EHRA 2020 during COVID-19 days

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Ulf von Euler legacy—Professor Guido Grassi

Professor Guido Grassi, Professor of Internal Medicine at the Clinica Medica of the University of Milano-Bicocca and Director of the Clinica Medica Institute at Saint Gerardo Hospital-Monza/Milano (Italy), described Ulf von Euler, Bernard Katz, and Julius Axelrod as 'the fathers of modern cardiovascular physiology'.

A former chairman of the ESC Working Group 'Hypertension and the Heart', he said: 'The discoveries performed by von Euler, Katz, and Axelrod also represent the background for the development of important cardiovascular drugs, such as atropine and the large family of beta-blocking drugs. It can be thus concluded that the research carried out in this area goes well beyond the borders of cardiovascular physiology, involving pathophysiology and pharmacologic treatment of cardiovascular disease'.

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COVID-19 resulted in confinement instead of a meeting for the European Heart Rhythm Association (EHRA) 2020 Congress

Many of us were looking forward to attending a successful EHRA 2020 Congress in Vienna from 29 to 31 March 2020. Shortly before this was due to take place, the COVID-19 pandemic broke out and changed the course of events worldwide.

The EHRA Scientific Programme Committee had worked hard to put together a programme with the theme 'Joining Forces to Overcome Arrhythmias'. This involved identifying hot topics in arrhythmias, while delivering science and education in a variety of formats to make the content enjoyable and address the needs of a wide range of delegates. EHRA is a global community and we ensured that faculty members from all corners of the globe were invited. Whilst acknowledging the value of established colleagues to share their experience and knowledge, we also explicitly opted to provide opportunities to take the stage for younger colleagues. This was reflected in the average age of the faculty, which for the first time fell below 50 years (see *Figure 1*, left panel).

Another objective was to have better representation of female faculty members in the programme (see *Figure 1*, right panel). Adjustment of the gender imbalance will no doubt continue to evolve naturally over the coming years, as more women enter our field.

Attendance at EHRA 2019 in Lisbon had increased by 41% compared with EHRA 2018, which had been negatively impacted by the introduction of restrictive Medtech rules which curtailed sponsoring of attendees. We were extremely pleased with the numbers of registrations for EHRA 2020 which was up by 34% compared with EHRA 2019 for the same period and may even have topped the record number of attendees (6000+) of EHRA 2017 in Vienna! Although COVID-19 was at that time not yet labelled as a pandemic, the EHRA leadership as well as faculty members were increasingly concerned by the health risks for participants.

Furthermore, day after day, it was clear that severe measures must be implemented, and that physicians and hospitals needed to ready themselves to deal with the epidemic. As such, many congress faculties had to cancel their participation in EHRA 2020. As a result of these factors and our responsibility to protect the health of our faculty, delegates, and staff, the EHRA Board decided that cancelling the congress was the only responsible course of action.

Nonetheless, to help the community stay up to date on the latest scientific developments in arrythmias, we have put together the

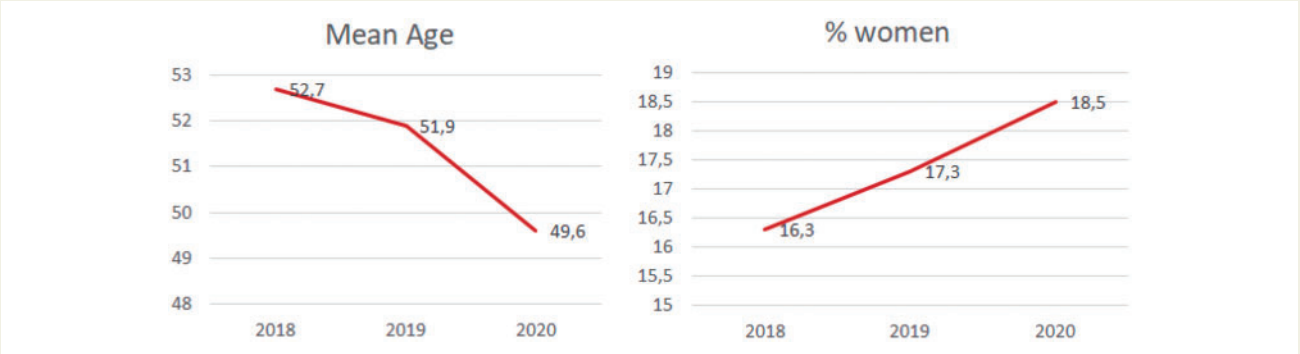

Figure 1 Evolution of the mean age of the faculty (left) and proportion of women faculty members at EHRA congresses over the last 3 years.

essentials—scientific updates and publications—carefully selected and freely available in one place 'EHRA Essentials 4 You' part of the Essentials 4 You campaign—Your hub for the latest science on cardiology.

The platform hosts a variety of features such as late-breaking science presentations, publications of scientific abstracts (>400 to date), a collection of clinical cases, and presentations from industry partners. All content can be commented upon to enable interaction between authors and viewers, which is an essential element of scientific dialectics. The 'EHRA Essentials 4 You', will soon also feature the recordings of a new 'Global EHRA Webinars' series of webcasts with our international sister societies. These international webinars highlight the importance of international scientific collaboration in times of isolation and quarantine. The Essentials 4 You platform has already registered >10 000 views and will undoubtedly continue to attract visitors as content is updated.

The COVID-19 pandemic has disrupted our social and professional environment. Social distancing and travel restrictions have necessitated teleworking and telecommunication. Some of these measures have proven to be both attractive and effective, and are destined to remain after the pandemic blows over. One may even question the need to maintain the EHRA Congress in today's digital world. Nevertheless, the vibe one experiences in a room during an inspiring lecture, the ideas sparked from discussing with peers presenting their science, the pleasure of meeting up or bumping into colleagues and friends, and the convenience of being informed of innovations from the many industry partners grouped under the same roof cannot be replicated in a virtual environment.

Few of us prefer exploring Google Earth to travelling to an exciting new destination, or prefer browsing Google Images to visiting a museum to behold its treasures. The new EHRA Scientific Programme Committee, chaired by Isabelle van Gelder and Tom de Potter, will undoubtedly find inventive ways to adapt to new realities for EHRA 2021 from 28 to 30 March in Barcelona. With every challenge comes opportunity!

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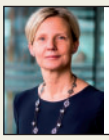

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The heart as its own defibrillator

Replacing metal, algorithms and shocks by ion channels as a Biologically Integrated Cardiac Defibrillator (BioICD) is discussed by Daniël A. Pijnappels, PhD

Cardiac arrhythmias and electrical defibrillation

Contractions of the heart are triggered by electrical waves that are generated and propagated by well-coupled cardiomyocytes expressing various ion channels. Disturbances in these electrophysiological processes can lead to cardiac arrhythmias, ranging from an atrial flutter to ventricular fibrillation (VF). While long-lasting global efforts have resulted in a significant improvement in the treatment of arrhythmias, these disorders remain a large and growing problem worldwide, with high annual mortality and morbidity rates, and enormous health-care costs. This is partly due to suboptimal efficacy, specificity, tolerability, safety, and/or cost effectiveness of the current treatment options.[1]

However, for acute termination of arrhythmias, one approach has proven to be very effective: the delivery of electric shocks to arrhythmic cardiac tissue.[2,3] Its effectiveness is emphasized by the wide-spread use of software-driven electronic devices to control cardiac rhythm by applying these traumatizing electric shocks to cardiac tissue in an attempt to terminate atrial or ventricular arrhythmias (electrical cardioversion/defibrillation). Once such a device is implanted, as with the implantable cardioverter-defibrillator (ICD) for ventricular arrhythmias,[4] continuous monitoring of the heart rhythm is ensured, thereby enabling rapid detection of arrhythmias for automatic delivery of an electric shock to restore sinus rhythm (SR).

Due to their non-biological nature, these devices have a number of inherent shortcomings not least, limited battery life, and technical malfunction, but most importantly for the patient, the severe pain, anxiety, and depression resulting from the electroshocks, especially when delivered inappropriately.[5] Studies have indicated that around 20% of patients with an ICD suffer from a post-traumatic stress disorder and up to 40% show anxiety and depressive symptoms. In addition, these devices are expensive, while health-care costs are already huge and still rising. Nevertheless, as there are no reasonable alternatives that are equally effective, electroshock therapy for cardiac arrhythmias is still undeniably important, thereby further underlining the major remaining challenges in current cardiac arrhythmia management.

An intriguing common feature between ICDs and ion channels

The ICD device is the product of electronic engineering and contains metal, software, and wires to establish a system in which both a detector (i.e. sensor of electrical activity) and effector (i.e. electroshock generator) are incorporated. Nature also makes use of such detector–effector systems where they control different physiological processes. Such systems are the product of cells, genes, and proteins and involve a regulated variable, set point, and signalling between detector and