May 2022, Issue 4

Dear Colleagues,

We are pleased to share with you the fourth issue of our bimonthly newsletter, featuring news from the ISE, the ISE Young Community and their members, upcoming events, recent papers about electrocardiography and an interview with one of our special council members.

On behalf of the ISE Communication Team, we hope you enjoy this issue. Also, we would most welcome your contributions and suggestions for future issues.

The ISE Communication Team

Dr Göksel Çinier (Coordinator)
Dr Hector Isaac Alejandro Ortiz Lopez (Social Media Editor)
Dr Levent Pay (Social Media Editorial Team)
Dr Mark Potse (ISE Council member)
Prof Gary Tse (ISE Secretary)
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News from ISE

- **Only A Few Days Left Until The First International Meeting of ISE Young Community: 4th and 5th of June 2022!**

The ISE young committee will hold its first scientific meeting on the 4th and 5th of June. The event will be fully online and registration is free of charge. Four of the submitted abstracts will be selected to be presented at the "Best Abstract" oral session. Other accepted abstracts will be presented as posters during the conference. Finally, and most importantly, accepted abstracts will be published in the Journal of Electrocardiology.

- **Recent Meeting on ECG in Inherited Arrhythmia Disorders: Part II**

  The second part of the *ECG in Inherited Arrhythmia Disorders* webinar meeting was held on the 12th of May. At the meeting, Prof. Philippe Chevalier, Prof. Elena Zaklyazminskaya and Prof. Emanuela T. Locati talked about Brugada syndrome, carriers of risky alleles and long-QT syndromes. Don't worry if you missed it, you can watch it via this link:

  https://www.youtube.com/watch?v=gb6CDi-4AL8

Recent Publications

1. **Title:** P Wave Parameters and Indices: A Critical Appraisal of Clinical Utility, Challenges, and Future Research-A Consensus Document Endorsed by the International Society of Electrocardiology and the International Society for Holter and Noninvasive Electrocardiology

   Journal:

   Authors: Chen LY, Ribeiro ALP, Platonov PG, Cygankiewicz I, Soliman EZ, Gorenek B, Ikeda T, Vassilikos VP, Steinberg JS, Varma N, Bayés-de-Luna A, Baranchuk A.

   Contributor: Dr Levent Pay (Turkey)

   Full text link: https://pubmed.ncbi.nlm.nih.gov/35333097/

   Summary

Chen *et al*. aimed to reuse ECG to improve the study, diagnosis and treatment of atrial cardiomyopathy and ultimately to overcome critical challenges in the prevention of cardiovascular disease and dementia. The study focused on the relationship of P wave parameters with cardiovascular and neurocognitive outcomes. The authors found that, changes in surface P waves can provide important information about cardiovascular disease and dementia risk. To evaluate the inclusion of P wave parameters in the clinical decision making process, more extensive studies are needed under the guidance of the P wave index.

2. **Title:** The prognostic significance of the electrical QRS axis on long-term mortality in acute coronary syndrome patients - The TACOS study

   Journal: Journal of Electrocardiology

   Authors: Punkka O, Kurvinen HJ, Koivula K, Eskola MJ, Martiskainen M, Huhtala H, Virtanen VK, Mikkelsson J, Järvelä K, Laurikka J, Niemelä KO, Karhunen PJ, Pérez-Riera AR, Nikus KC.

Contributor: Dr Levent Pay (Turkey)

Full text link: https://pubmed.ncbi.nlm.nih.gov/35567860/

Summary

Punkka *et al*. investigated the long-term prognostic significance of acute phase frontal plane QRS-axis deviation and its shift during hospital stay in ACS patients. The included 1026 patients were divided into 3 groups as normal axis (n = 823), left axis (n = 166) and right axis (n = 37). The authors concluded that acute phase QRS axis deviation was related to an increased risk of death from all causes in ACS patients. Among the three groups, right QRS axis deviation was the strongest predictor of mortality in multivariate analysis.

3. **Title:** Interatrial block and P terminal force in the general population - Longitudinal changes, risk factors and prognosis

Journal: Journal of Electrocardiology

Authors: Istolahti T, Eranti A, Huhtala H, Tynkkynen J, Lyytikäinen LP, Kähönen M, Lehtimäki T, Eskola M, Anttila I, Jula A, Nikus K, Hernesniemi J.

Contributor: Dr Levent Pay (Turkey)

Full text link: https://pubmed.ncbi.nlm.nih.gov/35533410/

Summary

Istolahti *et al*. aimed to examine the longitudinal changes and risk factors for P-wave abnormalities, to re-evaluate earlier findings about the associated risks of partial and advanced interatrial block to develop atrial fibrillation (AF), as well as to study the associated risk of P terminal force for AF development. Study results showed that traditional cardiovascular risk factors increase the risk of a new P wave abnormality. Partial and advanced IAB is associated with a high risk of developing AF. Interestingly, P wave abnormalities have been observed to be frequently reversible during long-term follow-up in the general population.

Interview with Dr Mark Potse

On behalf of the International Society of Electrocardiology Young Community (ISE-YC) it is our honor to have the opportunity to interview Dr Mark Potse from the University of Bordeaux.

Dr Potse is a scientist affiliated with LIRYC, the cardiac rhythmology and modeling institute in Bordeaux, France, and the Bordeaux Sud-Ouest center of Inria, the French national computer science institute. His research focuses on three areas, particularly cardiac sudden death syndromes, atrial fibrillation, and the development of realistic computer models of the electrophysiology of the human heart. He has been working in the field of cardiac electrophysiology since 1994.

Question: Dear Dr Potse, ISE has a long history. When did you join the society and how was your experience?

Dr Potse: My first ISE experience was the ICE meeting in 2002, I think. The meeting was in Montreal (Canada) that year and it was co-organized by my supervisor Professor Ramesh Gulrajani. I had just started a postdoc with him a few months earlier. I liked the small scale of the meeting and the fact that as a biomedical engineer I could easily talk with cardiologists, even famous ones. I've been there in Helsinki in 2003 and since then joined every time I could. Ten years ago I joined the council of the ISE and I have learned a lot in there.

Question: Considering that the first practical ECG was invented in 1895 by Willem Einthoven, what is your interpretation that it still has an important diagnostic place in clinical practice?

Dr Potse: I want to be careful about this subject because I am not a cardiologist. As a scientist I think that the ECG offers a wealth of information that would be difficult to obtain by other means, for example about rhythm and about acute ischemia. It can also give hints about numerous cardiac disorders such as ion channel mutations, cardiomyopathies, and even about non-cardiac issues such as hypothermia or abnormal serum electrolyte concentrations. But I think that cardiologists should not use the ECG anymore to infer anatomical states such as hypertrophy when they have access to more reliable means such as echocardiography and cardiac imaging. It may be much better to combine these techniques so one can recognize discrepancies like a small QRS amplitude in a big heart.

Question: What are your opinions about pitfalls and advantages on ECG recordings and diagnosis of arrhythmia obtained through the wearables?

Dr Potse: What worries me most is that scientists do not have access to the raw signals measured by these devices. The signals are heavily filtered and compressed, and we do not even know how. We don't know what the manufacturers are doing in there, and thus we cannot help them to improve their methods.

Question: What do you think will be the role of artificial intelligence on ECG in the near future?

Dr Potse: Machine-learning (ML) methods exist but there is no such thing as artificial "intelligence". ML is pure experience, there is no reason in it. Admittedly, ECG interpretation too is sometimes more of an art than a science, so perhaps an ML method could do better than traditional methods in raising alarms for arrhythmia or ischemia. But I would never let an ML method interpret an ECG; this requires not only experience but also real intelligence.

Question: Do you think that ECG can be improved and can be helpful diagnosis in other areas?

Dr Potse: I think that we actually understand very little of the ECG, so there is much room for improvement. For example, from knowledge of how isolated myocytes behave in the lab, we cannot understand why T waves are concordant in a normal ECG. Also the technology can be much improved. Most ECG machines make very poor measurements, and often operators don't know how to store the measurements in digital form. We all have smartphones now - supercomputers by the standards of a few decades ago - but cardiologists are using them to send photos of paper ECGs to each other. In a paper published in the Journal of Electrocardiology in 2016 I investigated what P waves really look like. It turned out they usually have three to seven peaks. One reviewer wrote that they also see such things, but to the average cardiologist a P wave looks like a little blob of ink. I believe that there is much more to be learned if we treat our signals better.