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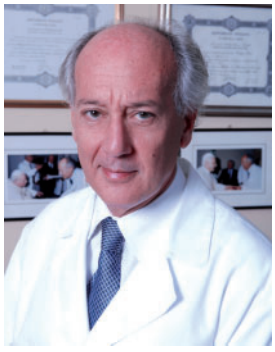
Focus on atrial fibrillation, syncope, and arrhythmias during COVID-19 pandemic



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Atrial fibrillation (AF) poses a ignificant burden to patients, physicians, and healthcare systems globally. Substantial research efforts and resources are being directed towards gaining detailed information about the mechanisms underlying AF,[1] its natural course,[2] and effective treatments,[3,4] and new evidence is continuously generated and published. This Focus Issue on arrhythmias contains the '**2020 ESC Guidelines for the diagnosis and management of atrial fibrillation developed in collaboration with the European Association for Cardio-Thoracic Surgery (EACTS)**', authored by Gerhard Hindricks from the Leipzig Heart Institute and colleagues from the ESC Scientific Document Group.[5] The authors note that the complexity of AF requires a multifaceted, holistic, and multidisciplinary approach to the management of AF patients, with their active involvement in partnership with clinicians. Streamlining the care of patients with AF in daily clinical practice is a challenging but essential requirement for effective management of AF. In recent years, substantial progress has been made in the detection of AF and its management, and new evidence is integrated in a timely fashion in this third edition of the ESC guidelines on AF. The 2016 ESC AF Guidelines introduced the concept of the five domains to facilitate an integrated structured approach to AF care and promote consistent, guideline-adherent management for all patients. The Atrial Fibrillation Better Care (ABC) approach in the 2020 ESC AF Guidelines is a development of this approach, with the goal to further improve the structured management of AF patients, promote patient values, and finally improve patient outcomes.

In a Special Article entitled '**The year in cardiovascular medicine 2020: arrhythmias**', Harry Crijns from the Maastricht University Medical Centre in the Netherlands, and colleagues review the most relevant studies in the field of arrhythmias and pacing.[6] The past year has shown a significant progress: landmark clinical trials in AF and implantable defibrillator therapy, new guidelines, integrated care, lifestyle and arrhythmias, His bundle pacing, risk prediction in sudden cardiac death, and advances in cardiogenetics (*Figure 1*) .

An estimated 50% of the general population will have a syncopal event at some point in their life, most frequently caused by vasovagal reflex. Although the clinical course is benign in most cases, especially in the younger population, severe forms of reflex syncope account for ∼14% of cases primarily in older patients.[7] Frequent unpredictable syncopal events in these patients may be severely disabling, justifying mechanism-specific treatments. Pacemakers with a rate-responsive closed loop stimulation (CLS) system continuously analyse trends of right ventricular intracardiac impedance during systolic phases to gather information about the speed of myocardial contraction and adjust the pacing rate accordingly. Recently, in acute tilt testing studies, pacemakers with CLS have shown the ability to institute a rapid pacing rate at the time of impending tilt-induced syncope.[8] In a Fast Track clinical research manuscript entitled '**Cardiac pacing in severe recurrent reflex syncope and tilt-induced asystole**', Michele Brignole from the Ospedale San Luca in Milan, Italy, and colleagues note that the benefit of cardiac pacing in patients with severe recurrent reflex syncope and asystole induced by tilt testing has not been established. The usefulness of the tilt-table test to select candidates for cardiac pacing is controversial.[9] The authors randomly assigned patients 40 years or older who had at least two episodes of unpredictable severe reflex syncope during the last year and a tilt-induced syncope with an asystolic pause >3 s to receive either an active (pacing ON; 63 patients) or an inactive (pacing OFF; 64 patients) dual-chamber pacemaker with CLS. The primary endpoint was the time to first recurrence of syncope. Patients and independent outcome assessors were blinded to the assigned treatment. After a median follow-up of 11.2 months, syncope occurred in significantly fewer patients in the pacing group than in the control group (16% vs.

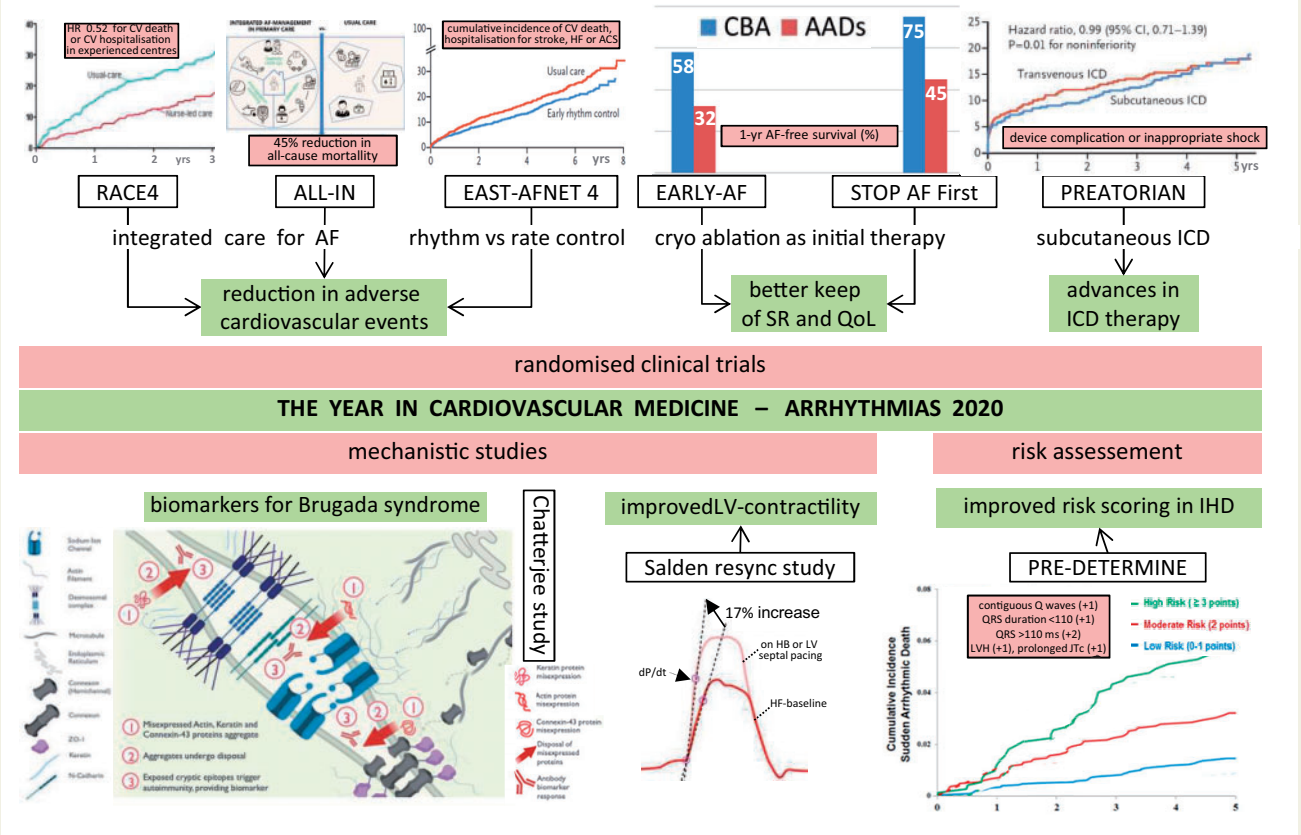

Figure 1 Graphical abstract. (from Crijns HJGM, Prinzen F, Lambiase PD, Sanders P, Brugada J. The year in cardiovascular medicine. See pages 499–507.)

53%; hazard ratio, 0.23; P =0.00005). A combined endpoint of syncope or pre-syncope occurred in significantly fewer patients in the pacing group (37% vs. 63%; hazard ratio, 0.44; P =0.002) (Figure 2). Minor device-related adverse events were reported in five patients (4%).

Brignole *et al.* conclude that in patients 40 years or older, affected by severe recurrent reflex syncope and tilt-induced asystole, a dual-chamber pacemaker with CLS is highly effective in reducing recurrences of syncope. The authors' findings support inclusion of tilt testing as a useful method to select candidates for cardiac pacing. The manuscript is accompanied by an **Editorial** by Cecilia Linde from the Karolinska Hospital in Stockholm, Sweden and Harry Crijns from the Maastricht University Medical Center in the Netherlands.[10] They note that The SPAIN study led to a Class IIb recommendation for dual-chamber pacing in the 2018 ESC syncope guidelines. The convincing results of the BIOSync CLS study published in this issue may contribute to broaden the recommendations for patients with recurrent vasovagal reflex syncope. There may indeed be a solution to an old problem.

Ventricular arrhythmias (VAs) are more likely to occur in settings associated with increased sympathetic tone, including physical activity, illness, and emotional distress. Historically, we have seen significant world events coinciding with a substantial rise in myocardial infarctions as well as VAs and the need for implantable cardioverter-defibrillator (ICD) therapies.[11] The health consequences of such events may be long lasting, with documented increases in myocardial infarctions up to 3 years following earthquakes and tsunamis. Interestingly, a decline in hospitalization for cardiovascular-related illness during coronavirus disease 2019 (COVID-19) has been documented in multiple countries, seemingly attributable to fewer acute coronary syndrome presentations.[12,13] In a clinical research article entitled '**Ventricular arrhythmia burden during the coronavirus disease 2019 (COVID-19) pandemic**', Catherine O'Shea from the University of Adelaide in Australia, and colleagues sought to determine the VA burden in ICD patients during COVID-19.[14] In their multicentre, observational, cohort study over a 100-day period during the COVID-19 pandemic in the USA, the authors assessed VAs in ICD patients from 20 centres in 13 States, via remote monitoring. Comparison was with a 100-day control period (late 2019) and a seasonal control period (early 2019). The primary outcome was the impact of COVID-19 on VA burden. During the COVID-19 period, ~6000 ICD patients underwent remote monitoring, with ~17 000 episodes of treated VAs (2.8 events per 100 patient-days). Comparing patients remotely monitored during both COVID-19 and the control period, significantly fewer VAs occurred during COVID-19 [incident rate ratio (IRR) 0.68, $P < 0.001$]. This difference persisted when comparing the patients monitored during both the COVID-19 and seasonal control period (IRR 0.69, 95% confidence interval 0.56–0.85, $P < 0.001$).

The authors conclude that during COVID-19, there was a 32% reduction in VAs needing device therapies, coinciding with measures of social isolation. The manuscript is accompanied by an **Editorial** by

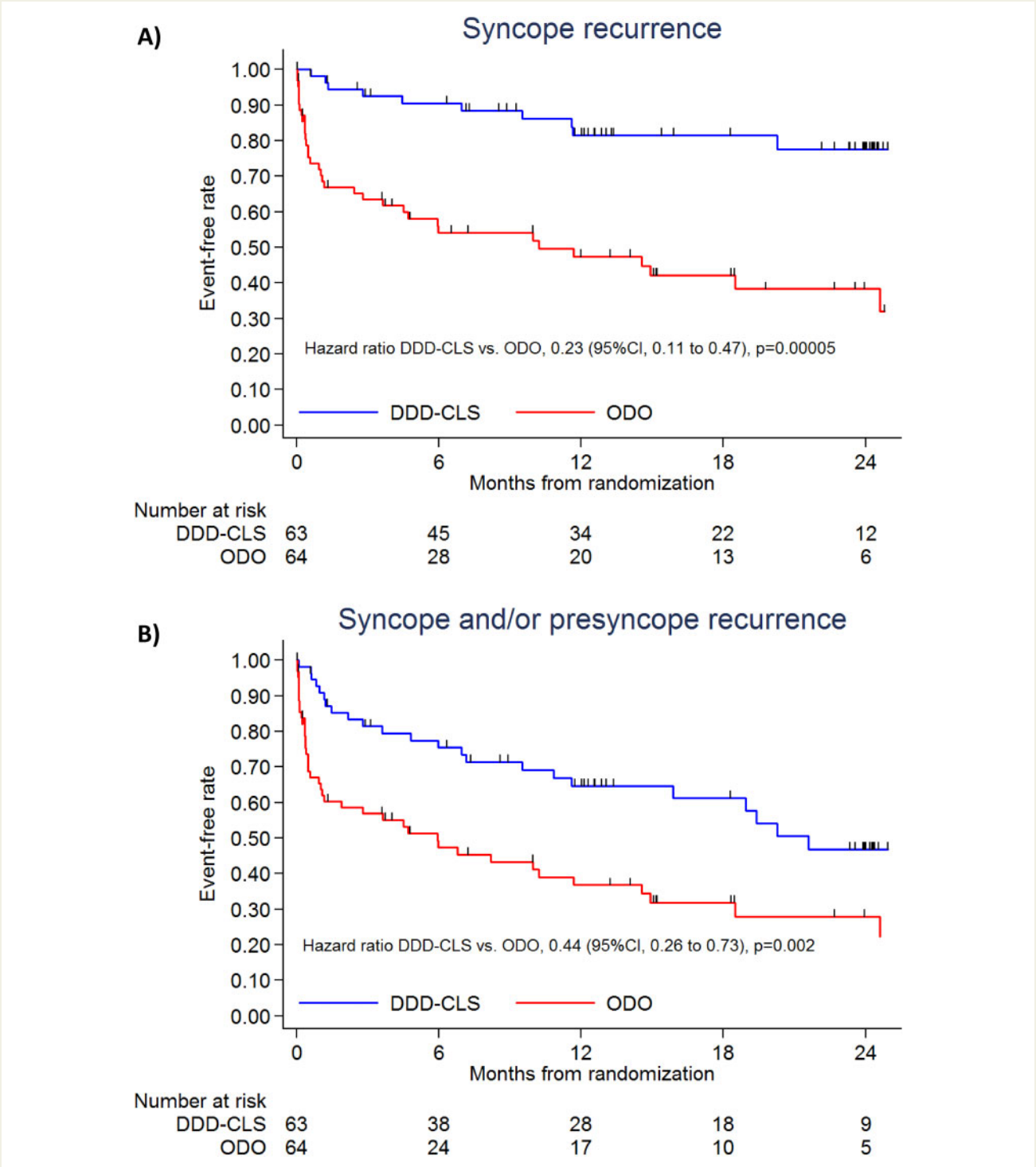

Figure 2 Kaplan–Meier curves comparing survival free of symptoms. (*A*) Primary endpoint and (*B*) combined endpoint of syncope or pre-syncope. (from Brignole M, Russo V, Arabia F, Oliveira M, Pedrote A, Aerts A, Rapacciuolo A, Boveda S, Deharo JC, Maglia G, Nigro G, Giacopelli D, Gargaro A, Tomaino M; for the BioSync CLS trial Investigators. Cardiac pacing in severe recurrent reflex syncope and tilt-induced asystole. See pages 508–516.)

Giuseppe Boriani and Marco Vitolo from the University of Modena and Reggio Emilia.[15] They note that this study highlights that within the wide spectrum of the complex, frequently disruptive, effects of the COVID-19 pandemic on the natural course of cardiovascular disease, the net result of COVID-19 direct and indirect effects can be, in selected patients, a reduction of factors triggering or favouring VAs.

In a State of the Art Review entitled '**Chronic obstructive pulmonary disease and atrial fibrillation: an interdisciplinary**

perspective', Sami Simons from the Maastricht University Medical Centre, and colleagues note that chronic obstructive pulmonary disease (COPD) is highly prevalent among patients with AF, shares common risk factors, and adds to the overall morbidity and mortality in this population.[16] Additionally, it may promote AF and impair treatment efficacy. The prevalence of COPD in AF patients is high and is estimated to be ∼25%. Diagnosis and treatment of COPD in AF patients requires a close interdisciplinary collaboration between the electrophysiologist/cardiologist and pulmonologist. Differential diagnosis may be challenging, especially in elderly and smoking patients complaining of unspecific symptoms such as dyspnoea and fatigue. Routine evaluation of lung function and determination of natriuretic peptides and echocardiography may be reasonable to detect COPD and heart failure as contributing causes of dyspnoea. Acute exacerbation of COPD transiently increases AF risk due to hypoxia-mediated mechanisms, inflammation, increased use of beta-2 agonists, and autonomic changes. Observational data suggest that COPD promotes AF progression, increases AF recurrence after cardioversion, and reduces the efficacy of catheter-based antiarrhythmic therapy. However, it remains unclear whether treatment of COPD improves AF outcomes and which metric should be used to determine COPD severity and guide treatment in AF patients. Future prospective cohort studies in AF patients are needed to confirm the relationship between COPD and AF, the benefits of treatment of either COPD or AF in this population, and to clarify the need and cost-effectiveness of routine COPD screening.

The issue is further complemented by a Discussion Forum contribution. In a manuscript entitled '**Personalized anti-thrombotic management of patients with non-valvular atrial fibrillation and a CHA2DS2-VASc score of 1: a statement of the ESC Working Group on Cardiovascular Pharmacotherapy and ESC Council on Stroke**', Patrick Sulzgruber from the Medical University of Vienna in Austria comments on the '**2020 ESC Guidelines for the diagnosis and management of atrial fibrillation developed in collaboration with the European Association of Cardio-Thoracic Surgery (EACTS)**' that are also published in this issue.[5,17]

The editors hope that readers of this issue of the *European Heart Journal* will find it of interest.

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