and 49.4% and 67.7%, respectively. Criteria for extraction was met in 65/95 (69%); reason for extraction was a pocket infection in 16/65(24.6%), bacteremia in 49/65 (75%), infective endocarditis in 38/65(58%). Thirty (31.5%) had device extracted without meeting guidelines recommendation, in 17 a diagnosis of pocket infection but without microbiological criteria or clinical diagnosis. In 9 patients lead vegetations were seen but no cultures to support extraction. Mortality was seen in 4 patients, one during the extraction procedure.

Conclusion. In our institution, 1/3 of the patients diagnosed with DI had no indication for DE. Guidelines recommendation for CIED extraction should be followed as extraction could be associated with significant complications. In this study, overall compliance with guidelines work up recommendations were not consistently followed, especially LC and device pocket cultures.

Disclosures. All authors: No reported disclosures.

1179. Rates and Causative Pathogens of Device-Associated Bloodstream and Urinary Tract Infections Attributed to Solid-Organ Transplant Units, 2015–2017

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Background. Due to complex invasive medical procedures and compromised immunity, solid-organ transplant (SOT) patients are at high risk for infections. However, whether SOT patients are at higher risk than other hospitalized patients for selected healthcare-associated infections (HAI), such as central line-associated bloodstream infections (CLABSI) or catheter-associated urinary tract infections (CAUTI), or for infections with antimicrobial-resistant (AR) pathogens, is not well described. We analyzed data reported to the Centers for Disease Control and Prevention's (CDC's) National Healthcare Safety Network (NHSN) from inpatient SOT units and compared CLABSI and CAUTI rates and AR in hospitals with both SOT and non-SOT units.

Methods. We analyzed 2015–2017 CLABSI and CAUTI data reported to NHSN from hospitals with adult or pediatric inpatient SOT units. We calculated CLABSI and CAUTI incidence rates per 1,000 central-line days (CLD) and urinary catheter days (UCD), respectively, and compared rates, pathogen distributions, and AR among events attributed to three unit types: (1) SOT units; (2) adult, pediatric, and neonatal critical care units; and (3) adult and pediatric medical, surgical, and combined medical-surgical wards. We compared proportions using χ^2 tests and determined statistical significance at $P \leq 0.05$.

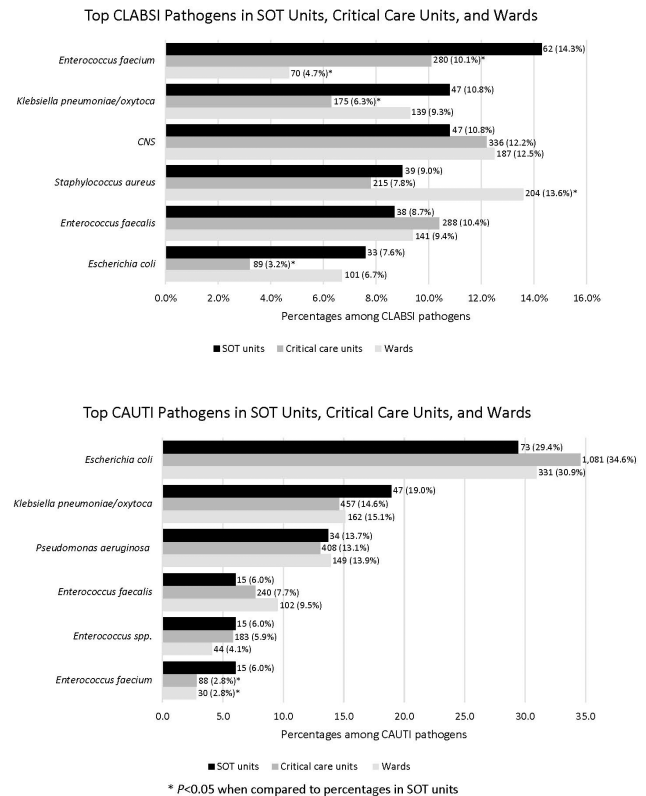
Results. CLABSI and CAUTI rates in SOT units were lower than rates in critical care units, but higher than rates in wards (table). Although the most common CLABSI and CAUTI pathogens were similar in all three unit types, the prevalence of individual pathogens differed (figure). Among CLABSI pathogens, *Enterococcus faecium*, *Escherichia coli*, and *Klebsiella pneumoniae* or *oxytoca* were significantly more prevalent in SOT compared with critical care units. Vancomycin resistance among CLABSI *E. faecium* was significantly lower (71.4% vs. 87.5%) and fluoroquinolone resistance among CAUTI *E. coli* was significantly higher (49.3% vs. 32.5%) in SOT compared with critical care units.

Conclusion. SOT units have lower CLABSI and CAUTI rates compared with critical care units. Differences in pathogens and AR among device-associated HAIs in SOT units should be considered when implementing infection prevention and treatment policies.

Table. CLABSI and CAUTI attributable to SOT units, NHSN, 2015 – 2017.

	CLABSI			CAUTI		
	SOT	CC units	Wards	SOT	CC units	Wards
No. hospitals	41	41	41	42	42	42
No. inpatient units	54	244	360	56	265	371
No. events	380	2,453	1,275	224	2,843	936
No. pathogens	435	2,759	1,499	248	3,126	1,070
No. device days	362,923	1,936,242	1,387,365	180,758	1,922,367	850,164
Incidence rate per						
1,000 device days	1.05	1.27	0.92	1.24	1.48	1.10

Figure. Top CLABSI and CAUTI pathogens in SOT units, critical care units, and wards



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