Heartbeat: Highlights from this issue

Catherine M Otto

As the year 2015 begins, I would like to personally thank all of you who have reviewed articles for *Heart* over the past year. External peer review is a core aspect of scientific publishing and your balanced reviews assist the Editorial Team in selecting the highest quality and most interesting original research papers for publication in *Heart*. Your insightful comments also provide authors with the opportunity to revise the paper to ensure the data is presented and interpreted as carefully as possible. I hope that my short comments on "How to Review a Paper for *Heart*" (***see page 3***) in this issue will be helpful to both new and experienced reviewers in understanding what types of comment are most useful to authors and the Editorial Team. *Heart* is committed to a rapid review cycle both in the interest of rapid dissemination of research data and out of courtesy to authors; reviewers are the keystones of this rapid review process. Again, my most sincere thanks.

In this issue is the Joint UK Societies' 2014 Consensus Statement on Renal Denervation for Resistant Hypertension (***see page 10***). Although endothelial renal denervation initially showed promising effects for control of blood pressure in small studies of patients with hypertension resistant to drug therapy, efficacy was not confirmed in a large randomized controlled clinical trial. The Joint UK Societies conclude that additional research in this area should be encouraged, but do not recommend renal denervation in routine clinical practice at this time.

Most adults with symptomatic severe aortic valve stenosis (AS) have hemodynamics characterized by a high transaortic velocity and pressure gradient. However, severe AS may be present with a low-gradient or velocity when transaortic stroke volume is low. Clinically, this is relatively obvious when the left ventricular ejection fraction (EF) is low; defined as Stage D2 AS in the 2014 AHA/ACC Valve Guidelines and also called "low-output low-gradient severe AS with reduced EF". The clinical diagnosis of Stage D3 AS

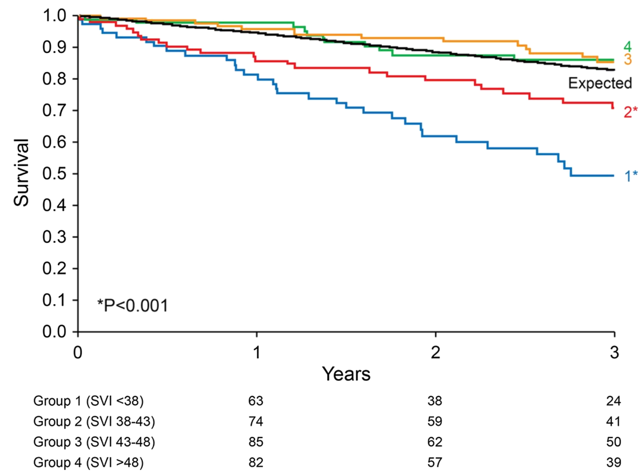

Figure 1 Stroke volume index (SVI) quartiles and adjusted survival. Group 1 (SVI <38 mL/m^2) had the lowest survival (3-year estimate 49%), followed by group 2 (SVI 38–43 mL/m^2; 3-year estimate 70%), group 4 (SVI >48 mL/m^2; 3-year estimate 85%) and group 3 (SVI 43–48 mL/m^2; 3-year estimate 86%) (p<0.001). Groups 1 and 2 had reduced survival compared with expected (p<0.001). Survival estimates were computed at the mean of variables in the multivariable model: age (80 years), body mass index (28.3 kg/m^2) and right ventricular systolic pressure (39.3 mm Hg).

(low-output low-gradient severe AS with a normal EF) is more difficult, requiring calculation of the stroke volume index. Further clinical outcomes in the subgroup of patients with Stage D3 severe AS is less well defined. In the Editor's Choice paper for this issue, Dr. Eleid and colleagues (***see page 23***) report that in a cohort of 405 adults with Stage D3 severe AS a lower stroke volume index was associated with a higher mortality, with a graded relationship between stroke volume index and survival rates (figure 1).

In an accompanying editorial, Professor Pibarot (***see page 5***) provides a useful algorithm for evaluation of these challenging patients as shown in figure 2. He also discusses that many of these patients benefit from aortic valve replacement and concludes that the paper by Eleid and colleagues "further emphasises the importance of always interpreting the data of aortic valve area and gradient in light of the flow data. Hence, the stroke volume index should be systematically incorporated in the echocardiographic evaluation and risk stratification of patients with AS and a SVI <35 mL/m^2 indicates that the patient is at a higher risk for mortality".

It has long been recognized that heart rate is inversely associated with longevity. However, the mechanism of this association remains obscure. Some data suggest that heart rate is simply a marker of increased cardiovascular risk, rather than an independent risk factor. In a large cross-sectional and longitudinal study by Dr. Jiang and colleagues (***see page 44***) from China, resting heart rate was an independent risk factor for metabolic syndrome, both at baseline (figure 3) and in the future, suggesting the association between heart rate and metabolic syndrome might account, at least partly, for the relationship between heart rate and survival.

Our Almanac series of review articles continues in this issue with Dr. Gerhard Diller's summary of congenital heart disease research published in Heart over the past 2 years, put into the context of major publications on this topic in other journals (***see page 65***). The Almanac articles offer a quick way to update your knowledge base in a specific topic area.

The Education in Heart article this issue examines the utility of strain, strain rate and post-systolic shortening measures

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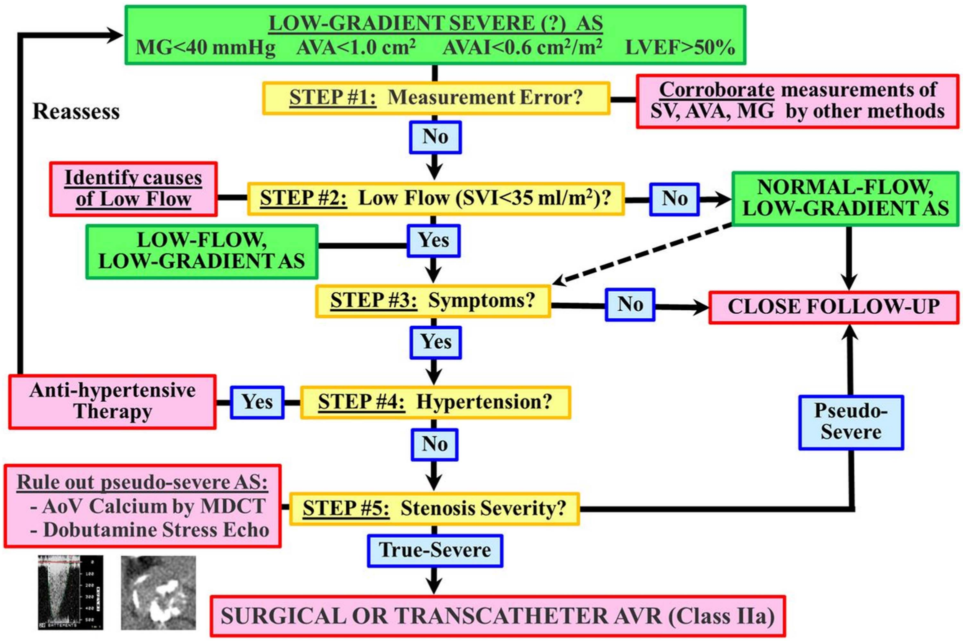

Figure 2 Algorithm for the management of patients with low-gradient AS. The yellow boxes indicate the step of the algorithms with the questions to address; the blue boxes, the possible answers to these questions and the outputs of the steps; the green boxes, the disease entity; and the red boxes, the follow-up or therapeutic interventions. AS, aortic stenosis; AVA, aortic valve area; AoV, aortic valve; AVAI, aortic valve area index; AVR, aortic valve replacement; SV, stroke volume; SVI, stroke volume index; MDCT, multi-detector computed tomography; MG, mean gradient.

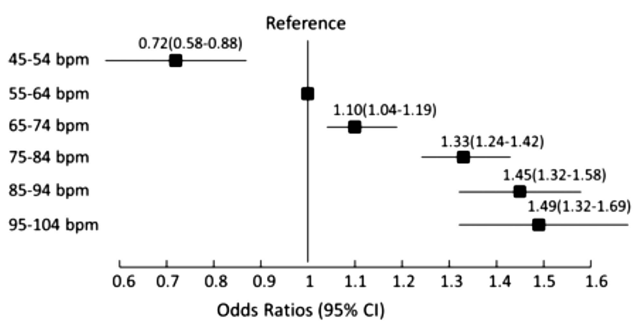

Figure 3 Stratified resting heart rate and OR (95% CI) of having metabolic syndrome in an association study after adjustments (model 1: age and sex; model 2: education, smoking, alcohol drinking and physical activities; model 3: body mass index, hypertension, diabetes and hyperlipidaemia; model 4: C reactive protein; model 5: further adjusted for creatine).

of myocardial deformation during dobutamine stress echocardiography (*see page 72*). Although tissue Doppler imaging and speckle tracking strain imaging are now feasible and provide incremental information compared to standard ultrasound imaging, these techniques remain outside the scope of practice for most busy clinicians. Perhaps, in the future these types of analysis will become automated leading to improvements in the accuracy of stress imaging for diagnosis of myocardial ischemia, stunning, hibernation and scar.

Try the Image challenge (*see page 29*) to see if you can identify the cause of recurrent ST segment elevation after myocardial infarction based on the ECG pattern and a computed tomographic image of the heart.

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