Heart transplantation was initiated in Singapore in 1990. Three to six heart transplants are performed annually. The waiting list mortality was about 30%. Hence, mechanical circulatory support was initiated with HeartMate 1 in 2001. Extracorporeal membrane oxygenation (ECMO) for acute life support became available by 2003. Durable implantable rotary left ventricular assist device (LVAD) with HeartMate II (HMII) was introduced in 2007, followed by HeartWare (HVAD) in 2012 and HeartMate 3 (HM3) in 2015.

90 consecutive durable implantable devices (58 HMII, 21 HVAD and 11 HM3), were placed from May 2009 to December 2017. Of these, 65 were placed as bridge-to-plant. Overall perioperative mortality was 7 (7.7%). 26 were INTERMACS level 1 patients, bridged with ECMO without perioperative mortality. Median ICU stay and hospital stay were 8 and 31 days, respectively. Mean duration of support was 907 days. The longest support was 8.6 years. 45 had been on ongoing support, and 23 were transplanted. Late mortality occurred in 13 patients, 5 due to stroke. Driveline infection developed in 28.7%. 57.1% were associated with driveline trauma. Pocket infection developed in 5 patients. In the initial 78 patients, 17 (21.7%) experienced gastrointestinal bleeding (GB); 11 with recurrent GB were successfully treated with thalidomide. 6 developed aortic regurgitation, 5 underwent modified Park stitch. Implantable cardioverter defibrillator placement pre-LVAD did not confer mortality benefit. Issues with hardware occurred in 60%. Cardiac recovery occurred in 2 and their LVADS were decommissioned. Overall survival at 5 years was 84.4%, compared with INTERMACS registry data of 48%.

**REFERENCES**


**22**

Renal Complications in LVAD and Heart Transplant Patients

Michael S Kieman. Cardiovascular Center, Tufts Medical Center and Tufts University School of Medicine, Boston, Massachusetts, USA

The perioperative management of patients with a left ventricular assist device (LVAD) presents a whole set of challenges to the nurses at the bedside and outpatient settings. Despite the remarkable advancements in technology, the care of patients following LVAD implant remains complex for the multidisciplinary healthcare team. This presentation provides a brief overview of the currently used durable LVAD designs worldwide. These include axial (HeartMate II™) and magnetic flow levitation (HeartMate 3™ and HeartWare HVAD®) LVADs. Discussion of the nursing management of patients post-LVAD implant in the critical care, progressive care, and in the outpatient care settings will be approached at conceptual level. This approach will equip the participant with a ‘thinking framework’ guiding his/her actions in caring for LVAD patients. Salient nursing actions include early detection and management of post-surgical complications, device-related complications, heart failure symptom exacerbations, infection, among others. The nurse’s role in helping patients attain an optimum level of functioning post-implantation during hospitalisation and the impact of the nurse in supporting patients (and caregivers) to attain an increase in quality of life are highlighted.
aldosterone system antagonists which lead to SCr elevations unrelated to underlying renal dysfunction. Additionally, patients with HF are frequently malnourished with muscle wasting, in which case SCr levels may be misleading. Baseline proteinuria is associated with poor post-operative outcomes in LVAD recipients and is an easily measurable biomarker that can further help to risk stratify patients in advance of VAD surgery.\(^4\) While absolute thresholds of risk are difficult to define, if eligible for dual organ transplant, advanced HF patients with GFR <35 mL/min/m\(^2\) are likely to derive a survival benefit from simultaneous heart-kidney transplantation rather than HTx alone.\(^5\)

REFERENCES


In conclusion, stroke remains an important cause of morbidity and mortality among Hong Kong patients receiving LVAD therapy.

Although left ventricular assist devices (LVADs) have revolutionised the treatment of advanced heart failure, LVAD infection (LVADI) remains a significant cause of morbidity and mortality in LVAD patients.

The International Society of Heart and Lung Transplantation defines LVADI in three categories: VAD-specific infections (pump/cannula, pocket, driveline); VAD-related infections (infective endocarditis, blood stream infection, mediastinitis); and non-VAD infections.\(^1\)

Infection should be excluded or appropriately treated by an infectious disease physician before LVAD implantation when clinically feasible. Surgical techniques such as increasing intrafascial tunnelling and externalisation of the silicone portion of the driveline may help reduce infections.\(^2\)

Besides culture tests, additional imaging, such as ultrasonography or computed tomography may be warranted if underlying abcess is suspected.\(^3\)

The recommended treatment includes antimicrobial therapy, local debridement of the exit sites; surgical drainage, driveline repositioning and instalment of a wound VAC (or vacuum-assisted closure) system in patients with deep infection,\(^4\) surgical debridement and device exchange in the setting of persistent or relapsing blood stream infection (BSI) despite adequate antimicrobial and surgical therapy; pump exchange should be performed if feasible, in patients with persistent sepsis and instability due to device infection while heart transplant should be considered in haemodynamically stable transplant candidates with BSI.\(^5\)

The clinical manifestations and management of LVADI vary based on the type and extent of infection, and the causative pathogens. Understanding these differences is critical in making timely diagnoses and providing appropriate management interventions for LVADI.

REFERENCES