

Review article: the best of 2018

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Review article: the best of 2018

Marc J. Claeys^a, Michel De Pauw^b, Peter Geelen^c, Patrizio Lancellotti^d and Luc Pierard^d

^aDepartment of Cardiology, Antwerp University Hospital, Edegem, Belgium; ^bDepartment of Cardiology, Ghent University Hospital, Ghent, Belgium; ^cDepartment of Cardiology, OLV Hospital Aalst, Aalst, Belgium; ^dCentre Hospitalier Universitaire de Liège, Liège, Belgium

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In 2018, a total of 90 original scientific papers or reviews were published in *Acta Cardiologica*.

In this paper, we focus on the 10 best papers that we selected based upon the innovative character and/or upon the clinical relevance of their research. In different domains of the cardiology, we highlight the most important findings from these 10 best research papers.

1. Hypertrophic cardiomyopathy

Risk assessment for sudden cardiac death (SCD) in hypertrophic cardiomyopathy is a crucial part in the management as there is a subgroup at increased risk of SCD (up to 4–6% per year) for whom implantable cardioverter defibrillator (ICD) is recommended. Current risk models, although useful, remain imprecise. Dr Patel et al. from the Mayo Clinic assesses electrocardiogram-derived risk factors on SCD in a 1615 HCM patients with an ICD and related this to SCD events as documented on the ICD [1]. They identified prolonged QTc as an important ECG related risk factor for SCD and death even when controlling for typical risk factors (see [Figure 1](#)).

The management for HCM does not only include an appropriate indication for ICD but targets also the treatment of the obstruction caused by asymmetrical septal hypertrophy which is present in one-third of the HCM patients. Intracavitary gradient can be reduced by medication, by alcohol septal ablation or by surgical myectomy. Dr Hoedemakers et al. evaluates the long-term effects of these three strategies in 106 HOCM patients (27% conservative, 24% alcohol ablation, 49% myectomy) during a follow-up period of 8 ± 5 years [2]. Conservative treatment was associated

with more SCD-related events (5%/year vs 1%/year in the invasively treated patients) (see [Figure 2](#)). Invasive treatment was associated with a higher need for pacemaker implantation.

2. Heart failure

Sacubitril/valsartan reduced heart failure (HF) hospitalisation and mortality in the PARADIGM-HF trial. The group of Dr Mullens studied the effect of this drug in a real-world population of 201 HF patients [3,4]. Although their patients were frailer and older than in the landmark trial, the initiation of this drug exhibits a significant and early reduction in incident HF-hospitalisation (as compared to antecedent HF-admissions) together with a significant symptomatic and functional improvement (see [Figure 3](#)). Also, higher doses seem to be associated with more reductions in HF-admissions, underscoring the importance of dose up-titration.

In ischaemic cardiomyopathy, it is unclear whether the presence of chronic total occlusion (CTO) carries a higher risk for ventricular arrhythmia (VA) and mortality in patients with an ICD. Dr Vutthikraivit et al. performed a meta-analysis to examine the association between the presence of CTO and poor cardiovascular outcome in patients with ischaemic cardiomyopathy with an implanted ICD [5]. Based upon five studies, including 1095 patients (505 with CTO), the presence of CTO was associated with an increased risk of VA (risk ratio 1.7) and of all-cause mortality (risk ratio 1.6). These findings suggest revascularisation of CTO should be considered in these patients.

Risk stratification of heart failure is mainly based upon patient-related factors (such as extent of cardiac dysfunction, presence of renal failure); but, it is less known

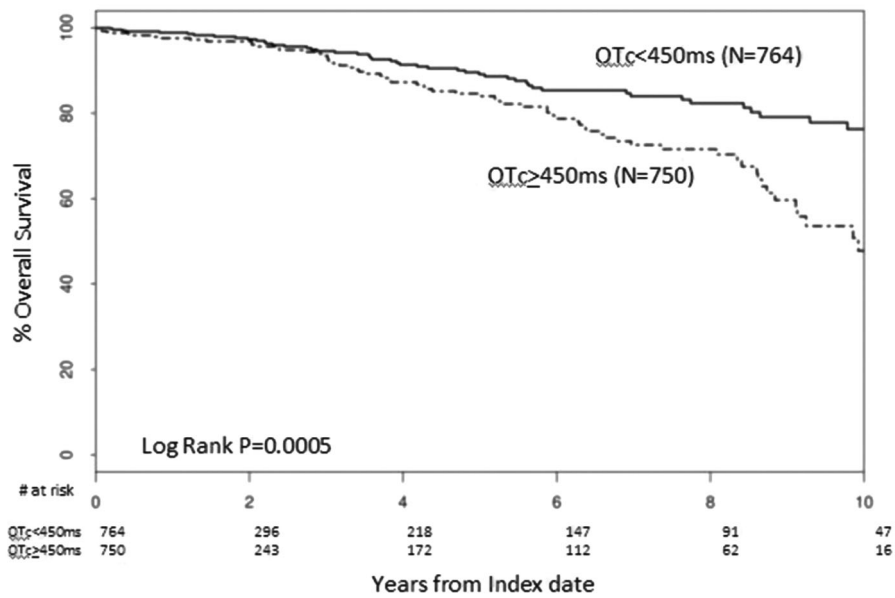


Figure 1. Impact of prolonged QTc on overall survival.

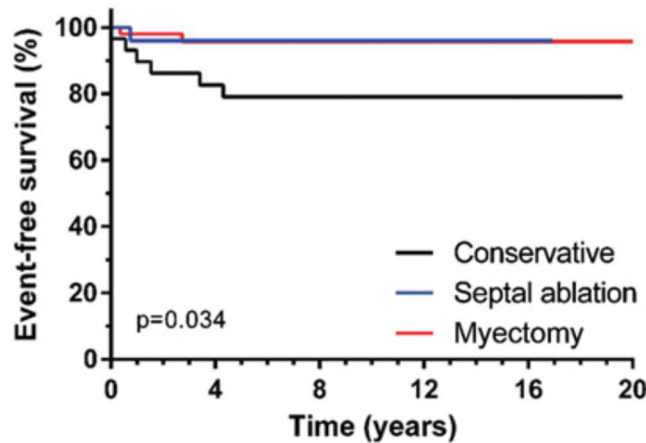


Figure 2. Sudden cardiac death related event rate.

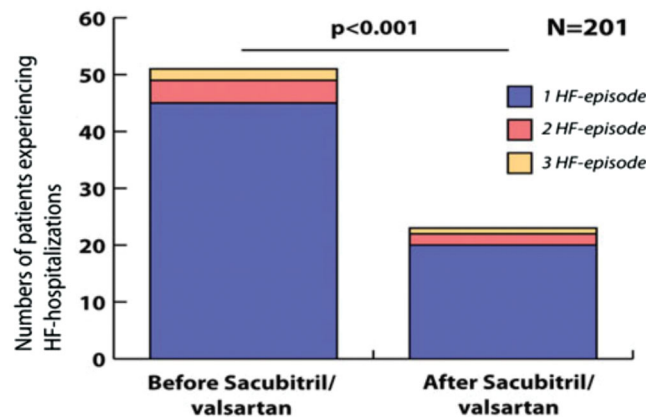


Figure 3. Heart failure hospitalisations before and after sacubitril/valsartan in a similar timeframe.

whether environment factors such as air pollution might play a role. Chen et al. studied whether the exposure of particulate matter (PM2.5) might aggravate heart failure in a murine model of transverse aortic constriction-

induced left ventricular failure (TAC) [6]. Exposure to PM2.5 decreased the LV-function and augmented the associated pulmonary arterial hypertension as compared to the sham operation (see Figure 4). Even in sham

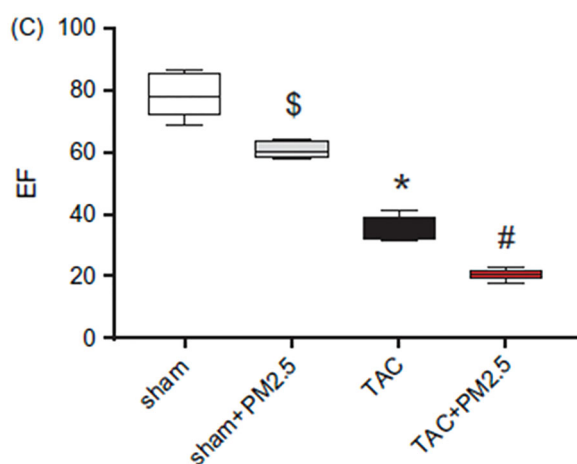


Figure 4. LV ejection fraction.

group, exposure to PM 2.5 resulted in a decrease of LV function.

3. Valvular heart disease

Transcatheter aortic valve implantation (TAVI) is the preferred treatment modality for patient with severe aortic stenosis (AS) at high or prohibitive risk for surgical aortic valve replacement. Dr Bakelants et al. aimed to evaluate real-world outcomes of 405 high-risk AS patients according to the treatment strategy chosen within the heart-team: TAVI ($n = 188$) vs surgical aortic valve replacement (SAVR, $n = 98$) vs medical treatment (MT, $n = 116$) [7]. SAVR patients had lower surgical risk score than TAVI and MT patients. At 1 year, all-cause mortality was 14% for SAVR, 17% for TAVI and 51% for MT ($p < 0.001$) (Figure 5). Hospital stay was shorter

with TAVI vs SVAR and safety at 30% favoured TAVI (22% vs 47%).

Dr Kanjanahattakij et al. performed a systematic review and meta-analysis to determine the relationship between pre-procedural anaemia and mortality post-TAVI [8]. Based on six studies, the authors found an independent association between anaemia and long-term mortality (adjusted RR 1.43) but not for short-term mortality (see Figure 6). Further study is needed to explore the underlying pathophysiology of this association.

4. Atrial fibrillation

Non-valvular atrial fibrillation (NVAf) carries a risk of ischaemic stroke or systemic embolism, which can be mitigated using anticoagulant treatment. Dr Cools et al. describes treatment patterns in anticoagulant therapy in 1713 patients with a new diagnosed NVAf in the period 2012–2016 (Belgian results from the GARFIELD-AF registry, see Figure 7) [9]. Guidelines adherence to stroke prevention was higher in Belgium than in the rest of Europe (80% vs 73%). In high stroke risk patients (CHADS-VASc ≥ 2), anticoagulants were used in 84.3%, whereas in low-risk patients (CHADS-VASc 0-1) anticoagulants were overused (58.7%).

AP: antiplatelet; DTI: direct thrombin antagonist; FXa: factor Xa inhibitor; VKA: vitamin-K-antagonist.

5. Ischaemic heart disease

Platelet inhibition with the newer more potent antiplatelet drugs (ticagrelor, prasugrel) was superior

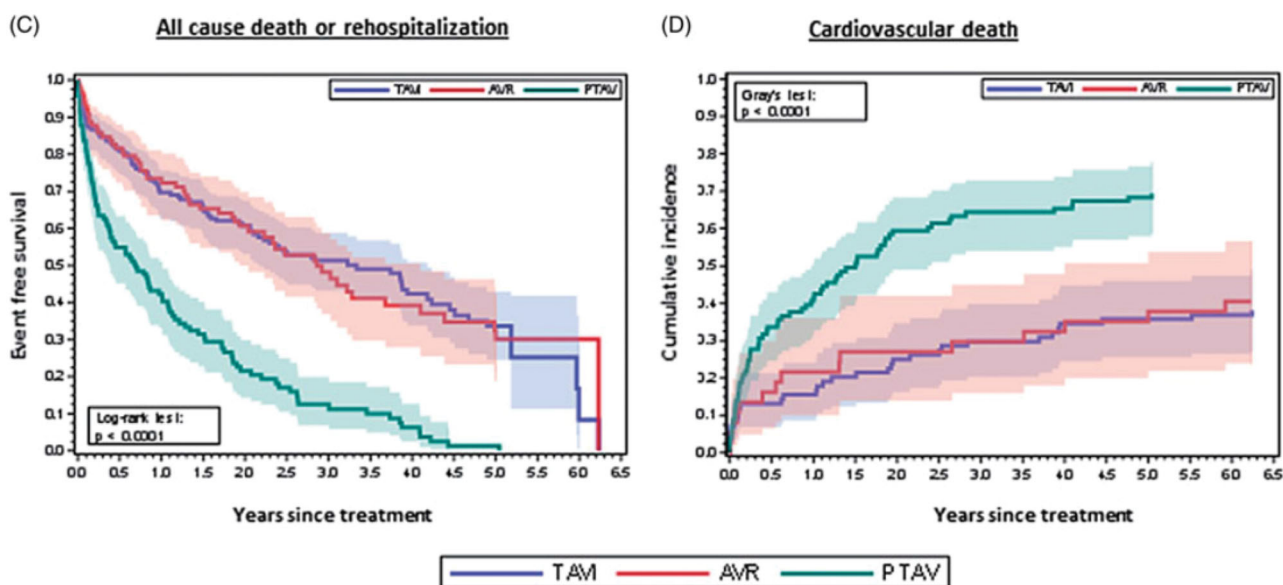


Figure 5. Clinical outcome and treatment strategy.

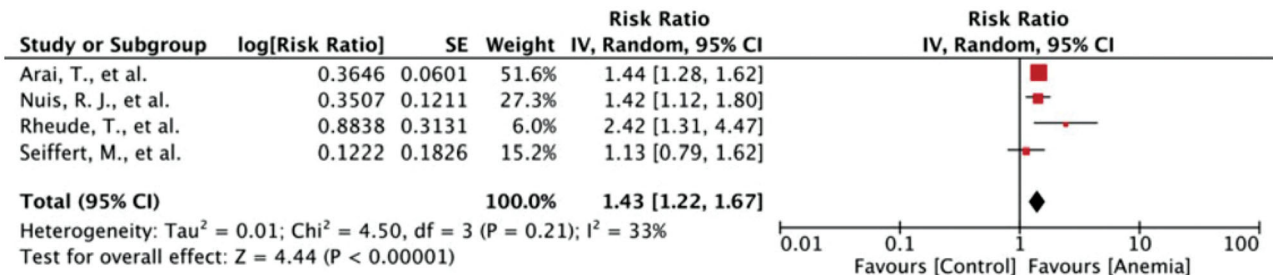


Figure 6. Association between anaemia and long-term mortality.

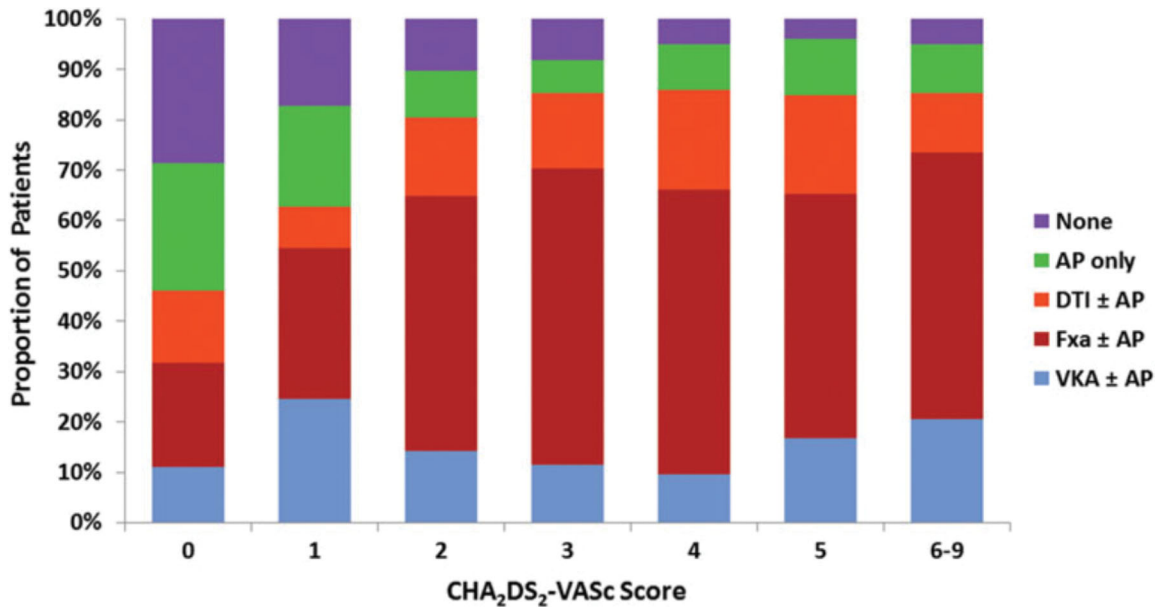


Figure 7. Antithrombotic therapy at baseline according to CHA2DS2-VASc score.

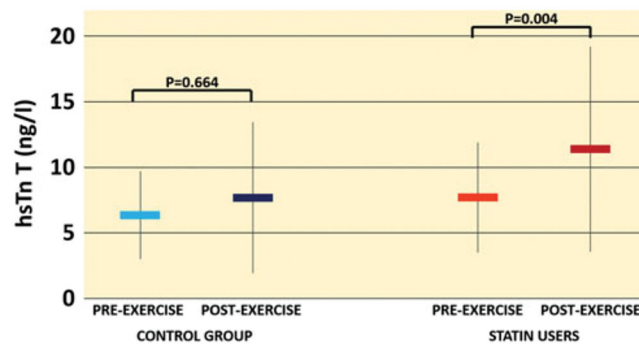


Figure 8. Troponine increase after exercise.

than clopidogrel when evaluated in terms of major adverse clinical events (MACE) in acute coronary syndromes patients. The role of new antiplatelets on top of aspirin with respect to minor myocardial injury after elective PCI has not been established previously. Göksülük et al. compare post PCI myonecrosis in 104 patients receiving clopidogrel with 96 patients

receiving ticagrelor [10]. In this randomised trial, minor myocardial necrosis was significantly more prevalent in clopidogrel than in the ticagrelor group (33% vs 19%). MACE rate at 1 month (myocardial infarction, stroke and transient ischaemic attack, death) was also higher in the clopidogrel group (16% vs 6%).

Cardiac troponins play a crucial role in the diagnosis of acute myocardial infarction. However, high sensitive cardiac troponin (HsTn) levels can be elevated due to non-pathological events such as strenuous exercise. Dr Unlü et al. evaluated the effect of statins on hsTnT level with moderated exercise in healthy subjects [11]. Statin therapy causes a significant trop increase, whereas the increase in the control group was marginal (see Figure 8). The observed increase can jeopardise the accuracy of clinical diagnosis particularly in the 0–1 h diagnostic protocols.

Disclosure statement

No potential conflict of interest was reported by the authors.

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