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Abbreviations used in this issue:

- AF = atrial fibrillation
- ARNI = angiotensin receptor neprilysin inhibitor
- BNP = brain natriuretic peptide
- CAD = coronary artery disease
- CCS = composite congestion score
- CKD = chronic kidney disease
- COPD = chronic obstructive pulmonary disease
- CV = cardiovascular
- EF = ejection fraction
- HF = heart failure
- HFPEF/HFREF = HF with preserved/reduced LV function
- HR = hazard ratio
- LV = left ventricular
- LVAD = LV assist device
- OR = odds ratio
- QOL = quality of life
- CCS = composite congestion score
- BNP = brain natriuretic peptide
- CAD = coronary artery disease
- CKD = chronic kidney disease
- COPD = chronic obstructive pulmonary disease
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- LVAD = LV assist device
- OR = odds ratio
- QOL = quality of life

Welcome to issue 51 of Heart Failure Research Review.

This issue begins with a randomised controlled trial showing no benefit of a collaborative symptom care intervention for patients with HF on HF-specific health status, but there was a benefit for two of the trial’s secondary outcomes, namely fatigue and depression. This issue also includes a registry analysis investigating comorbidity health pathways in Swedish patients with HF, which is followed by another registry analysis identifying five distinct patterns of comorbidities among Asian patients with HF. Two post hoc analyses of the PARADIGM-HF trial (enalapril versus sacubitril/valsartan in HF) are also included, with one investigating the impact of hypotensive episodes on outcomes, and the other reporting recurrent events, including HF hospitalisations and CV-related deaths. The issue concludes with research showing comparable 1-year outcomes between patients with severely reduced versus preserved systolic LV function who underwent MitraClip™ implantation.

I hope you find these and the other selected papers as interesting as I have, and I look forward to reading any comments or feedback you may wish to send.

Kind Regards,

Prof Peter Macdonald
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Effect of a collaborative care intervention vs usual care on health status of patients with chronic heart failure

Authors: Bekelman DB et al.

Summary: The CASA trial randomised outpatients with symptomatic HF (56.7% with HFREF) to a collaborative symptom and psychosocial care intervention (n=157) or usual care (n=157); the intervention was provided by a nurse and a social worker, both of whom worked with participants’ primary-care physicians and were supervised by a study primary-care physician, cardiologist and palliative care physician. Increases in KCCQ (Kansas City Cardiomyopathy Questionnaire) score at 6 months (primary outcome) were 5.5 and 2.9 points in the intervention and control arms, respectively (p=0.19). The intervention was associated with significant improvements for the secondary outcomes of depressive symptoms and fatigue at 6 months compared with the control arm (p=0.02 for both), but not for overall symptom distress, pain, shortness of breath or number of hospitalisations. There were ten deaths in the intervention arm and 13 in the control arm (p=0.52).

Comment: Improving the symptoms and QOL of patients with chronic HF are important goals of HF therapy; however, previous randomised trials of similar sizes have tended to focus on surrogate endpoints (e.g. change in LV size and function, change in BNP level) and physician assessment of patient wellbeing, rather than patient’s self-report regarding symptom burden and QOL. The authors are to be congratulated on completing this study directed primarily at improving symptoms and QOL (i.e. a palliative-care approach). The primary endpoint of the study was patient-reported health status (using the KCCQ) with important secondary endpoints of patient-reported anxiety, depression and overall QOL. While the study failed to meet its primary endpoint, there were encouraging findings with regard to depression and anxiety.


Abstract
Two-year outcomes with a magnetically levitated cardiac pump in heart failure

Authors: Mehra MR et al., for the MOMENTUM 3 Investigators

Summary: Patients with advanced HF were randomised irrespective of the intended goal of support (bridge to transplantation or destination therapy) to a centrifugal-flow pump (n=190) or axial-flow pump (n=176). Compared with the axial-flow pump, use of the centrifugal-flow pump was associated with a significantly higher primary endpoint event rate (2-year survival free of disabling stroke or reoperation to replace or remove a malfunctioning device; 79.5% vs. 60.2% [p<0.001 for both noninferiority and superiority]), including its reoperation component (1.6% vs. 17.0% [p<0.001]). Although there was no significant between-group difference for the death and disabling stroke rate, the overall stroke rate was significantly lower with the centrifugal-flow pump than it was with the axial-flow pump (10.1% vs. 19.2% [p=0.02]).

Comment: This is an important ongoing study that compared a third-generation centrifugal LVAD (HeartMate 3) to its second-generation axial-flow predecessor (HeartMate 2), which globally is the most commonly implanted LVAD. Both LVADs are continuous-flow devices. At 2 years, clinical outcomes with the HeartMate 3 device were better, mainly due to fewer pump thromboses requiring pump exchange. Overall strokes were also significantly fewer in the HeartMate 3 cohort, although the rate of disabling stroke was similar (5% vs. 7%). Survival at 2 years with both devices was excellent and comparable to the survival that is currently achieved after heart transplantation.


Abstract

Comorbidity health pathways in heart failure patients

Authors: Lawson CA et al.

Summary: Cross-sectional data from 10,575 Swedish registry patients were used to explore associations of comorbidities and patient-reported symptoms, functional limitations and patient-rated health. Mean EuroQol visual analogue scale scores, as an assessment of patient-rated health, were 66, 62 and 59 for patients with no comorbidities, CV comorbidities and non-CV comorbidities, respectively. The relationships among CV comorbidities and patient-rated health were explained by their associations with anxiety/depression (ORs 1.16 [95% CI 1.06–1.27] and 1.20 [1.09–1.32] for AF and ischaemic heart disease, respectively) and pain (1.25 [1.14–1.38] for ischaemic heart disease), while associations of non-CV comorbidities were explained by their associations with shortness of breath (1.17 [1.03–1.32], 1.23 [1.10–1.38] and 1.84 [1.62–2.10] for diabetes, CKD and COPD, respectively) and fatigue (1.27 [1.13–1.42], 1.24 [1.12–1.38] and 1.69 [1.50–1.91] for diabetes, CKD and COPD, respectively). Direct associations were seen between all symptoms and patient-rated health, and there were also indirect associations via functional limitations. Anxiety/depression had the strongest association with functional limitations (OR 10.0 [95% CI 5.16–19.50]) and patient-rated health. These associations were not modified by HF optimising therapies.

Comment: This large cross-sectional study from the Swedish Heart Failure Registry highlights the importance of comorbidities as contributors to impaired QOL in patients with chronic HF. Not surprisingly, the number of comorbidities the more negative the impact on patient-reported QOL. The study also highlights the high prevalence of anxiety and depression among patients with chronic HF, and the negative impact these conditions have on functional status and overall QOL.


Abstract

Multimorbidity in patients with heart failure from 11 Asian regions

Authors: Tromp J et al., ASIAN-HF authors

Summary: Data from 6480 Asian registry patients with chronic HF (1204 with HFPEF) were prospectively analysed to detect multimorbidity patterns and their associations with QOL and health outcomes. The following five distinct multimorbidity groups were identified: i) elderly/AF (n=1048); ii) obesity, diabetes or hypertension (metabolic; n=1129); iii) young, low comorbidity rate and nonischaemic aetiology (young; n=1759); iv) ischaemic aetiology (n=1261); and v) diabetic, hypertensive, low prevalence of obesity and high prevalence (metabolic; n=1129); iii) young, low comorbidity rate and nonischaemic aetiology (young; n=1759); iv) ischaemic aetiology (n=1261); and v) diabetic, hypertensive, low prevalence of obesity and high prevalence of CKD (lean diabetic; n=1283). The lean diabetic group had the poorest QOL, the most severe HF signs and symptoms and the highest rate of the primary outcome of all-cause mortality or HF hospitalisation within 1 year (p<0.001 for all). Compared with the young group, the lean diabetic, elderly/AF, ischaemic and metabolic groups had significantly greater likelihoods of a primary outcome event (respective adjusted HRs 1.79 [95% CI 1.46–2.22], 1.57 [1.26–1.96], 1.51 [1.22–1.88] and 1.28 [1.02–1.60]).

Comment: This is another large HF registry study, this time from 11 Asian countries, focusing on multimorbidity. The mean age of patients included in the registry was relatively young (62 years of age) compared with similar registries from Western countries where the number of comorbidities are likely to be even higher. While the authors identified five distinct ‘multimorbidity’ phenotypes, the overall take-home message is that for patients with HF, the older you are and the more comorbidities you have, the worse your QOL and the worse your survival.


Abstract

Independent commentary by Professor Peter Macdonald.

Peter Macdonald is a Conjoint Professor of Medicine in the University of New South Wales, senior staff cardiologist in the Heart & Lung Transplant Unit at St Vincent’s Hospital, Sydney and co-head of the Transplantation Research Laboratory at the Victor Chang Cardiac Research Institute. He is a past President of the Transplantation Society of Australia & New Zealand (TSANZ). His major research interests over the last 20 years have been in the areas of heart failure, pulmonary hypertension, transplant allograft rejection, donor management and organ preservation. He has contributed to eight national guidelines, and published 18 book chapters and over 280 peer-reviewed scientific papers.
CHF patients aged ≥ 70 years deserve an age-proven β-blocker¹,²

NEBILET reduced the risk of all-cause mortality or cardiovascular hospitalisation in a broad range of CHF patients aged ≥ 70 years*¹,²

*vs placebo P = 0.039; patients ≥ 70 years regardless of age, gender or left ventricular ejection fraction

CHF = Chronic Heart Failure

PBS Information: Restricted benefit. Moderate to severe heart failure. Refer to PBS Schedule for full restricted benefit information.

Please review full Product Information before prescribing. The Product Information can be accessed at www.menarini.com.au/pi

Nebilet® (nebivolol hydrochloride) tablets 1.25 mg, 5 mg, 10 mg. INDICATIONS: Essential hypertension. Stable chronic heart failure (CHF) as an adjunct to standard therapies in patients 70 years or older. CONTRAINDICATIONS: Hypersensitivity to the active or any of the excipients; liver insufficiency or liver function impairment; acute heart failure; cardiogenic shock or episodes of heart failure декомpenstion requiring IV inotropic therapy; sick sinus syndrome, including sino-atrial block; second and third degree heart block (without a pacemaker); history of bronchospasm (e.g. including COPD) and/or asthma; untreated phaeochromocytoma; metabolic acidosis; bradycardia (HR < 60 bpm prior to starting therapy); hypotension (systolic BP < 100 mmHg); severe peripheral circulatory disturbances. PRECAUTIONS: Avoid abrupt cessation unless clearly indicated – reduce dosage gradually over 1-2 wks; refer to full PI. If it must be withdrawn abruptly, close observation is required. Anaesthesia: untreated congestive heart failure, unless stabilised; bradycardia; peripheral circulatory disorders (e.g. Raynaud’s disease, intermittent claudication); first degree heart block; Prinzmetal’s or variant angina; lipid and carbohydrate metabolism – does not affect glucose levels in diabetic patients, but may mask symptoms of hypoglycaemia. Hyperthyroidism; COPD/asthma; phaeochromocytoma; various skin rashes; conjunctival xerosis; oculomucocutaneous syndrome; psoriasis; increased sensitivity to allergens and severity of anaphylactic reactions; galactose intolerance, Lapp-lactase deficiency or glucose-galactose malabsorption; driving vehicles or operating machines. Pregnancy (Cat C). Lactation. Children and adolescents. Renal and hepatic insufficiency – see Dosage and Administration. INTERACTIONS: Combination not recommended: Class I antiarrhythmics; calcium channel antagonists (verapamil/diltiazem); centrally-acting antihypertensives; other beta-blockers (incl. eye drops). Combination to be used with caution: Class III antiarrhythmic drugs; anaesthetics (volatile); insulin and other oral diabetic medicines; calcium antagonists (dihydropyridine type); catecholamine depleting agents; baclofen; amifostine; for other combinations requiring careful consideration, see full PI. ADVERSE EFFECTS: Headache, dizziness, tiredness, fatigue, paraesthesia, constipation, nausea, diarrhoea, cardiac failure aggravated, bradycardia, hypotension, dyspnoea, oedema, slowed AV conduction/AV-block, bronchospasm. Post-marketing reports of hypersensitivity, angioneurotic oedema, abnormal hepatic function, acute pulmonary oedema, acute renal failure, myocardial infarction, others see full PI. DOSAGE AND ADMINISTRATION: Once daily dosing, can be given with or without meals, consistent approach is recommended. Hypertension: 5 mg daily. Renal insufficiency: recommended starting dose is 2.5 mg daily, can be increased to 5 mg if needed. Patients > 65 years: recommended starting dose is 2.5 mg daily, can be increased to 5 mg if needed. Patients > 75 years: caution must be exercised and these patients monitored closely. Chronic Heart Failure: The initial up titration should be done gradually at 1-2 wk intervals based on patient tolerability starting at 1.25 mg once daily, increased to 2.5 mg, then to 5 mg and then to 10 mg once daily. Initiation of therapy and every dose increase should be done under close supervision for at least 2 h. No dose adjustment is required in patients with mild to moderate renal insufficiency. Use in patients with severe renal insufficiency (serum creatinine ≧ 250 µmol/L) is not recommended. Date prepared 17 December 2015. References: 1. Nebilet Approved Product Information, 14 December 2015. 2. Flather MD et al. Eur Heart J 2005; 26: 215–25.
Prevalence, predictors and clinical outcome of residual congestion in acute decompensated heart failure

Authors: Rubio-Gracia J et al.

Summary: These researchers studied the prognostic value of residual clinical congestion using an established CCS (composite congestion score) in 1572 patients with acute decompensated HF. Significant congestion (CCS >2) was present in 20% of patients at baseline, with 28.7% still significantly congested, 47.8% mildly congested (CCS 1–2) and 23.5% with no residual congestion (CCS 0) at hospital day 7 or discharge (whichever came first). The risk of readmission by day 60 was significantly increased in patients with significant residual congestion at day 7 or discharge (HR 1.88 [95% CI 1.39–2.55]), as was the 180-day all-cause mortality risk (1.54 [1.16–2.04]). Baseline prediction of both outcomes was increased when diuretic response was added to residual congestion, albeit with only a modest gain in prognostic performance.

Comment: In this post hoc analysis of the PROTECT study (aimed at assessing the efficacy of an adenosine-1 receptor antagonist, rolodifline, in acute decompensated HF), the authors developed a CCS to estimate the degree of clinical congestion on admission and at discharge in patients with acute decompensated HF. As expected, virtually all patients had a high CCS on admission. The interesting finding is that only about one quarter of patients had completely cleared their congestion by discharge while another quarter had a persistently high CCS (despite receiving a higher cumulative dose of furosemide) with the rest having mild residual congestion. Renal impairment and diabetes mellitus were more common comorbidities in those with a high CCS at discharge, and not surprisingly, this cohort had the highest rates of readmission at 2 months and mortality at 6 months. Although not part of the trial, it is tempting to speculate that HF patients with an elevated CCS at discharge are the ones who have the most to gain from referral to a multidisciplinary HF management service.

Reference: Int J Cardiol 2018;258:185–91

Association of diuretic treatment at hospital discharge in patients with heart failure with all-cause short- and long-term mortality

Authors: Parén P et al.

Summary: The association of diuretic treatment at discharge with short- and long-term all-cause mortality was explored in 26,218 real-life Swedish patients with HF (irrespective of EF), of whom 87% were prescribed diuretics at hospital discharge. In an analysis of a 1:1 propensity score-matched cohort of patients with HF (irrespective of EF), of whom 87% were prescribed diuretics at hospital discharge, the authors of this Swedish HF registry analysis is whether being on diuretics at discharge impacts on subsequent survival. Patients receiving diuretics at discharge were on average older, more likely to be female and have HFPEF, had a longer duration of HF, were more symptomatic at discharge, were more likely to have physical and radiographic signs of congestion and had a higher BNP level and a lower glomerular filtration rate than patients who were not receiving diuretics at discharge. Not surprisingly given these differences in baseline characteristics, in unadjusted analyses, diuretic therapy at discharge was associated with increased short-term and long-term mortality. After propensity matching for 46 variables, diuretic therapy at discharge was no longer associated with short-term mortality, but was still associated with long-term mortality. Whether diuretic therapy at discharge is a cause of long-term mortality remains a hypothesis (which is unlikely to be tested in any future randomised trial), however, it can be concluded that diuretic treatment like clinical congestion at discharge identifies HF patients at increased mortality risk.

Comment: Clinicians are often concerned that HF patients will develop symptomatic hypotension after initiation of inhibitors of the renin angiotensin system, including ACE (angiotensin converting enzyme) inhibitors, ARBs (angiotensin receptor blockers) and more recently ARNI. These concerns are increased in the elderly and those with low blood pressure prior to commencing therapy. In this post hoc analysis of the PARADIGM-HF trial, the authors focussed their analysis on patients who experienced symptomatic hypotension during the open-label run-in phase or after randomisation. Symptomatic hypotension was uncommon in the total study population, but did occur more commonly with sacubitril/valsartan than with enalapril. Discontinuation of study drug due to symptomatic hypotension was similar between the two treatments. Symptomatic hypotension during run-in did not adversely affect the benefit of sacubitril/valsartan over enalapril during the main trial. These results are encouraging, it should be noted that patients only progressed to the randomised phase of the trial if they demonstrated tolerability to enalapril followed by sacubitril/valsartan. Furthermore, the average age of randomised patients in the PARADIGM trial was 64 years, considerably younger than the ‘real-world’ HF population.

Reference: Circ Heart Fail 2018;11:e004745

Coronary microvascular dysfunction and future risk of heart failure with preserved ejection fraction

Authors: Taqueti VR et al.

Summary: This research involved 201 consecutive patients undergoing evaluation for suspected CAD who did not have flow-limiting CAD or reduced LVEF. These patients were followed for a median of 4.1 years for CV death and hospitalisation for nonfatal myocardial infarction or HF. Patients with impaired coronary flow reserve (n=108) exhibited changes in diastolic flow and relaxation velocities that were consistent with worsening diastolic function (p<0.0001 for trend). Detectable troponin was associated with diastolic dysfunction only when coronary flow reserve impairment was present (p=0.002 for interaction). Independent associations were seen between impaired coronary flow reserve and diastolic dysfunction (adjusted OR 2.58 [95% CI 1.22–5.48]) and composite CV outcomes or HFPEF hospitalisation alone (adjusted HR 2.47 [1.09–5.62]). Patients who had both impaired coronary flow reserve and diastolic dysfunction had a >5-fold increased risk of hospitalisation for HFPEF (p<0.001).

Comment: This is an interesting study examining the potential role of coronary microvascular dysfunction as a pathophysiological basis for HFPEF. The authors identified a consecutive cohort of patients undergoing evaluation for suspected CAD with myocardial perfusion PET (positron emission tomography) scanning, echocardiography and troponin who were found to have nonocclusive CAD and normal LVEF. Just over half the study population had impaired coronary flow reserve by perfusion PET scanning. Impaired coronary flow reserve was associated with echocardiographic parameters of diastolic dysfunction and a greater than 5-fold risk of future hospitalisation with HFPEF over the subsequent 4 years. Whether impaired coronary flow reserve is the cause or result of HFPEF remains unclear, but it does provide a potential therapeutic target for future intervention studies.

Reference: Eur Heart J 2018;39:840–9

Incidence, predictors, and outcomes associated with hypotensive episodes among heart failure patients receiving sacubitril/valsartan or enalapril

Authors: Vardeny O et al.

Summary: This was an analysis of data from the PARADIGM-HF trial assessing if the efficacy of sacubitril/valsartan was modified according to hypotension during the trial’s run-in periods (enalapril, followed by sacubitril/valsartan) and postrandomisation. Hypotension affected 1.3% and 2.4% of participants during the enalapril and sacubitril/valsartan run-in phases, respectively, among whom 68% and 51% were unable to continue the trial. Postrandomisation, a greater proportion of sacubitril/valsartan recipients experienced hypotensive events compared with enalapril recipients (14.0% vs. 9.9% [p<0.001]), but there was no significant between-group difference for the proportion who discontinued therapy because of hypotension. For both groups, participants who experienced a hypotensive event were older, had lower blood pressure at randomisation and were more likely to have an implantable cardioverter defibrillator. Efficacy of sacubitril/valsartan versus enalapril was similar for participants versus without hypotensive events during the run-in phases (p=0.90 for interaction).

Comment: Clinicians are often concerned that HF patients will develop symptomatic hypotension after initiation of inhibitors of the renin angiotensin system, including ACE (angiotensin converting enzyme) inhibitors, ARBs (angiotensin receptor blockers) and more recently ARNI. These concerns are increased in the elderly and those with low blood pressure prior to commencing therapy. In this post hoc analysis of the PARADIGM-HF trial, the authors focussed their analysis on patients who experienced symptomatic hypotension either during the open-label run-in phase or after randomisation. Symptomatic hypotension was uncommon in the total study population, but did occur more commonly with sacubitril/valsartan than with enalapril. Discontinuation of study drug due to symptomatic hypotension was similar between the two treatments. Symptomatic hypotension during run-in did not adversely affect the benefit of sacubitril/valsartan over enalapril during the main trial. While these results are encouraging, it should be noted that patients only progressed to the randomised phase of the trial if they demonstrated tolerability to enalapril followed by sacubitril/valsartan. Furthermore, the average age of randomised patients in the PARADIGM trial was 64 years, considerably younger than the ‘real-world’ HF population.

Reference: Circ Heart Fail 2018;11:e004745

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Effect of sacubitril/valsartan on recurrent events in the Prospective comparison of ARNI with ACEI to Determine Impact on Global Mortality and morbidity in Heart Failure patients (PARADIGM-HF)

Authors: Mogensen UM et al.

Summary: Various recurrent event analyses were used in this post hoc analysis of the PARADIGM-HF trial reporting on recurrent events, incorporating all HF hospitalisations and CV-related deaths, for the 8399 participants randomised and followed for a median of 27 months. Among 3181 primary endpoint events that occurred during the trial, including 1251 CV-related deaths, 63.8% were first events, including 836 CV-related deaths. Among participants with ≥1 HF hospitalisation (n=1199), 54% required ≥1 further HF hospitalisation. Compared with enalapril, sacubitril/valsartan was associated with a lower risk of recurrent HF hospitalisation when assessed using a negative binomial model (rate ratio 0.77 [95% CI 0.67–0.89]), the Wei, Lin and Weissfeld method (HR 0.79 [0.71–0.89]), the Lin, Wei, Ying and Yang method (rate ratio 0.78 [0.68–0.89]) and a joint frailty model (HR 0.75 [0.66–0.86]); similar effects of sacubitril/valsartan versus enalapril were seen for recurrent HF hospitalisations/CV-related death.

Comment: In another post hoc analysis of the PARADIGM-HF trial, the authors investigated the impact of sacubitril/valsartan compared with enalapril on recurrent HF admissions. In the main trial, 16% of patients in the enalapril group required admission for acute decompensated HF over the duration of the trial. Within this group, just over one third required further readmissions for acute decompensated HF. Sacubitril/valsartan not only reduced the rate of first hospital readmission by 20% as reported in the original trial publication, but also reduced the rate of subsequent readmissions by approximately 20% compared with enalapril. As a consequence, the absolute treatment benefit of sacubitril/valsartan over enalapril was substantially greater when total events rather than first events were considered.

Reference: Eur J Heart Fail 2018;20:760–8

Early ambulation among hospitalized heart failure patients is associated with reduced length of stay and 30-day readmissions

Authors: Fleming LM et al.

Summary: The impact of early ambulation on length of stay, discharge disposition, readmission and mortality was explored in 285,653 patients admitted to 369 US hospitals for HF. Ambulation by hospital day 2 was achieved by 65% of the patients, and was predicted by younger age and male sex (p<0.01 for both), but not hospital size or academic status. Analyses at the hospital level revealed that those with early ambulation rates in the top versus bottom 25% were less likely to have a length of stay >4 days (OR 0.83 [CI 0.73–0.94]) and (in subgroup analyses of fee-for-service Medicare beneficiaries) they also had a 24% lower 30-day readmission rate (p<0.0001).

Comment: Early ambulation defined as ambulation without human assistance by day 2 was found in this very large US registry analysis of patients admitted with acute decompensated HF to be associated with reduced hospital length of stay and a lower rate of 30-day readmissions. The authors identified both hospital-level and patient-level variables that were associated with early ambulation. While these observational data support a policy of early ambulation in hospitalised HF patients, the authors acknowledge that the expectation that early ambulation will be beneficial remains a hypothesis. As discussed by the authors, the major patient-level confounder that is not currently captured in the registry and that is likely to impact on early ambulation is frailty. A prospective randomised trial of early ambulation will be needed to formally test the hypothesis. In the meantime, based on the findings of this analysis, a policy of early ambulation would seem both desirable and appropriate.

Reference: Circ Heart Fail 2018;11:e004643

Safety and efficacy of MitraClip™ therapy in patients with severely impaired left ventricular ejection fraction

Authors: Geis NA et al.

Summary: The safety and efficacy of percutaneous mitral valve repair using the MitraClip™ device was investigated in patients from a German registry with severely reduced systolic LV function. Among the 777 MitraClip™ implantations, 256 recipients were found to have experienced an LVEF of <30%, all of whom had successful percutaneous mitral valve repair. Procedural success rates were high, and periprocedural complication rates, in-hospital mortality and residual mitral regurgitation grades at discharge were low, with no significant differences according to preimplantation EF. The respective 1-year mortality rates for patients with EFs of <30%, 30–50% and >50% were 24.2%, 17.3% and 18.9%, and the respective major adverse cardiac or CV event rates were 29.7%, 24.4% and 23.5%. The main predictor of mortality in the EF <30% group was procedure failure (HR 10.38 [95% CI 3.71–29.02]). Most patients across all groups experienced improvements in clinical symptoms, and significantly more from the EF<30% group achieved a ≥1-grade increase in New York Heart Association functional class compared with the EF >50% group (69.5% vs. 56.8% [p<0.05]). There was also a notable increase in QOL (which was very poor at baseline) among patients with severe HF.

Comment: This German Study used data from a national registry of MitraClip™ implants for severe mitral regurgitation to compare clinical outcomes postprocedure stratified by preprocedural LV function. While the authors report a marked symptomatic improvement in patients undergoing successful MitraClip™ implantation with a preprocedure LVEF <30%, this observation should be interpreted cautiously in the absence of any sham control group. The high mortality approaching 25% at 1 year in this group is concerning. Also concerning is the 1-year mortality rate approaching 20% in those with normal preprocedural LVEF – possibly reflecting the advanced age (79 years) and comorbidities that placed them at high surgical risk. A large prospective randomised study of MitraClip™ in patients with severe functional mitral regurgitation complicating severe HF (COAPT NCT01626079) will help to define the role of percutaneous mitral valve procedures in this challenging group of patients.

Reference: Eur J Heart Fail 2018;20:598–608

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