No advantage of prolonged bivalirudin after PCI

EXTENDING anticoagulant treatment with bivalirudin for at least four hours following completion of PCI did not improve outcomes any better than stopping treatment immediately after the procedure. The MATRIX trial, published simultaneously in the New England Journal of Medicine, provided no clear winner.

Bivalirudin is known to reduce bleeding as compared to unfractionated heparin; but concomitantly increases risk of stent thrombosis. ‘But’, said study presenter Marco Valgimigli from the Swiss Cardiovascular Centre, Bern, ‘whether prolonging bivalirudin after PCI mitigates ischaemia without increasing bleeding risk is unknown due to a lack of properly controlled randomised trials.’

The Minimizing Adverse Hemorrhagic Events by Transradial Access Site and Systemic Implementation of Angiography (MATRIX) study was designed to determine whether bivalirudin given during intervention followed by a post-PCI infusion for at least four hours was associated with reductions in adverse cardiovascular events. The study is part of a series of three randomised trials involving patients with acute coronary syndromes.

Between 2011 and 2014, 3600 patients were randomised to receive bivalirudin either during PCI only (n = 1,188) or both during and after the procedure (n = 1,799). The study, sponsored by the Italian Society of Interventional Cardiology, took place at 78 sites in Italy, the Netherlands, Spain and Sweden.

Rates of the primary outcome (a composite of urgent target vessel revascularisation, definite stent thrombosis, and net adverse event) were associated with poor prognosis as well as death in patients with HF: ASV uses a non-invasive ventilator to treat the apnoea by delivering servo-controlled inspiratory pressure support via a face mask in addition to expiratory positive airway pressure. Although algorithms employed by different ASV devices vary slightly, the principle of treatment is the same - that is, back-up rate ventilation with adaptive pressure support.

Small studies have suggested multiple beneficial effects of ASV on surrogate markers in HF patients with CSA. Improvements have been observed in LVEF, plasma BNP levels, quality of life and functional outcomes. Post-hoc data from the recent CANPAP trial suggested that continuous positive airway pressure therapy (CPAP) might improve mortality when CSA is controlled in HF patients with CSA and EF of 40% or less.

Cowie reported that the SERVE-HF trial aimed to investigate the effects of adding ASV to guideline-based medical management on survival and cardiovascular outcomes in patients with HF with reduced EF and predominant CSA. The study was conducted in 91 centres in 11 countries including Germany, France, UK and Australia.

A total of 1325 patients were randomly assigned to guideline-based medical treatment associated with poor prognosis as well as death in patients with HF: ASV uses a non-invasive ventilator to treat the apnoea by delivering servo-controlled inspiratory pressure support via a face mask in addition to expiratory positive airway pressure. Although algorithms employed by different ASV devices vary slightly, the principle of treatment is the same - that is, back-up rate ventilation with adaptive pressure support.

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Non-invasive patient selection for catheterisation

A DIAGNOSTIC STRATEGY using computed tomographic angiography (CTA) to measure fractional flow reserve (FFRct) in suspected coronary artery disease can triage patients more effectively for subsequent invasive procedures than the usual care, according to the PLATFORM study reported as a Hot Line yesterday.

While current guidelines recommend that stable chest pain patients should be evaluated with non-invasive stress testing, rates of invasive angiograms showed no obstructive CAD was normal. The recent PROMISE and SORT-HEART trials comparing anatomic and functional strategies found that CT angiography improved processes of care but increased rates of invasive catheterisation and revascularisation with no significant reductions in events.

FFRct can be derived from CTA using computational algorithms that could address such limitations by providing non-invasively both functional and anatomic data. The PLATFORM study, which was published simultaneously in the European Heart Journal, thus aimed to investigate use of a CTA/FFRct-guided strategy as compared to standard practice in reducing the rate of invasive angiograms without increasing the occurrence of major cardiac events.

In this sequential non-randomised study 584 patients with new onset chest pain and suspected CAD were prospectively assigned to either usual testing or CTA/FFRct as the next step in their diagnostic work-up. The study was performed at 11 sites.

Results showed that 73.3% of those in the usual care group had angiograms without evidence of obstructive disease, while in the FFRTCT population 64% of invasive angiograms were cancelled following receipt of information from FFRTct, leaving 12.4% to proceed to invasive angiograms. The difference in the number of patients having invasive angiograms in the two groups was statistically significant (P < 0.0001). No differences were found for MACE, radiation or revascularisation rates.

"Use of this combined anatomic and functional strategy employing CTA and FFRTct was safe and improved patient selection for invasive catheterization," said study presenter Pamela Douglas, from Duke University School of Medicine in the US.

For more see www.esccardio.org.

Longer feasibility potential of bioresorbable stents

A DRUG-ELUTING stent made from bioresorbable material showed similar mid-term (12 month) safety and efficacy to a metal stent in patients undergoing PCI in the ABSORB Japan study and lays ‘a solid foundation’ for continued evaluation of long term outcomes for bioresorbable stents.

Study presenter Takeshi Kimura from Kyoto University Hospital said: ‘These results support the feasibility of bioresorbable vascular scaffolds to potentially improve long-term outcomes of patients.’

Theoretically, bioresorbable vascular scaffolds (BVS) may provide superior long-term results compared with permanent metallic DES, but whether they are as safe and effective as the metallic DES prior to complete bioresorption has been unknown.

In this ABSORB study, performed between April and December 2013, 400 patients with up to two de novo target lesions were randomised 2:1 to PCI using either BVS (n = 266) or metallic DES (n = 134). The study took place at 38 investigational sites in Japan.

The primary endpoint of target lesion failure (a composite of cardiac death, MI attributable to target vessel, or ischemia-driven target lesion revascularisation at one year) occurred in 4.2% of the BVS patients and 3.8% of the metallic DES patients (HR 1.10; 95% CI 0.39-3.11), demonstrating non-inferiority for the bioresorbent stent (P = 0.0001). Definite or probable stent scaffold thrombosis at 12 months occurred in 1.5% of patients with both devices. Procedure duration, however, was significantly longer for the bioresorbent stent.

For more see www.esccardio.org.

Not so disappointing in Chagas disease

Benznidazole did not reduce progression of Chagas disease cardiomyopathy (CCM) among patients, according to a trial presented at a Hot Line session yesterday and published simultaneously in the New England Journal of Medicine.

However, the BENEFIT (Benznidazole Evaluation For Interrupting Trypanosomiasis) study did find that a 40-80 day treatment with this antiparasitic medication significantly reduced parasitic activity in the blood.

The study was the largest to date to examine the impact of benznidazole in cardiomyopathy patients (CCD) which affects around 7 million people worldwide, including more than 100,000 in Europe.

Presenter Carlos Mortillo from McMaster University, Ontario, Canada, said the findings ‘may seem disappointing’ but have the potential to ‘dramatically change the way we investigate’ this potentially life-threatening condition.

Recent data has indicated that parasite persistence may play a role in the pathogenesis of chronic CCM. However, the role of trypanosomal infection in CCM is unknown. Thus the BENEFIT trial set out to evaluate whether the use of this approach with benznidazole reduced mortality and progression in CCM.

A total of 2854 patients at 49 sites in five countries were randomised between 2004 to 2011 to either benznidazole for 40 to 80 days. After an average follow-up of 5.4 years, the primary outcome was met in 27.5% of the benznidazole group and in 29.1% of the placebo group.

Comments from study author Takeshi Kimura, Kyoto University, Japan: ‘These results support the feasibility of BVS use to potentially improve the long-term outcomes of patients undergoing percutaneous coronary intervention,’ write the authors. The study, they add, enrolled a highly selected patient population with mainly stable CAD and single de novo non-complex target lesions. ‘As such, the study results should not be generalized to complex lesions, which are often encountered in clinical practice, such as bifurcations, heavily calcified lesions, diffuse disease, and thrombus.’

For more see www.esccardio.org.

Sleep apnoea

with ASV (n = 666) for a recommended five hours per night seven days a week, or guideline-based medical treatment alone (n = 659).

The primary endpoint was time to first event of all-cause death, life-saving cardiovascular intervention or unplanned hospitalisation for worsening HF. Secondary endpoints included both all-cause and cardiovascular mortality. The median follow-up was 31 months.

The results showed a 54.1% event rate of the primary endpoint in the ASV group and 50.8% for the control group (HR 1.13; 95% CI 0.97-1.31; P = 0.10). However, all-cause and cardiovascular mortality were significantly higher in the ASV group (HR 1.28; 95% CI 0.95-1.74; P = 0.10). Moreover, the number of patients having invasive angiograms in the two groups was significantly different (P > 0.0001). No differences were found for MACE, radiation or revascularisation rates.

‘Use of this combined anatomic and functional strategy employing CTA and FFRTct was safe and improved patient selection for invasive catheterization,’ said study presenter Pamela Douglas, from Duke University School of Medicine in the USA.

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Prolonged bivalirudin

clinical events up to 30 days) were 11.0% for patients with post-procedure bivalirudin versus 11.9% for patients who only received bivalirudin during the procedure (RR 0.91, P = 0.34). Additionally, no component of the primary end point was found to be reduced in the group receiving prolonged infusions of bivalirudin.

‘The study leaves both options open. There were no safety signals with respect to prolonging bivalirudin – which had been a professional concern,’ said Valgimigli.

The results, wrote the authors, reinforce the concept that reducing the rate of major bleeding events among patients with acute coronary syndromes treated with PCI does not necessarily affect the risk of major ischaemic adverse cardiovascular events. ‘The difference between the findings of this study and other studies may reflect the way in which nonfatal peri-procedural ischaemic events and bleeding events were defined,’ they suggest.

Nevertheless, according to an accompanying editorial in the NEJM, ‘the MATRIX trial provides the best evidence to date on the question of whether prolonging the infusion of bivalirudin after the end of the PCI procedure is beneficial.’
New guidelines on infective endocarditis

INFECTIVE ENDOCARDITIS (IE) is a deadly disease. Despite improvement in early diagnosis and management, IE remains associated with high mortality and severe complications. After the 2009 ESC guidelines these updated guidelines on IE takes account of new publications - including the first randomised study of surgical treatment and the important improvement of imaging (especially nuclear imaging). The guidelines focus on prophylaxis, a new concept of the cornerstone of diagnostic criteria for IE remains the imaging study. They provide the clinician with an evidence-based scoring system based on a classification of the strength of recommendations and the level of evidence. As in the previous guidelines on IE, prophylaxis is considered only for the highest risk patients when a high-risk procedure is performed. At the same time non-specific prevention measures are advised in high-risk and intermediate-risk patients.

After long discussions among the task force, a very practical algorithm has been proposed for the patient with known or suspected for IE. One of the most important parts of the new guidelines is the concept of a reference centre and endocarditis team. Thus, the guidelines state: 'Patients should be evaluated and managed at an early stage in a reference centre, with immediate surgical facilities and the presence of a multidisciplinary team, the 'Endocarditis Team'. This should include a cardiologist an infectious disease specialist, a microbiologist, imaging specialist, a cardiac surgeon, and, if needed, a specialist in CAD.

The cornerstone of diagnostic criteria for IE remains the modified Duke criteria, which are categorised in 'Definite', 'Possible' and 'Rejected' IE. The task force proposed the detection of paravalvular lesions by cardiac CT and ‘an abnormal activity of paravalvular lesions by cardiac SPECT/CT’, with the detection of embolic events/vascular phenomena detected by imaging alone a minor criteria. The task force proposed the detection of paravalvular lesions by cardiac CT and ‘an abnormal activity of paravalvular lesions by cardiac SPECT/CT’, with the detection of embolic events/vascular phenomena detected by imaging alone a minor criteria. A clear image of anatomical and echocardiographic definitions of what constitutes a vegetations, abscess, pseudocyst, perforation, fistula, valve aneurysm, and dehiscence of a prosthetic valve has been agreed to facilitate communication among experts.

What has not changed is the recommendation to limit antibiotic prophylaxis to patients at high risk of IE having dental procedures, and the guidelines provide detailed information on antibiotic treatment for every type of organism and situation.

Indications for echocardiography in suspected infective endocarditis.

Cardiovascular Research: an ESC flagship in basic research

While gratified by a strong 2015 impact factor of 5.940 (from 5.808 in 2014), the Editor-in-Chief of Cardiovascular Research, Kari Sipido, maintains that impact factors are not the only judge of journals.

In the cardiovascular field of basic research journals we are now number two behind Circulation Research,' she says, 'and ranked 13th in a total of 123 journals in the cardiovascular systems category. But it’s a category ‘crowded with clinical journals,’ she adds, ‘and high impact factors are hard to achieve for any basic science journal.' Cardiovascular Research is the ESC’s flagship journal for basic and translational research - and thus for this congress - and performs well with full-text downloads, which rose from 155,038 in 2013 to 226,712 in 2014. There is also an increasing number of subscribing institutions and manuscript submissions.

Since taking the helm as Editor-in-Chief in 2013, Sipido has developed Cardiovascular Research as ‘an overarching journal’ in the cardiovascular field, with comprehensive coverage of different sub-disciplines. While continuing to maintain its basic science core, she promotes interaction with translational and clinical research.

She is also strengthening the reproducibility of basic science studies published in the journal. ‘For no good reasons,’ she says, ‘experimental practice in basic research lags behind that for clinical investigations.’ To address such issues the journal has provided updated instructions to authors including a checklist and the editorial team gives detailed advice on statistical analysis and data presentation. Another goal is to ensure papers clearly describe the details of animal research to avoid others needlessly repeating the same experiments.

The editorial team continues to aim for speedy publication, says Sipido, with editorial decisions made on average within 21 days of receipt of manuscript - average online publication speed for corrected articles in 2014 was 4.2 weeks. ‘By the time a decision is made at least three editors and three external reviewers will have considered the manuscript,’ she says, adding that the final decision is made by deputy editors.

In addition to these monthly issues, Cardiovascular Research also publishes at least two Spotlight issues each year, where a series of invited expert reviews are featured alongside original research papers on specific topics - recently, for example, on sarcomeric cardiomyopathies and leucocyte trafficking across the vessel wall. The journal has also introduced support to authors for making schematic representations to illustrate their manuscripts, and offers an image gallery containing illustrations that can be downloaded free for use in presentations.

Plans for the future include commissioning news and opinion articles. ‘We would like to provide a central source of information for the field of cardiovascular research which gives an overview of both scientific advances and policy changes,’ says Sipido.
Winners from this year’s Young Investigator programme received their awards on Monday from ESC President Fausto Pinto.

Fausto Pinto: President previews ESC strategic plan
Speaking at yesterday’s General Assembly, ESC President Fausto Pinto described this year’s Congress as ‘a great success.’ The ESC has acted as host to more than 32,000 participants, he said, including more than 26,000 active delegates and 5000 exhibitors. In other news, he told the Assembly that a strategic plan for 2015 to 2020 will be approved by the end of this year. This blueprint for the future direction of the ESC has already been discussed by the board and Heart House colleagues and focuses on five strategic areas – congress, education, membership, research and advocacy.

Key achievements over the past 12 months in education, he said, have included eLearning as well as assessment and quality assurance, the ESC Education Conference and needs assessments. ‘Many courses have been introduced – not just for education but also for certification and accreditation, both in general cardiology and the sub-specialties,’ said Pinto.

The ESC believes in ‘education as a process’ and work is continuing on a virtuous circle of objectives which include guidelines, gap analysis and needs assessment, educational programmes, and the EURObservational programme. These registry findings will in turn provide ‘welcome data to fit into the guidelines’, of which five were published in 2014 and five at this year’s Congress.

Plans to enhance the identity of the ESC
The ESC is working with a branding agency to communicate the essence of the organisation, said Stephan Achenbach, the ESC’s Vice President for Global Affairs and Communication, said. ‘We want to convey a message of unity with diversity and broadcast our mission to reduce the burden of cardiovascular disease.’ While the ESC represents a strong brand, he said it is important that all the organisation’s many different activities are fully recognised. ‘We don’t always come across as one big family,’ he said, ‘and there can be a tendency for the six Associations and registries to be thought of separately.’ The updated ESC website, launched in April this year, has been well received, with ‘overwhelming’ positive feedback. Users have increased from 1 million in 2013 to over 3 million in 2015, said Achenbach. The website now has a global reach with the highest number of users coming from the US (7.72%) followed by Italy (7.28%), UK (7.15%) and Germany (6.03%).

‘But our mission,’ he said, ‘goes beyond national boundaries, to promote use of our guidelines and secure recognition for the ESC as a leading authority in cardiovascular care.’

Financial situation: ‘a true success’
There is a need for cost containment to continue the financial success of the ESC, to improve coordination of projects and to start projects when funding, volunteers and staff are in place, said ESC Secretary/Treasurer Francesco Cosentino.

Presenting the key financial figures for 2015, Cosentino said that they showed an operating income of €57.735 million and operating expenses of €56.116 million, which resulted in an operating profit of €1.619 million. Adding in €0.937 million derived from the ESC’s investments this brought profit before tax to €2.557 million, which fell to €1.734 million after tax. ‘Given the economic environment this can be considered a true success,’ said Consentino. ‘We are in a good position in case of trouble. However we have to still work on operating expenses, which continue to grow.'
The heart failure risks following cancer treatment

Biomarkers for prediction

The high-sensitivity cardiac troponin T biomarker could be used to identify those chemotherapy patients at increased risk of cardiotoxicity, according to results of the Spanish GECAME/CARDIOTOX study presented at this congress.

Early detection of those at risk of cardiotoxicity would help identify those who would benefit from heart failure therapies. The GECAME/CARDIOTOX study was based on a registry of patients from 19 Spanish hospitals treated with cardiotoxic anticancer drugs. They were followed-up with serial echocardiographic and biochemical measurements for two years after starting chemotherapy, and investigators Carlos Alvarez-Ortega and colleagues from University Hospital La Paz, Madrid, explored the role of biomarkers in early diagnosis.

More than 200 consecutive patients, 76.7% of whom were women, had blood samples drawn at baseline, 21 days, three months, six months and one year after starting chemotherapy. Levels of the two cardiac troponin isoforms cardiac troponin T (cTnT) and cardiac troponin I (cTnI) were measured, along with NT-proBNP and Galectin-3. Altogether, 59.5% of patients had been diagnosed with breast cancer, 34.7% with leukaemia or lymphoma and 5.8% with other tumours.

Results for cTnI at three months showed that 120 patients had cTnI levels above the 99th percentile, seven developed cardiotoxicity. For the 102 patients with cTnT levels below the 99th percentile, seven developed cardiotoxicity. This gave a negative predictive value of 93% (meaning that 93% of patients with high cTnT levels below the 99th percentile did not develop cardiotoxicity). NT-proBNP and Galectin-3 levels did not vary significantly at follow-up.

The results suggest that asymptomatic patients with cTnT values below the 99th percentile at three months might not need a very close cardiac follow-up, because they are at low risk of developing left ventricular dysfunction,” said Alvarez-Ortega. More research, he added, is now needed with a larger series of patients to introduce multiple variables into the risk score.

The reason NT-proBNP and Galectin-3 showed no variation, he suggested, was that a number of chemotherapy drugs and radiotherapy are cardiotoxic, with anthracyclines and trastuzumab known to be particularly damaging to cardiac cells.

Narelle Berry from Flinders University, Adelaide, described the study on behalf of a multidisciplinary team. They aimed to explore whether there were differences in cancer patients diagnosed with HF who subsequently died of HF compared to cancer patients who died of HF without a prior HF diagnosis. The study is part of a series designed to understand the health care ‘journey’ of patients with cardiotoxicity after chemotherapy and the stage at which HF interventions might best be introduced.

The team linked data from the Queensland Cancer Registry to the Hospital Admitted Patient Data Collection and the deaths’ registry. Results showed that within the cohort of 15,987 patients from HF did so without ever having a diagnosis of HF or treatment. This points to a need for chemotherapy patients to be monitored more closely and undergo detailed risk factor screening.”

Symptom monitoring for HF

Many cancer patients dying from heart failure related to chemotherapy do so without ever having received a HF diagnosis or treatment, according to a study described at this congress. This Australian study further found that almost two-thirds of chemotherapy patients who died from HF did so within three years of treatment.

It is now well established that a number of chemotherapy drugs and radiotherapy are cardiotoxic, with anthracyclines and trastuzumab known to be particularly damaging to cardiac cells.

Narelle Berry

Programme number P3632. High-sensitivity troponin for early detection of cardiotoxicity among patients on chemotherapy.

99 percentile cut-off (where 99% of normal healthy patients have levels below this). Of these 120 patients, 20 went on to develop cardiotoxicity during follow-up giving a positive predictive value of 17% (meaning that only 17% of all patients with cTnT levels above the 99th percentile developed cardiotoxicity).

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The team linked data from the Queensland Cancer Registry to the Hospital Admitted Patient Data Collection and the deaths’ registry. Results showed that within the cohort of 15,987 patients receiving chemotherapy for blood, lymphatic and breast cancers, 1062 were diagnosed with HF and 14,925 were not. Among the cohort of 4894 patients who subsequently died, 279 who had been diagnosed with HF died from HF (known as the HFA group), and 455 who had never been diagnosed with HF died from HF (known as the NHFA group).

Within the first year of cancer diagnosis 30.5% of the HFA group had died from HF compared to 33.4% of the NHFA group, and by three years 60% of the HFA group had died compared to 62% of the NHFA group. Furthermore, HFA patients had a median of four chemotherapy cycles compared to NHFA patients who had a median of six. Finally, 71% of the deceased patients who had an index HF died within one year of that index HF admission.

‘As has been shown previously, mortality is high and occurs quickly in patients with cancer and HF,’ said team leader Robyn Clark. ‘What’s new from our study is the high proportion of cancer patients who develop cardiotoxicity and die without ever having a diagnosis of HF or treatment. This points to a need for chemotherapy patients to be monitored more closely and undergo detailed risk factor screening.’

New approaches in devices for heart failure

Reshaping the heart with biomaterials and intricate anchor systems

RESHAPING the heart using biomaterials and anchor systems and undertaking cardiac contractility modulation (CCM) are all new approaches in heart failure treatment, according to presentations at a Symposium on Monday.

Despite advances in therapy, morbidity and mortality from HF remain unacceptably high, with five-year mortality rates exceeding 50%. For this growing population of patients, clearly remains an unmet need for new therapeutic approaches.

Gerd Hasenfuss from the Heart Centre of Göttingen, Germany, described how CCM devices are being used to enhance natural contractions of the heart. While the Optimizer IV looks much like a pacemaker, its mode of action is very different. Unlike the pacemaker, CCM, which is implanted under the skin with wires threaded into the right part of the septum of the heart, delivers its electrical impulses precisely when the heart cells are fully depolarised during systoles and does not respond by initiating contractions. Studies, explained Hasenfuss, suggest CCM signals have a direct impact on cellular physiology, increasing phosphorylation of key proteins and modulating calcium handling by the sarcoplasmic reticulum.

A recent meta-analysis of three studies involving 641 participants showed CCM significantly improved peak VO2 (a measure of performance capacity during exercise), 6-minute walk test distances and quality of life measured by the Minnesota Living with Heart Failure Questionnaire (p<0.0001).

The CCM system, said Hasenfuss, is the only device-based treatment option for 60% of HF patients with advanced symptoms and normal QRS durations, who are not suitable for cardiac resynchronisation therapy.

Currently ongoing is the Fix-HF. St. studying CCM in 230 moderate to severe HF patients with LVEF of 25-45% and a QRS>130ms. ‘If this study proves positive, I believe it will be time for CCM to be indicated in guidelines for patients with a normal QRS who have symptoms under optimal drug therapy,’ said Hasenfuss. In theory, he said, the system could be used in addition to other implantable devices.

Stefan Anker, from the University of Göttingen, explained how a number of new approaches are being based upon a well-defined law of physics. The law of Laplace states that ventricular wall stress/tension is proportional to the radius and pressure within the left ventricular chamber and inversely proportional to the left ventricular wall thickness.

The Revivent system has been designed to reduce wall tension by restoring a more natural conical shape with a reduced radius. The approach involves a number of pairs of polyester fabric-covered anchor heads made of titanium and implanted on the left ventricular epicardium and right ventricular septum via a catheter-based approach.

The anchor pairs have a ‘flexible tether’ running between them that functions like a ‘zip tie’, squeezing the anchors together and holding the heart in place. The effect is to create a fold of tissue excluding the non-functioning scar created by a myocardial infarction. For the procedure, Anker said, the external anchors are positioned by transmural catheters, avoiding the need for cardiopulmonary bypass and making incisions in the heart.

Data presented at the 2014 EuroPCR study by Olaf Wendler suggested that the efficiency of the remaining heart muscle was immediately improved by as much as 30-40%.

The technology also helps reshape the anatomy of the mitral valve, making more patients eligible for mitral clip procedures. Another approach using Laplace’s law is to inject the ventricular wall with inert alginate-hydrogel. This acts as a permanent prosthetic scaffold making it thicker. The procedure, Anker explained, involves performing a left thoracotomy to expose the heart and the pericardium, and then undertaking 10-19 injections of alginate-hydrogel into the beating left ventricular wall. ‘It’s a one-time procedure that does not require a power source and only minimal care following implantation,’ Anker said.

In the phase 2 AUGMENT-HF trial, 78 patients were randomised to alginate-hydrogel in combination with standard medical therapy through a limited left thoracotomy approach (n = 40) or standard medical therapy alone (n = 38). Results published online in the European Heart Journal in June showed at six months that alginate-hydrogel treatment was associated with improved peak VO2, six-minute walk test distance, and NYHA functional class (P<0.001). Furthermore, the six month MACE rate excluding the index hospitalisation was lower for patients receiving alginate-hydrogel and appears to have been mostly attributable to lower rates of hospitalisations for worsening HF.

‘These results provide proof of concept that intracardiac injection of alginate-hydrogel leads to beneficial effects in patients with advanced chronic HF,’ said Anker, adding that the absence of any increase in ventricular arrhythmias was reassuring. Future developments, he said, might include the possibility that the invasive procedure could be supplanted by percutaneous approaches, allowing hydrogel delivery by catheters, and the possibility that the inert material could be used as a transport system for locally acting drugs.

Increase in AED number prompts improved survival

A DANISH STUDY has found that the survival of cardiac arrest patients following bystander CPR increased from below 10% in 2001 to around 55% in 2012. The change follows a substantial increase in the number of AEDs in Denmark - from 141 in 2007 to 7800 in 2012 - and improvements in public CPR education.

Investigator Steen Hansen from Aalborg University in Denmark said that prompt use of an AED can have a "significant impact on the chances of survival" but this will be dependent on the AED’s proximity to the cardiac arrest and a bystander present able to locate and use the device. This study found that, while 74% of cardiac arrests occurred in the home, the rate of bystander defibrillation for those in public locations increased from 1.4% in 2001 to 11.9% in 2012. (Prog. No. 4072)

Another study reported at this congress found that CPR for out-of-hospital cardiac arrest had little benefit for survival beyond 35 minutes - and no patient from a list of 17,238 emergency cases having CPR for more than 53 minutes survived one month after cardiac arrest. Indeed, the probability of survival declined with each minute of CPR, such that nearly all survivals were achieved within 35 minutes. ‘This implies that we need to start CPR as soon as possible,’ said Youshikazu Goto from Kanazawa University Hospital in Japan.
Energy drinks: no endothelial effects

Energy drinks with low caffeine content do not appear to adversely affect vascular functions, according to a study presented at this Congress. The energy drink market is booming, with estimates that over 30% of 12-19 year-olds regularly use them, apparently undeterred by case reports linking energy drinks to fatal arrhythmias, ST segment elevation, Takotsubo cardiomyopathy, and aortic dissection. Or, for that matter, by studies suggesting that energy drinks increase blood pressure and platelet reactivity.

Cansin Tuhunay Kaya, Cetin Erol, and colleagues, from Ankara University in Turkey explored the long-term consequences of energy drinks on CV health by documenting effects on endothelial dysfunction. ‘It’s well known that endothelial dysfunction plays an important role in the pathogenesis of atherosclerosis, hypertension and diabetes and could facilitate the atherosclerotic events that occur in late life,’ said Erol. ‘But these results should be interpreted with caution since the amount of caffeine and taurine in our protocol was lower than that used in commercially available products in many other countries.’

Turkey, he pointed out, is unusual in imposing legal limits on the amount of caffeine and taurine in drinks. Further studies exploring higher doses of caffeine and chronic use, he adds, should be undertaken before reaching definitive conclusions about the CV safety of energy drinks.’ Cardiologists should always ask young patients about their energy drink consumption, Erol warned.

Results showed that systolic blood pressure, diastolic blood pressure and heart rate values were similar before and after energy drink consumption. Additionally, there was a 1.58% absolute decrease in FMD levels after consumption, but this did not reach statistical significance. According to our study energy drinks with limited caffeine and taurine content don’t seem to have any influence on endothelial function,’ said Erol. ‘Another short-term study exploring higher doses of caffeine and chronic use, he adds, should be undertaken before reaching definitive conclusions about the CV safety of energy drinks.’ Cardiologists should always ask young patients about their energy drink consumption, Erol warned.

Melting hearts: an antioxidant ice cream

YOU COULD SOON lick your way to a healthier heart. From Italy, the home of ice cream, comes a study showing that frozen desserts rich in polyphenols may improve vascular function and exercise performance.

Polyphenols, found in cocoa, nuts and red wine, are known to be the most abundant antioxidants in our diets and to protect cells against free radical damage. Epidemiological studies have reported inverse correlations between polyphenol intake and CVD, mortality and stroke. ‘Behind this study lay the hypothesis of Valerio Sanguigni and colleagues from the University of Rome Tor Vergata that an ice cream recipe rich in polyphenols would improve heart health. ‘Our objective was to develop a popular food product guaranteeing daily intakes of antioxidants which could be taken by both healthy and sick subjects,’ explained Sanguigni.

The study recipe contained cocoa and hazelnuts with other organic ingredients. Using the Folin-Ciocalteu colorimetric method, they demonstrated that total polyphenol content was 1817 mg/100g in the antioxidant ice cream compared to 96 mg/100g in the control milk chocolate ice cream. Fourteen healthy subjects were randomised to a treatment sequence with a single dose of 100 g natural antioxidant ice cream or milk chocolate ice cream, and then crossed over with a one week washout period between the two phases.

Results showed that flow mediated dilation (a direct marker of nitric oxide bioavailability and vascular health) increased from 2.55 at baseline to 6.3 after the ice cream (p<0.001). No significant change was found for subjects eating the milk chocolate ice cream. The exercise test showed an improvement of physical performance demonstrated by reductions in the double product of heart rate and systolic blood pressure, which decreased from 26.055 at baseline to 21.50 after eating the antioxidant ice cream. Again, no significant changes were found after eating milk chocolate ice cream. A photometric test showed antioxidant ice cream also significantly reduced levels of plasma hydroperoxides, providing an indirect measure of reduction of oxidative stress.

‘Our results show for the first time that antioxidant ice cream improved vascular function in healthy subjects and increased physical performance,’ said Sanguigni. ‘Habitual use of antioxidant ice cream could offer a new therapeutic approach for preventing CVD, chronic degenerative diseases and ageing.’ His group now plans to give antioxidant ice cream to patients with hypertension and metabolic syndrome.

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What’s your take-home message from London?

The message for me is the importance of CPR as early as possible when patients collapse outside hospital. There’s been interesting data on 17,000 patients showing there’s very little point in continuing CPR after 35 minutes. This message impacts on cardiologists at all levels. We’ll get patients who’ve been resuscitated after this point and we feel obliged to carry on when we need to face the clear truth. It reinforces the evidence that speed is of the essence - if we intervene as soon as possible after cardiac arrest, then they have a chance of survival.

For me, it’s been about the crucial role of cardiologists in assessing athletes for life-threatening issues such as IHSS. I see young people playing basketball who drop dead because of this. So how do you ensure that young athletes are safe to play top level sports? The consequences of not knowing are severe. The message from this Congress has been about what tests you need to run to minimise risk. EKG for example is a very important part of testing along with examination, and an exercise test if necessary. If there are no signs of heart conditions like heart murmurs or IHSS, then you can be confident.

The fact we need to take into account the different biologies of women. It’s encouraging of course that there have been presentations at this year’s Congress which have focused on cardiology from a perspective of gender. This includes data on women and mortality risk following MI treatment. Conditions such as coronary artery spasm are more common in women yet the reasons behind this and other cardiac issues have not been fully investigated. We need more studies which take gender into account if we are to improve our knowledge and understanding of the different outcomes depending on the sex of the patient.

I have been really impressed by the courage of both the ESC and cardiology journals to present and publish studies that have negative results. This year, for example, there have been really important messages in atrial fibrillation showing that incorporating additional ablation strategies does not deliver any improvement in results. Publicising such data is really important because it helps to overcome people’s prejudice about techniques and avoids the expense of undertaking unnecessary procedures. It also prevents different investigators from having the same idea and repeatedly undertaking the same experiment. It really is important to know when to cut your losses and recognise when procedures do not work.

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Step 1
Download the MyHF application on your patient’s smartphone prior to hospital discharge or during consultation (or the patient can download it themselves).*

Step 2
MyHF helps to optimize your patient’s compliance, involvement, and self-care and also helps gather serial data to aid decision-making during the patient’s appointment:
- Weight
- Blood pressure
- Heart rate
- Quality of life

Step 3
Advise your patient to enter heart failure measurements regularly at home, even if he or she is feeling well.

Step 4
Use the MyHF application to evaluate your patient’s serial measurements during his or her clinic appointment.

*Available in your country (check with your Servier local contact)