Central theme

Post-surgical transthoracic echocardiography (TTE) evaluation should be performed for assessing overall structure and hemodynamics of left and right heart, valvular regurgitation, inflow and outflow cannula evaluation and intracardiac thrombus detection. Small LV dimensions post LVAD support, as demonstrated by marked deviation of interventricular septum towards the left side may signify excessive high pump speed. Right ventricular function evaluation after LVAD implantation is crucial as it may paradoxically worsen due to excessive LV unloading.

New-onset aortic regurgitation (AR) occurs in approximately 25%–30% of patients one year after LVAD implantation. It not only causes adverse effects on LVAD performance but also increases future morbidity and mortality. Assessment of AR is technically challenging in LVAD patients. Regurgitant fraction is superior to traditional TTE parameters (e.g. vena contracta) in assessing LV filling pressures.

As for cannula evaluation, high Doppler velocity $>1.5$ m/s at inflow may result from malposition or flow obstruction, whereas low velocity may indicate inflow cannula thrombosis. Outflow graft abnormality should be suspected when the Doppler velocity $>2$ m/s. Although adequate anticoagulation is indicated post LVAD implantation, there is still risk of intracardiac thrombosis. The typical sites of thrombus formation include the atria, LV apex and aortic root.

REFERENCES

PRINCIPLES OF EXTRACORPOREAL LIFE SUPPORT (ECLS)

Based on the principle of cardiopulmonary bypass (CPB), short-term circulatory support was developed to supplement cardiac and/or respiratory failure. Extra Corporeal Life Support (ECLS) involves the use of mechanical devices to temporarily support heart or lung function during cardiopulmonary failure, leading to organ recovery or replacement. Though the circuity setup configurations represented by the different techniques are closely related, extracorporeal membrane oxygenation (ECMO) aims to support the failing lungs, while extracorporeal life support (ECLS) aims to support the failing heart. ECMO primarily affect oxygenation and deoxyribonucleic acid (DNA) by blood, while ECLS has a circulatory and a respiratory effect. The cannulation sites will essentially distinguish these two types of assistance. Venovenous ECMO (VV-ECMO) is used for respiratory failure only while venoarterial ECMO (VA-ECMO) is used for ECLS to provide support for heart failure or cardiopulmonary failure. VV-ECMO is mainly implemented in patients with severe acute respiratory distress syndrome (ARDS) unresponsive to conventional medical treatment while the most frequent indication for VA-ECMO is represented by causes of cardiogenic shock refractory to medical treatment.

IMAGING OF LVAD COMPLICATIONS: EXPERIENCE FROM MAYO CLINIC

Left ventricular assist devices (LVADs) are mechanical support devices for patients with end-stage heart failure. Echocardiography plays a pivotal role in different aspects including patient selection, perioperative imaging guidance, management of complication, optimisation of LVAD efficacy and assessment of ventricular recovery.

Abstracts

PERIOPERATIVE CARE OF LVAD

Ka Lee Kerk, Mechanical Circulatory Support, Heart and Lung Transplant Unit, Department of Cardiothoracic Surgery, National Heart Centre Singapore, Singapore

10.1136/heartasia-2018-apahff.16

Introduction Continuous-flow left ventricular assist devices (LVAD) have emerged as the standard of care for advanced heart failure patients requiring long-term mechanical circulatory support or as bridge to transplant. Evidence-based clinical management of LVAD is becoming increasingly important for optimising outcomes.

Preoperative management Pre-implant optimisation of comorbid conditions is vital in minimising the incidence and severity of post-operative adverse events and for enhancing survival. This includes psychosocial and behaviour screening prior to surgery. Pre-operative education will prepare patient to be self-reliant after device implant.

Intraoperative management Transoesophageal echocardiography (TEE) is essential for identifying valvular pathology and intracardiac defect which may require correction during LVAD implant.1,2 Inotropic support should be tailored to the TEE and pulmonary artery catheter findings. A combination of inotropes, inodulators, vasoconstrictors and nitric oxide may be needed and used with care to protect and preserve right ventricular function.

Postoperative management The principles of long-term care include assessment and management of VAD function, haemodynamics, anticoagulation, arrhythmias, infections, and psychosocial factors.1,4 Echocardiography is critical in determining optimal pump position and speed setting, and in diagnosing problems with the patient-pump interface.1 Immobilising the percutaneous lead and exit site care to prevent exit site trauma reduces infection risk.4 Cardiac rehabilitation is an important component in returning patients to the community.

Summary The success of LVAD support depends on not only surgical implant technique but also judicious pre-operative evaluation and post-operative management of both immediate and long term post-operative issues. This can be accomplished through the comprehensive care from a multidisciplinary team.

REFERENCES
In patients with severe aortic stenosis (AS) requiring aortic valve replacement (AVR), a reduced pre-operative left ventricular ejection fraction (LVEF) is one of the most meaningful risk indicators of early and late mortality. Despite this fact, AVR seems to be beneficial in the majority of patients with low LVEF.

From 2009 to 2016, we performed 304 cases of isolated AVR for severe AS. Among them, the patients with LVEF <35% (14 cases) were analysed. The pre-operative baseline characteristics of these patients were as follows: mean age 67 years ±10.2; n=9 male patients (64.3%); n=8 were in NYHA functional class ≥III; mean LVEF 29%±5.4 (range, 19–35); n=3 on haemodialysis. Mortality prediction using euroSCORE II was 10.8%±13.0 (range, 1.7–19). Three distinct symptom clusters were identified: the distress cluster (including shortness of breath, anxiety, and depression), the decondition cluster (fatigue, drowsiness, nausea, and reduced appetite), and the discomfort cluster (pain and a sense of generalised discomfort). These three symptom clusters accounted for 63.25% of variance of the patients’ symptom experience. Low to moderate correlations between these symptom clusters indicated that they were rather independent of one another. After adjusting for age, gender and co-morbidities, the distress (β = −0.635, p = 0.001), decondition (β = −0.148, p = 0.01) and discomfort (β = −0.258, p < 0.001) symptom clusters independently predicted patients’ QoL.

Conclusion This study identified the distinctive symptom clusters among patients with advanced HF. The results shed light on the need to develop palliative care interventions for optimising symptom control for this life-limiting disease.