Reviews

_Evolution and impact of drive-line infection in a large cohort of continuous-flow ventricular assist device recipients_

Koval, Christine E.; Thuita, Lucy; Moazami, Nader; Blackstone, Eugene

Dr. Koval and colleagues perform a retrospective review of 194 HeartMate II LVAD’s implanted from 2004 to 2011. They investigate contributing factors, pathogen, and implications on survival.

In their analysis, the hazard from drive line infections (DLI) was 2% per month that increased to 11% a months 7.5 months post implant. Approximately 1/3 of patients developed a deep DLI and the incidence of pseudomonas as the pathogen was as high as 55%. While there were minimal antibiotic complications, of the patients who developed a second “superinfecting” organism ~75% of the infections initially were gram positive infections with 100% of the “superinfecting” organisms being gram negative bacteria. The predominant organisms were those that produced biofilms (staph and pseudomonas).

The impact of the infections had a detrimental effect on outcomes. The patients with DLI had an increase number of hospitalizations. At 12 months, in patients with DLI, 31% had died and only 28% had been transplanted. With a limited data set to draw definite conclusions, 20 of 45 patients reported drive line trauma. This trauma is considered to be a highly correlative factor for DLI.
A novel method of blood pressure measurement in patients with continuous-flow left ventricular assist devices

Woldendorp, Kei; Gupta, Sunil; Lai, Jacqueline; et al.

Dr. Woldendorp and colleagues perform a prospective correlation of current and novel methods of measuring blood pressure in patients with continuous flow LVADs (cfLVADS). The clinical problem is a very important one in that outpatient and home blood pressure measurements are difficult at best to obtain and often inaccurate. The presence of (even relative) hypertension in cfLVAD patients is a significant contributing risk factor to stroke.

The authors evaluate 38 patients in 2 cohorts (14 and 24 patients) looking at arterial lines, automated cuff pressures, Doppler sphygmomanometry, and pulse oximetry with sphygmomanometry (PULSE cohort). In the PULSE cohort, an oximeter is placed on a digit and the sphygmomanometer inflates and the return of oximeter signal is recorded as the cuff is deflated.

In their cohorts, there was a high degree of correlation amongst the invasive approach, automated, Doppler measurement, and pulse oximetry for evaluating blood pressure. The PULSE approach had a high degree of repeatability and reliability (i.e., both accurate and reproducible). While this approach needs to be validated in a larger cohort, the ease of use and the reproducibility with rather low fidelity equipment makes it highly appealing.

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Disclosure statement: the author has no disclosures.