

Highlights from 2022 in *EHJ Open*

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In this editorial, the section editors are looking back at 2022 by summarizing a few of the many highlights in the *EHJ Open* content. All publications in *EHJ Open* are indexed in PubMed and PubMed Central (PMC), which will facilitate our mission to promote open and interactive cardiology for an accelerated and global sharing of science to fight cardiovascular disease.

Randomized controlled trials (RCTs) have been published in *EHJ Open* since the start of the journal.^{1,2} A RCT in patients with signs of mild hypertensive heart disease³ published in the section on Hypertension (Section and Deputy Editor Thomas Kahan) in 2022 examined the effects of curcumin, a polyphenol compound derived from the herb turmeric with anti-inflammatory and anti-oxidant effects, and animal experimental evidence suggesting effects to reduce the development of hypertensive heart disease. The study showed that treatment with curcumin for 24 weeks reduced plasma brain natriuretic peptide levels, as compared to placebo, while diastolic function (by echocardiography) was unchanged.³ Whether curcumin may offer an opportunity to prevent the transition from hypertension to heart failure with preserved function requires further study.

In Arrhythmia and Electrophysiology (Section and Deputy Editor Frieder Braunschweig), atrial fibrillation screening⁴ is highlighted through the meta-analysis by McIntyre *et al.*⁵ which showed a modest relative stroke risk reduction of 0.91 (0.84–0.99) in a total of 35 836 participants. However, the heterogenous populations as well as varying screening intervention and stroke outcome definition limited the conclusions and prompted for further studies.⁵ Comparing quarterly vs. annual electrocardiogram (ECG) screening for Atrial Fibrillation in elderly Chinese by an Automated ECG system in Community Health centres (AF-CATCH), Zhang *et al.*⁶ reported that a change in the CHA₂DS₂-VASc score of ≥ 2 was associated with a significantly elevated risk of incident atrial fibrillation and suggested that regular re-

assessments of cardiovascular risk factors in the elderly may improve atrial fibrillation detection.

Coronary Artery Disease (Section and Deputy Editor Maciej Banach) as well as Interventional Cardiology and Cardiac Surgery (Section and Social Media Editor Salvatore De Rosa) highlight sex-differences, which was one of the subjects also marking the previous year with *EHJ Open*.⁷ A comparison within four European registries revealed sex-related differences in ST-elevation myocardial infarction (STEMI).⁸ Women underwent angiography, PCI, and echocardiography to a lesser extent than men and also received less guideline-recommended post-STEMI therapies.⁸ Along the same line, novel data from the nationwide Japanese Percutaneous Coronary Intervention (J-PCI) registry highlighted how a significantly lower proportion of women were treated with preoperative mechanical circulatory support compared to intraprocedural use.⁹

The section for Epidemiology and Prevention (Section Editor: Karolina Szummer) spans a broad area of topics exploring associations between cardiovascular outcomes and markers including gastrointestinal factors, behaviours such as anger,¹⁰ and differences between trial and real-world populations. A highlight in 2022 was achievements of primary prevention targets in individuals with high risk of cardiovascular disease,¹¹ accompanied by an editorial.¹² This study, although being descriptive, points to areas where implementation of treatments may alter future outcomes. We look forward to a follow-up in a decade or so, when the effects of intensified primary prevention will further have decreased cardiovascular disease incidence.

Vascular stiffness is a marker of subclinical disease affected by cardiovascular risk factors as well as Cardiovascular Genetics (Section Editor Susanna C Larsson), which was highlighted by a study of genetic variations within the fatty acid desaturase (FADS) loci.¹³ Since FADS is

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involved in the metabolism of omega-3 polyunsaturated fatty acid (PUFA), the study investigated the relation between dietary omega-3 PUFA intake and vascular stiffness in relation to FADS genetic variations. A possible interpretation of the results is that the FADS genetic risk factor for vascular stiffness potentially can be neutralized by a high omega-3 PUFA intake. Since the carriers of the protective genotype had less benefit of omega-3 PUFA dietary intake for vascular stiffness, the findings raise the notion of a possible personalized medicine approach for identifying responders and non-responders to omega-3 PUFA-based cardiovascular prevention.¹³

Adult congenital heart disease (ACHD; *Section Editor Edit Nagy*) highlights a nationwide population-based study by Omann *et al.*¹⁴ which analyses the impact of maternal preeclampsia on neurodevelopmental disorders in children born with congenital heart disease. The study assessed whether the maternal-fetal environment further contributes to neurodevelopmental disorders in children born with congenital heart disease (CHD) as opposed to compromised fetal circulation and oxygenation being the main trigger. The main finding is that maternal preeclampsia increases the risk of behavioural diagnoses such as attention deficit hyperactivity disorder (ADHD) and autism spectrum disorders compared to those children born with CHD not exposed to preeclampsia. In addition, CHD and pre-eclampsia may act synergistically and potentiate this effect. These findings are novel and deserve attention with a great impact on further maternal and offspring complications. The section of ACHD welcomes articles in the field of broad spectrum of ACHD including studies with imaging and interventional character.

Current single-cell technologies in atherosclerosis are opening up new opportunities and clinical implications.¹⁵ In *Translational Basic Science* (*Section Editor Daniel F.J. Ketelhuth*), we learned from Slenders *et al.*,¹⁶ about the power of multi-omics, using a single-cell transcriptomics-driven workflow rooted into human large-scale genetic studies, to identify putative candidate genes as well as affected cells associated with cardiovascular traits. *EHJ Open* readers also had the chance to better understand the intriguing event of immune thrombotic thrombocytopenia (TIT) triggered by adenoviral vector-based severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) vaccination, its major clinical consequences, and potential mechanisms that could be exploited for preventing and treating it.¹⁷ This year, *Vascular Medicine* (*Section Editor Denis Wahl*) highlights the pre-TIT syndrome for which Salih *et al.*¹⁸ offer a clinical pathway for early recognition and treatment to prevent thrombotic complications of COVID-19 vaccination. It has also been pointed out by Noyé and Lecompte¹⁹ that there are other thrombosis and thrombocytopenia syndromes, e.g. heparin-induced thrombocytopenia and antiphospholipid syndrome, which encompass a range of pathogenic processes of which some overlap with TIT.

Autoimmune connective tissue diseases (CTDs) are associated with valvular heart disease (VHD; *Section Editor: Patrizio Lancellotti*). In particular, anti-phospholipid antibody positivity without systemic manifestations is more prevalent in aortic stenosis patients compared with matched healthy controls.²⁰ In terms of aortic stenosis management, Gad *et al.*²¹ reported that outcomes for patients with CTD after aortic valve replacement (AVR) followed in the American Nationwide Readmissions Database were not inferior compared to their non-CTD counterparts. Tricuspid regurgitation (TR) is a prevalent VHD associated with high morbidity and mortality when severe, which is highlighted by the causal relation of TR for heart failure outcomes in a mediation analysis of echocardiographic predictors by Hakuno *et al.*²² There are in addition few treatment options for TR, and often, the management is done late in the evolution of the disease when the patient already presents major comorbidities while the type of treatment depends essentially on the operative risk. Hochstadt *et al.*²³ provided a new scoring system to stratify the risk of patients with significant TR treated conservatively. The interest and the limitations of this new score were discussed by Donal *et al.*²⁴

Vascular and Cardiac Imaging (*Section Editor Alessia Gimelli*) highlights that coronary-specific quantification of myocardial deformation by strain echocardiography may disclose the culprit vessel in patients with non-ST-segment elevation acute coronary syndrome,²⁵ which was accompanied by a linked publication of an example of these diagnostic approaches in an *EHJ-Case Reports* article.²⁶ In addition to the widely studied left ventricular strain post myocardial infarction (MI), echocardiographic evaluation of atrial function may bring additional value to risk prediction following acute MI.²⁷ Myocardial deformation is in fact a topic, which has spanned over several *EHJ Open* sections in 2022, including prognostic value in congenital aortic stenosis²⁸ and in patients with severe aortic stenosis undergoing AVR.²⁹

Myocardial deformation characterization is also an important approach in *Heart Failure* (*Section Editor Gianluigi Savarese*). The implications of the latter were shown in *Special Populations* (*Section Editor Linda Mellbin*) relating to cardio-oncology. In the latter context, serial changes of layer-specific myocardial function according to chemotherapy regimen in patients with breast cancer identified the endocardial layer as the most vulnerable to chemotherapy-induced myocardial damage.³⁰ Villarraga and Herrman made the analogy of chemotherapy cardiotoxicity to the differentiation of MI into endocardial, transmural, or of another kind.³¹

Although we only highlighted some articles in this editorial, we encourage you to explore the full content of *EHJ Open*, which is freely available by Open Access. We also want to thank all of the authors for their contributions to the journal and welcome your future submissions to *EHJ Open*.

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