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6TH EDITION OF

CARDIOLOGY WORLD CONFERENCE

SEPTEMBER 15-17, 2025

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6th Edition of

Cardiology World Conference

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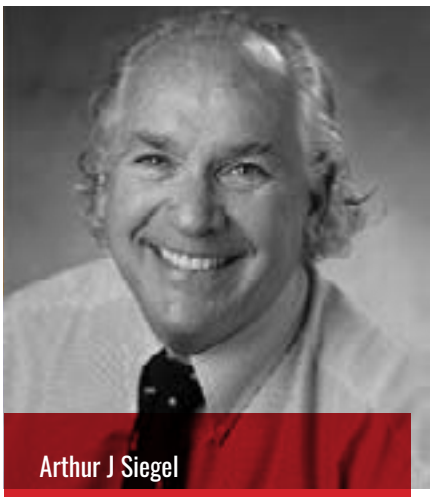
BOOK OF

ABSTRACTS

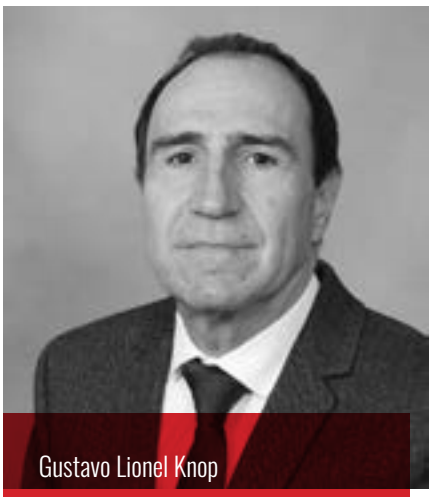
Index

Keynote Speakers

Abraham Teddy Weiss
Hadassah University Hospital, Israel



Arthur J Siegel
Massachusetts General Hospital, United States



Gustavo Lionel Knop
Mayo Clinic, United States

Iris Panagiota Efthymiou
University of Greenwich, United Kingdom

Mekhman N Mamedov
National Research Center for Therapy and Preventive Medicine, Russia

Narendra Kumar
HeartbeatsZ Academy, United Kingdom

Robert J Chilton
University of Texas Health Science Center San Antonio, United States

Sekib Sokolovic
Sarajevo School of Science and Technology, Bosnia and Herzegowina

Sergey Suchkov
N. D. Zelinskii Institute for Organic Chemistry of the Russian Academy of Sciences, Russia

Keynote Speakers

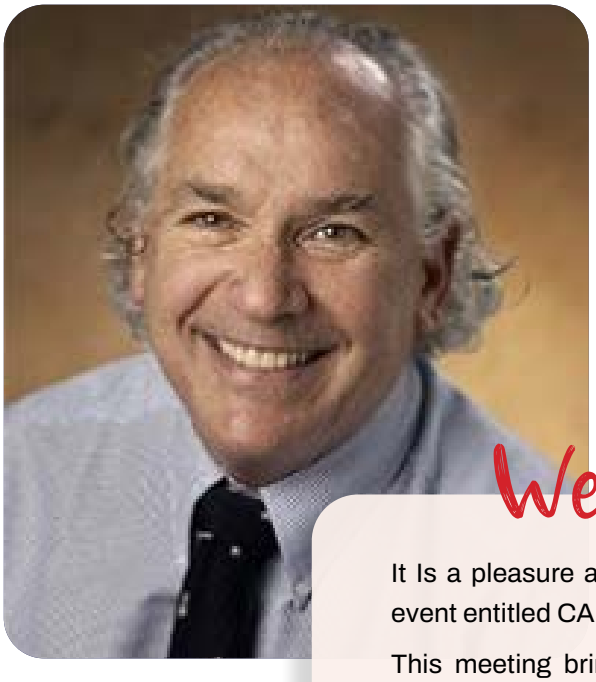
Syed Raza
Awali Hospital, Bahrain

Thomas Bernd Dschietzig
Relaxera GmbH & Co. KG, Germany

Y J H J Taverne
Erasmus University Medical Center, Netherlands

Yong Xiao Wang
Albany Medical Center, United States

Thank You All...



Welcome Message

It Is a pleasure and honor to welcome you to this important scientific event entitled CARDIO 2025.

This meeting brings us together to share our ongoing clinical work, devoted to improving the cardiovascular health of our patients and our community. I am eager to share with you my journey as a Boston marathon runner (20 years) morphed into clinician in the finish line medical tent (30 years). My goal is to make of the sport safer by reducing sudden cardiac arrests mainly in middle-aged men with sub-clinical coronary atherosclerosis as reported in the United States and worldwide. My proposal is aspirin use guided by gated coronary artery calcium scanning to enhance primary prevention consequent to activation of atherothrombosis by inflammation following exertional rhabdomyolysis after runners hit the wall. This same strategy may also ameliorate sports-related sudden cardiac death in elderly persons due to the same cause. Beyond exercise, aspirin use guided by coronary artery calcium scoring in clinical practice may reduce major acute cardiac events including sudden unexpected cardiac death due to subclinical coronary heart disease. This approach offers an opportunity to reduce the sharp increase in coronary heart disease morbidity and mortality forcast to 2050 by the American Heart Association.

I renew my welcome to all of you and look forward to your feedback, as we use this important opportunity to learn from and mentor each other.

Arthur J. Siegel, MD.

Fellow, American College of Physicians

Physician, Massachusetts General Hospital, Boston, Massachusetts

Associate Professor of Medicine

Harvard Medical School, Boston Massachusetts, USA

Welcome Message

I am pleased to participate in the 6th Edition of the Cardiology World Conference which will be organized during September 15-17, 2025, at London, UK.

The astonishing advances in medical treatment and interventional procedures during the last decades represent a challenge for these events, as more clinical trials and observational studies are improving previous guidelines.

It will be a great honor to present and attend to presentations of distinguished lecturers and learn from each other and from the audience.

Hoping to meet you all in September.

Gustavo L. Knop, MD, FRCS
Associate Consultant Cardiothoracic Surgeon
Assistant Professor of Surgery
Mayo Clinic
200 First Street SW, Rochester, MN 55905

Welcome Message

Dear Colleagues,

It is my pleasure to welcome you to Cardio 2025, a global gathering of experts dedicated to advancing cardiovascular health. This conference provides a vital platform for sharing ground-breaking research, innovative treatments, and the latest developments in cardiology.

Cardiovascular diseases remain a leading global health challenge, and our collective efforts in prevention, diagnosis, and treatment are more crucial than ever. Emerging technologies, including artificial intelligence and precision medicine, are reshaping the field, offering new possibilities for risk assessment and patient care. Through collaboration and knowledge exchange, we can drive progress and improve outcomes for patients worldwide.

I look forward to engaging discussions, insightful presentations, and meaningful connections with all of you. Welcome, and best wishes for a productive and inspiring conference.

Iris Panagiota Efthymiou

University of Greenwich, United Kingdom

Welcome Message

I am pleased to welcome the participants of the 6th Edition of Cardiology World Conference (Cardio 2025). Traditionally, the scientific program covers a wide range of cardiology issues: From epidemiology and prevention to the use of high technology and artificial intelligence in cardiology. The conference platform brings together scientists and clinicians from different continents and countries of the world. This allows for the exchange of experience and discussions between experts from different medical schools of the world. I am confident that the knowledge gained during the conference will be useful for both researchers and practicing cardiologists.

The abstracts of the reports are presented in the collection of scientific papers. In the future, these papers can also be used to establish contacts with colleagues for cooperation. I would like to express my gratitude to the organizers for their dedicated work and the implementation of this popular project.

I wish good luck and success to my colleagues from different countries of the world.

Professor Mekhman N. Mamedov, MD, Ph

Head of the Department of Secondary Prevention of Cardiovascular Diseases, National Medical Center for Therapy and Preventive Medicine, Moscow, Russia

Welcome Message

It is with immense pleasure that we welcome you to Cardio 2025 in the vibrant city of London! This gathering represents a pivotal moment for our field as we explore groundbreaking advances in cardiovascular medicine and forge connections that will shape patient care for years to come.

Over the next three days, you'll experience thought-provoking sessions on AI integration, minimally invasive techniques, and personalized therapeutics from world-renowned experts. Between presentations, we encourage you to engage with our interactive exhibits and networking opportunities designed to spark collaboration.

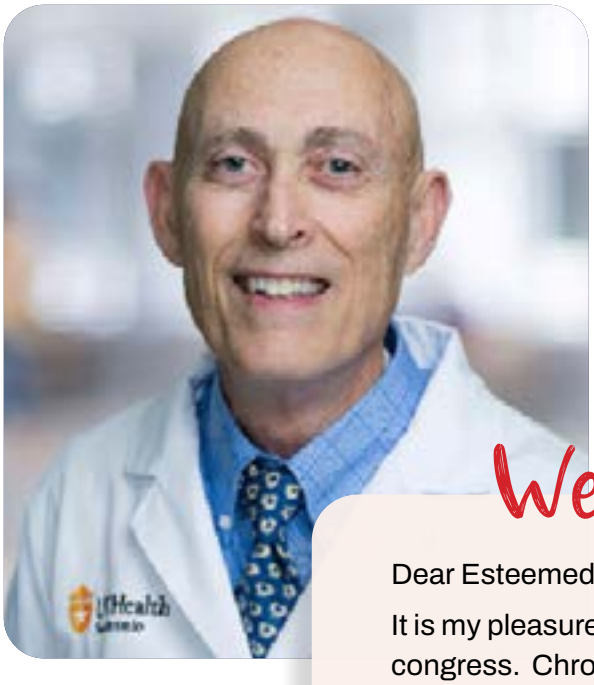
London's rich medical history provides the perfect backdrop for our forward-looking discussions. As we convene at this intersection of tradition and innovation, we are confident that Cardio 2025 will inspire transformative ideas to address our field's most pressing challenges.

We're thrilled you've joined us for what promises to be an extraordinary conference!

Let me know, if you have any questions.

Narendra Kumar

HeartbeatsZ Academy, United Kingdom



Welcome Message

Dear Esteemed Colleagues,

It is my pleasure to extend a warm welcome to all attendees of this congress. Chronic Kidney Disease (CKD) associated with type 2 diabetes remains one of the leading global health challenges, contributing significantly to morbidity and mortality. The need for effective treatment strategies has never been more critical.

The FIDELIO-DKD trial represents a major breakthrough in addressing this urgent issue. By evaluating finerenone, a non-steroidal mineralocorticoid receptor antagonist, this study has demonstrated substantial benefits in reducing the risk of kidney failure, cardiovascular events, and overall mortality in patients with CKD and type 2 diabetes. These findings underscore the dual protective role of finerenone in both renal and cardiovascular health, marking a pivotal advancement in CKD management.

This research not only expands our therapeutic arsenal but also signals a paradigm shift in how we approach CKD treatment in patients with diabetes. Targeting mineralocorticoid receptor activation emerges as a promising strategy to slow disease progression and enhance patient quality of life. The implications of these findings will shape future treatment protocols, improving outcomes for millions worldwide.

I look forward to engaging discussions and collaborative efforts as we explore the future of CKD treatment and its intersection with innovative therapeutic developments.

Prof. Dr. Robert Chilton

University of Texas Health Science Center, United States

Welcome Message

Dear distinguished colleagues

Welcome to the 6th Edition of Cardiology World Conference (Cardio 2025), taking place from September 15-17, 2025 at London, UK and Online.

I am honoured to share the latest advancements in cardiovascular diseases. Thank you all who will be attending the Conference either virtual or in a person and without your support this event would not be possible. Another welcome goes to our distinguished speakers from all over the world who will share their up to date scientific knowledge in cardiology.

I do hope that Cardio 2025 will provide full updated scientific knowledge and inspire future ideas and scientific work in the cardiovascular management for the sake of our patients.

Looking forward to our future scientiific cooperation and relationship in the future world cardiology events.

Sekib Sokolovic

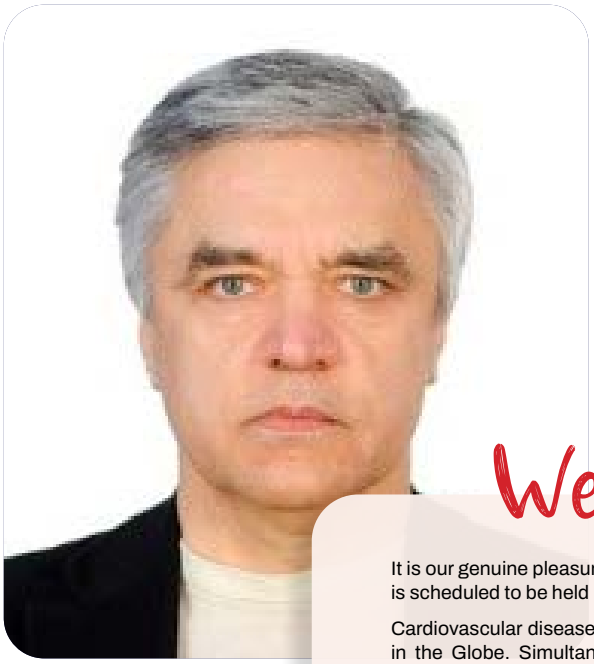
Emeritus Professor European Society of Cardiology

ASA Hospital Sarajevo

Sarajevo School of Science and Technology, Medical Faculty and

University of Buckingham

Bosnia and Herzegovina



Welcome Message

It is our genuine pleasure to invite you to attend 6th Edition of Cardiology World Conference, which is scheduled to be held in September 15 -17, 2025, in| London, UK.

Cardiovascular diseases are the leading cause of death globally and are escalating in prevalence in the Globe. Simultaneously treating heart failure and related cardiovascular diseases, using the latest achievements in the area of Personalized & Precision Cardiology integrated with Design-driven Biotech and Translational applications, are excellent starting points to gather distinguished scientists and healthcare professionals to discuss groundbreaking advancements. As well as clinical challenges, in order to find some evidence-based and novel directions to improve our knowledge in this field. Moreover, the upgraded field of cardiovascular biomarker research is entering a new, exciting era with the introduction of the concept of 'personalized & precision medicine' in therapeutic treatment guidance. One can expect that the increasing use of cardiovascular biomarkers, accompanying traditional diagnostic and prognostic measures, for specific cardiovascular diseases, will lead to their almost crucial role in clinical decision making. In this context, the Conference is to provide an innovative and comprehensive overview of the latest research developments in cardiovascular medicine, primarily in the areas of personalized cardiology and preventive cardiac surgery. The major goal will be to demonstrate recent development in prevention and prophylaxis, cardiovascular risk prediction based on risk assessment procedures. This approach provides you with an opportunity to ask questions pertinent to your own problems in providing cardiac care in your own venue.

The upcoming Heart Global Event will bring together leading researchers, scientists, clinicians, biodesigners and biotechnologists, and industry professionals from cardiovascular health and disease fields around the world. The Conference will include outstanding keynote sessions, plenary lectures, invited speeches, research presentations, technical demonstrations, and panel discussions around the world. So, participants can anticipate a dynamic exchange of insights, where they can share their latest research findings and gain valuable perspectives from diverse corners of the Globe. The Event seeks to accelerate breakthroughs in science, trials, and innovations within the realm of cardiology.

The Program has been designed to capture not only the interests of the participants but also to provide them with the state-of-the-art techniques and methods in order to cope with today's challenges in the fight against cardiovascular diseases. So, the Conference will provide enough space for discussion, meetings and workshops in order to allow a close contact between speakers and visitors. Many distinguished cardiologists, cardiac surgeons and scientists will take part in this Congress. Papers will be presented in the form of plenary sessions, symposia and posters and will include superb scientific and clinical material that was carefully selected by the Review Committee. The Conference will provide the ideal forum to stimulate ideas and establish collaborations.

It is our greatest pleasure to welcome all of you to join us in this highly educational and interactive biennial Conference and collaborate in the global action in reducing the burden of cardiovascular diseases.

We do hope that you will enjoy the Conference and that your interaction with your colleagues will stimulate a creative exchange of ideas and will be personally rewarding!

Dr Sergey Suchkov, MD, PhD

Professor in Medicine

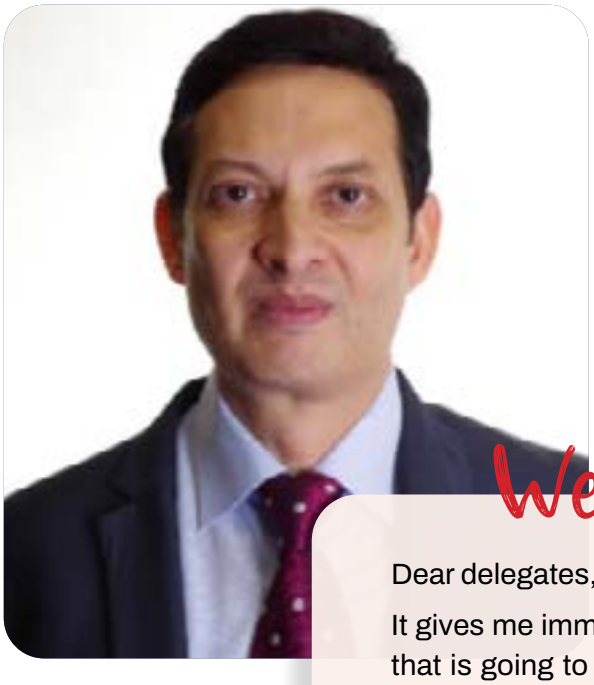
The Russian University of Medicine,

Moscow, Russia

Member, The Russian Academy of Natural Sciences, Russia

Member, New York Academy of Sciences, USA

Member, American Heart Association, USA



Welcome Message

Dear delegates,

It gives me immense pleasure to welcome you all to Cardio 2025 that is going to take place in world's most vibrant city, London in September 2025.

This conference is going to be a grand scientific feast where experts in Cardiology from different parts of the world will share their knowledge, skills and experiences in different aspects of cardiovascular medicine, innovations and research. This is going to be a perfect opportunity to enhance and strengthen your continuous professional development as well as nurture your interests in latest developments in Cardiology. Above all, the conference will serve as a great platform for professional networking and socialization.

Since this conference is in hybrid format, you also have the option to join virtually if circumstances do not allow your physical attendance.

Looking forward to seeing you all in September for a great conference!

Dr Syed Raza
Consultant Cardiologist
Bahrain

Welcome Message

It is a pleasure to welcome you to this important scientific event entitled 6th Edition of Cardiology World Conference (Cardio 2025). Contemporary medical research contributes strongly to reducing cardiovascular mortality and related major adverse events, such as acute myocardial infarction, heart failure, stroke, or peripheral artery occlusion. Notwithstanding recent advancements, mortality of some types of heart failure is still higher than that of most cancers, which poses a huge unmet medical need to both basic and clinical researchers.

This Conference which brings together physicians and researchers from all over the world will certainly make a significant contribution to scientific exchange and cooperation and, thereby, to novel clinically approved treatment approaches.

I renew the welcome to all of you and wish you all the best in your work.

Thomas Bernd Dschietzig, MD
Professor of Internal Medicine
CEO of Relaxera GmbH & Co. KG, Bensheim, Germany

Welcome Message

Dear congress visitors,

It is my honor and pleasure to write some welcome notes to you. Technological innovation, which is characterized by the development and introduction of new surgical procedures, new devices and novel pharmacotherapy, has significantly advanced the cardiothoracic surgery domain. From a historical point of view, technological advancements have really sculpted the field of cardiothoracic surgery, ranging from the development of the heart-lung machine to the creation of left ventricular assist devices and ex-situ cardiac perfusion systems. Such advancements are rooted in basic to translational scientific research and continue to transform the field. Nevertheless, technological innovations come at a price and a clear shift in scientific approach is emerging which is mostly led by the economic burden and the lack of real-time cardiac biofeedback. Our main objective is to determine alternate methods to improve cardiac performance and to determine new ways of getting real-time biofeedback. Within the setting of organ perfusion and cardiac transplantation, we present a novel approach using dynamic biofeedback on cardiac performance combined with innovative therapies not only to improve cardiac function but also prolong graft longevity. In such, within the scope of technological progress, we shift towards a more patient-tailored approach entering the world of precision medicine.

Dr. Yannick JHJ Taverne, MD PhD MSc

Department of Cardiothoracic Surgery, Erasmus Medical Center, Rotterdam, The Netherlands

Welcome Message

Dear Conference Visitors:

As the Conference Organizing Committee Member and Keynote Speaker, I am very honored to write this welcome message.

The current conference, with its overarching theme of “Advancing Heart Health: Breakthroughs in Cardiology”, promises to be a pivotal event for the global cardiology community and aims to address the global challenge posed by cardiovascular disease, a leading cause of approximately 15 million annual fatalities worldwide.

Clearly, the upcoming Cardiology World Conference is an annual collaboration that brings together leading researchers, scientists, clinicians, and industry professionals from cardiovascular health and disease fields around the world. The conference will include outstanding keynote sessions, plenary lectures, invited speeches, research presentations, technical demonstrations, and panel discussions around the world.

All the planned latest cutting-edge presentations and demonstrations will highlight the recent past, current, and future cardiovascular research, explore innovative technologies in cardiovascular disease treatment, and shed light on advancements in managing cardiovascular diseases. Furthermore, all participants including prominent researchers, cardiologists, cardio-thoracic surgeons, healthcare professionals, professors, scientists, students, nurses, and business professionals can gain valuable perspectives from diverse corners of the globe, accelerate breakthroughs in science, trials, and innovations within the realm of cardiology, share their latest research findings, and energize innovative developments and discoveries to unveil breakthroughs and shape future various objectives.

I am very excited to look forward to meeting with you at this fantastic upcoming conference.

Prof. Dr. Yong-Xiao Wang

Albany, Capital of New York State, USA

ABOUT
MAGNUS GROUP

Magnus Group, a distinguished scientific event organizer, has been at the forefront of fostering knowledge exchange and collaboration since its inception in 2015. With a steadfast commitment to the ethos of Share, receive, grow, Magnus Group has successfully organized over 200 conferences spanning diverse fields, including Healthcare, Medical, Pharmaceutics, Chemistry, Nursing, Agriculture, and Plant Sciences.

The core philosophy of Magnus Group revolves around creating dynamic platforms that facilitate the exchange of cutting-edge research, insights, and innovations within the global scientific community. By bringing together experts, scholars, and professionals from various disciplines, Magnus Group cultivates an environment conducive to intellectual discourse, networking, and interdisciplinary collaboration.

Magnus Group's unwavering dedication to organizing impactful scientific events has positioned it as a key player in the global scientific community. By adhering to the motto of Share, receive, grow, Magnus Group continues to contribute significantly to the advancement of knowledge and the development of innovative solutions in various scientific domains.

ABOUT
Cardio 2025

Amid growing concerns over the global rise in cardiovascular diseases, the **6th Edition of Cardiology World Conference (Cardio 2025)** stands as a vital gathering for those dedicated to transforming heart health. Scheduled for **September 15–17, 2025**, in **London, UK** and **virtually**, the conference centers around the theme *Advancing Heart Health: Breakthroughs in Cardiology*.

This global forum will unite cardiologists, scientists, healthcare professionals, and industry experts to share knowledge, unveil innovations, and discuss new clinical practices. From advances in cardiac imaging and AI-driven diagnostics to breakthroughs in interventional cardiology and heart failure management, Cardio 2025 promises a comprehensive exchange of ideas that drive real-world impact.

The research and perspectives featured in this book represent the collective effort to tackle today's most pressing cardiovascular challenges. Each abstract reflects the commitment of contributors to improving patient outcomes, advancing science, and building a healthier future through collaboration and discovery.

ABOUT

CPD Accreditation

Continuing Professional Development (CPD) credits are valuable for Cardio 2025 attendees as they provide recognition and validation of their ongoing learning and professional development. The number of CPD credits that can be earned is typically based on the number of sessions attended. You have an opportunity to avail 1 CPD credit for each hour of Attendance. Some benefits of CPD credits include:

Career advancement: CPD credits demonstrate a commitment to ongoing learning and professional development, which can enhance one's reputation and increase chances of career advancement.

Maintenance of professional credentials: Many professions require a minimum number of CPD credits to maintain their certification or license.

Increased knowledge: Attending Cardio 2025 and earning CPD credits can help attendees stay current with the latest developments and advancements in their field.

Networking opportunities: The Cardiology conference provide opportunities for attendees to network with peers and experts, expanding their professional network and building relationships with potential collaborators.

Note: Each conference attendee will receive 20+ CPD credits.

Table of Contents

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6th Edition of

Cardiology World Conference

SEPT

15-17

KEYNOTE PRESENTATIONS

A. T. Weisss*, S. Gorni, M. Mendelbaum, S. Rosenheck

Hadassah University Hospital, Israel

Home external defibrillation or pacing-the only strategy that can reduce sudden cardiac death

Sudden Cardiac Death (SCD)-caused by Ventricular Fibrillation (VF) or standstill-is one of the biggest unmet need in public health: It is unpredictable and occurs in about 1000 persons/day in US and Europe alone with very poor survival. Since survival drops by 10% for every minute delay-ambulances or high-cost public AED's are too late to save them and defibrillation or pacing should be used immediately, at home or office - where it occurs (in 80% of cases).

Our breakthrough technology device modifies by computer the sinusoidal alternating electrical current from the mains to a biphasic defibrillatory wave or to a pacing stimulus in case bradycardia or standstill-affordable to every household. Two animal experiments proved its safety and feasibility: In the first: Defibrillation of stable VF in 5 pigs was applied by our device and compared to a standard AED. Repeated defibrillation was successful by both devices and thresholds were found to be similar. The second experiment used six rats, following infarct by coronary closure-VF was induced with similar external defibrillation and in addition-our device only used external pacing successfully achieved in all, at a heart rate above their rate, for an unlimited time before and after defibrillation.

In future-pulse sensor watches will detect SCD and alert by bluetooth nearby people to use our device-immediately. We conclude that our breakthrough technology is feasible and at a much lower cost-more effective than that of the standard AED. This should be used to prevent SCD occurring at home/office and will revolutionize resuscitation outcome.

Biography

A. Teddy Weiss has completed his MD from the Hebrew University School of Medicine and Cardiology residency at Hadassah hospital in 1976 and postdoctoral studies at Cedars-Sinai cardiology center in Los-Angeles and since then-a fellow of the American College of Cardiology. A. Teddy was the director of the intensive coronary care unit in Hadassah for 30 years and now-director of cardiac rehabilitation unit. Also, published more than 150 papers in reputed journals with a great impact in nuclear cardiology and pre-hospital thrombolysis for acute myocardial infarction.

Arthur J. Siegel M.D

Division of General Internal Medicine, Massachusetts General Hospital, Boston, MA, USA

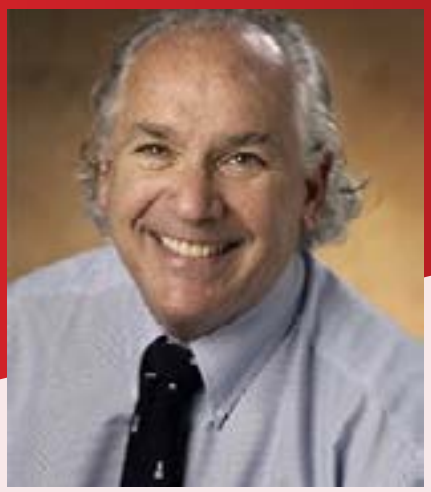
Department of Internal Medicine, McLean Hospital, Belmont, MA, USA

Harvard Medical School, Boston, MA, USA

Preventing sports-related cardiac arrest: Coronary artery calcium scoring stratifies the benefit of low-dose aspirin use for risk reduction

While habitual endurance exercise such as training for a marathon is quintessentially cardioprotective, running such a race paradoxically confers a transiently increased risk for cardiac arrest and sudden death. The frequency of such events increased significantly in United States road races since 2000, mainly in middle-aged men with subclinical coronary atherosclerosis. As low-dose aspirin use is evidence-based to reduce first heart attacks in middle-aged men by 43% in a randomized controlled primary prevention trial, such use in the absence of clinical contraindications is recommended to reduce the transiently elevated risk for cardiac arrest and sudden death during or after such races. Based on enhanced risk stratification with coronary artery calcium scoring, low-dose aspirin use is prudent for at-risk sports-active persons to reduce the risk for exertional cardiac arrest. This advice applies especially to individuals over age 60 among whom this risk is increased due to age.

Biography



Arthur J. Siegel, MD, is an associate professor of medicine at Harvard Medical School and a fellow in the American College of Physicians. J. Siegel research on Boston marathon runners has enhanced the safety of the sport by transposing evidence-based clinical paradigms from hospital-based practice to the marathon's medical tent. Prevention and treatment of acute cerebral edema due to exercise-associated hyponatremia mainly in young women and reducing risk for cardiac arrest mainly in middle-aged men are among these measures.

Dr. Gustavo Knop, MD, FRCS

Department of Cardiovascular Surgery, Mayo Clinic, MN, USA

Post-Cardiotomy ECMO (Pc-ECMO)

The term Post-Cardiotomy Cardiogenic Shock (PCCS) has been used variably to describe cardiogenic shock from 0 to 48 hours after separation from cardiopulmonary bypass. The incidence of PCCS is commonly reported to be 1% to 1.4% of patients undergoing cardiopulmonary bypass. PCCS has been and remains one of the most common indications of ECMO for which adults are placed on Veno-Arterial (VA) ECMO for cardiac support. PCCS has been and still is one of the most common indications of ECMO for which adults are placed on Veno-Arterial (VA) ECMO for cardiac support.

Although PCCS is an almost universally lethal condition in which timely institution of ECMO can be lifesaving, mortality rates after ECMO for PCCS are among the highest for any indication for ECMO and have remained largely unchanged for almost 2 decades despite a dramatic increase in utilization. There must be a better understanding of the benefits and risks of ECMO in this setting to decide who might benefit from such a costly, resource-intensive therapy associated with such a high rate of mortality as well as serious complications. Although there is a considerable body of literature on survival and risk factors for mortality for VA-ECMO, it often fails to address key variables that are useful for prognostication for PCCS patients.

The survival after VA-ECMO score (generated from extracorporeal life support organization data) does not examine PCCS specifically as a subgroup. Most of the literature consists of small or single-center studies with inconsistent definitions and outcomes of interest.

Biography

Dr. Gustavo Knop graduated from the University of Buenos Aires, Argentina, Trained in General Surgery and CV Surgery in Argentina and Australia. Trained in Heart/Lung Transplantation in the UK. Currently an Associate Consultant Cardiovascular Surgeon at the Mayo Clinic. Assistant Professor in Surgery, Mayo Clinic College of Medicine and Science.

A series of recent reports have attempted to apply the techniques of systematic review and meta-analysis to gain a better understanding of the risk factors influencing survival from PCCS with ECMO.

Khorsandi et al. summarized 24 studies from 1992 to 2016 with 1,926 patients. Survival to hospital discharge was 30.8%, and they identified risk factors including advanced age (>70), acute kidney injury on ECMO, rising lactate on ECMO, obesity, high European System for Cardiac Operative Risk Evaluation (Euro SCORE) (>20), and >48 hours of ECMO support.

A meta-analysis of 31 studies from 2002 to 2015 that included 2,986 patients reported 36.1% hospital survival and 30% 1-year survival. Both studies demonstrated high rates of serious complications, including stroke, bleeding, infection, and leg ischemia. A systematic review of the literature and meta-analysis of 20 studies published between 1996 and 2017, including 2,877 patients, revealed a hospital survival of 34%, a 1-year survival of 24%, and a midterm 3 to 5-year survival of 18%. This data reinforces the poor prognosis for this group of patients, as indicated by previous studies. The risk factors for in-hospital mortality were age>65, diabetes, pre-operative renal insufficiency, Euro Score>20, pulmonary disease, and pre-ECMO lactate. All meta-analyses are susceptible to the influence of publication bias.

In addition to further risk stratification for PCCS, it would also be useful to evaluate the efficacy of adjunct therapies such as inotropes or an intra-aortic balloon pump or other strategies for Left Ventricular (LV) unloading. There is evidence that combining ECMO with an intra-aortic balloon pump increases the efficacy of weaning. Efficacy of LA and PA cannulation is an alternative LV unloading strategy for patients supported with peripheral or central VA-ECMO, and can be efficiently utilized in PC-ECMO, surpassing Impella with lower complication rates, and IABP with more effective unloading.

Conclusion: ECMO is a lifesaving therapy for PCCS, an almost uniformly lethal condition; however, the combination of its high cost and intensity of resource utilization with persistently low reported rates of survival indicates the need for more prognostic information to help guide its use.

Dr Iris-Panagiota Efthymiou

Excecutive Business School, University of Greenwich, London, UK

Empathy and precision: Revolutionizing communication between cardiologists and patients

Effective communication is critical in cardiology, where the stakes often involve life-altering decisions. This presentation explores the intersection of empathy and precision in communication, emphasizing the cardiologist's role in fostering trust, understanding, and patient compliance. Drawing from evidence-based research and practical case studies. I will discuss strategies to navigate complex conversations, deliver difficult diagnoses, and motivate patients toward healthier lifestyles. By integrating behavioral insights and patient-centered approaches, we can enhance outcomes, reduce anxiety, and create a stronger partnership between cardiologists and their patients. This talk aims to equip cardiologists with practical tools to communicate with clarity and compassion, ensuring patients feel informed, valued, and empowered throughout their care journey.

Biography

Iris Panagiota Efthymiou is a Lecturer at the Greenwich University, University of East London, an Executive, results-driven, and multi-talented enterprise and institutional director, author, and keynote speaker with over 20 years of experience in entrepreneurship, and executive leadership roles. Possesses a solid foundation in research, management, consultancy, and strategic development. Iris has worked as a college director and created her own Public Affairs consultancy. She worked with politicians, Diplomats, entrepreneurs, academics, and journalists, and spoke at the UN Headquarters in Geneva. Iris is a Board Member of HAPSc and a member of the Academic Board of the LabHEM, of the University of Piraeus. Also, published over 17 books, 50 articles, and Book chapters in peer-reviewed journals, and she is the Chief Editor of the Journal of Politics and Ethics in New Technologies and AI. Iris has a Ph.D. in Behavioural Health Economics, a Master's in Health Economics and Management, and Bachelor's in Economics.

Mekhman N Mamedov

National Research Center for Therapy and Preventive Medicine, Moscow, Russia

Subclinical atherosclerosis: Association with additional risk factors and somatic diseases

Atherosclerosis has a long preclinical phase and the risk of cardiovascular events may be high in patients in the asymptomatic stage of the disease (Subclinical Atherosclerosis, SA). The presence of classical risk factors increases the likelihood of developing cardiovascular events, but additional identification measures are required in patients with SA. In the adult population, Subclinical Atherosclerosis is detected on average in 50% of cases (depending on the location, it can vary from 30% to 70% of cases). Among people with low cardiovascular risk, SA is detected with a similar frequency, which is a limitation of integral prognostic scales. In the PESA study (n=4184, mean age 45.8 years; 63% men), among participants at low 10-year risk using the Framingham score, subclinical atherosclerosis was detected in 58% and intermediate or generalized disease in 36%.

A meta-analysis of publications in PubMed and Scopus from 2015 to 2024 was conducted using keywords: subclinical atherosclerosis, association with somatic diseases and additional risk factors.

Among the somatic diseases associated with subclinical atherosclerosis are metabolic syndrome, progestational type 2 diabetes mellitus, fatty liver disease, psoriasis, antiphospholipid syndrome, arthritis and systemic lupus erythematosus.

Additional risk factors may also provide valuable information about the presence of asymptomatic atherosclerosis. A series of studies have demonstrated

Biography

Dr. Mamedov was born on January 10, 1970, in Sheki, Azerbaijan, and is a distinguished Azerbaijani cardiologist based in Moscow, Russia. He completed his medical education at the Moscow Medical Academy named after I.M. Sechenov, followed by postgraduate and doctoral studies in cardiology at the National Research Center for Preventive Medicine. Since 2002, Dr. Mamedov has led the Department of Secondary Prevention of Chronic Non-infectious Diseases at the National Research Center for Therapy and Preventive Medicine. His research focuses on cardiovascular disease epidemiology, risk factors, and pharmacotherapy. Dr. Mamedov has authored 468 articles, 13 monographs, and holds a Hirsch index of 40. Also, serves as the President of the Cardio progress Foundation, is on the board of the Russian Society of Cardiology, and is Editor-in-Chief of the International Journal of Heart and Vascular Diseases.

that SA markers are strongly associated with insulin resistance, glycated hemoglobin in non-diabetic individuals, growth differentiation factor-15, circulating proteins, cystatin C, and hearing loss measured by audiometry. The presence of these disorders may be the basis for a diagnostic search for SA.

Thus, some diseases associated with metabolic disorders, systemic inflammatory diseases of connective tissue and skin, as well as additional risk factors are closely related to SA. These circumstances should be taken into account when developing comprehensive preventive measures to prevent clinical manifestations and complications in people with SA.

Keywords: Subclinical Atherosclerosis, Somatic Diseases, Additional Risk Factors.

Narendra Kumar

HeartbeatsZ Academy, United Kingdom

The past, present and future of AI in cardiology

Artificial Intelligence (AI) is transforming cardiovascular medicine by enhancing diagnostic accuracy, treatment selection, and patient outcomes. Machine learning algorithms now analyze complex cardiac imaging with super human precision, detecting subtle patterns in echocardiograms, cardiac MRI, and cronary CT angiography that may elude human interpretation. Deep learning models demonstrate remarkable capability in predicting cardiovascular events from multimodal data, integrating clinical parameters, imaging findings, and genomic markers to stratify patient risk with greater accuracy than traditional scoring systems. In clinical practice, AI-powered clinical decision support systems assist physicians in treatment selection, medication management, and identifying patients requiring intervention, while wearable technologies enabled by AI algorithms provide continuous cardiac monitoring and early detection of arrhythmias. The emergence of AI-guided robotic systems shows promise for enhancing precision in complex cardiac procedures. Despite these advances, significant challenges persist, including addressing algorithmic bias, ensuring appropriate validation across diverse populations, maintaining data privacy, and integrating AI tools effectively into clinical workflows. As implementation expands, ongoing evaluation of clinical outcomes and cost-effectiveness remains essential to determine AI's true value in cardiovascular care.

Biography

Dr. N. Kumar is a European Board Certified Cardiac electrophysiologist (ECES) with his doctorate thesis in cardiology on Atrial Fibrillation Ablation from Maastricht University Medical Centre, Netherlands (ranked among the top 50 clinical universities worldwide). Kumar is also a program chair for an International cardiology program and a visiting professor Cardiology for EDU (Germany, Malta). His primary interest is Atrial Fibrillation, Arrhythmia Management, Heart Failure, and Cardiovascular Economics. Kumar has extensive experience with Ablation procedures and complex device implantation with>70 publications (and>600 citations) in reputed journals, including JACC and Heart rhythm journal. Also, has more than a decade of experience in Cardiology.

Robert Chilton, DO, FACC, MACOI, FAHA

Dept of Cardiology University of Texas Health Science Center San Antonio, Texas, USA

Revolutionizing CKD care: How finerenone transforms outcomes in heart and kidney health–insights from fidelio-DKD

Finerenone is a non-steroidal Mineralocorticoid Receptor Antagonist (MRA) designed to manage heart failure, especially in patients with Chronic Kidney Disease (CKD) and type 2 diabetes. Heart failure and CKD frequently co-exist, and the combination poses a particularly high cardiovascular risk. Finerenone stands out from traditional MRAs due to its targeted mechanism of action, which minimizes fibrosis and inflammation in both the heart and kidneys, two critical drivers of disease progression. In contrast to steroidal MRAs, Finerenone's non-steroidal structure allows for a more selective binding to Mineralocorticoid Receptors, reducing the likelihood of common MRA-associated side effects, especially hyperkalemia, or high potassium levels, a condition that can severely limit the use of traditional MRAs in patients with CKD.

The efficacy and safety profile of Finerenone have been validated in two major studies: FIDELIO-DKD and FIGARO-DKD. The FIDELIO-DKD trial included over 5,700 patients with CKD and type 2 diabetes, revealing that Finerenone significantly reduced the risk of kidney disease progression and cardiovascular events. Specifically, patients treated with finerenone experienced a 31% lower risk of experiencing a decline in kidney function (defined by a 40% reduction in estimated glomerular filtration rate), kidney failure, or death due to renal causes compared to those on a placebo. Moreover, cardiovascular event rates,

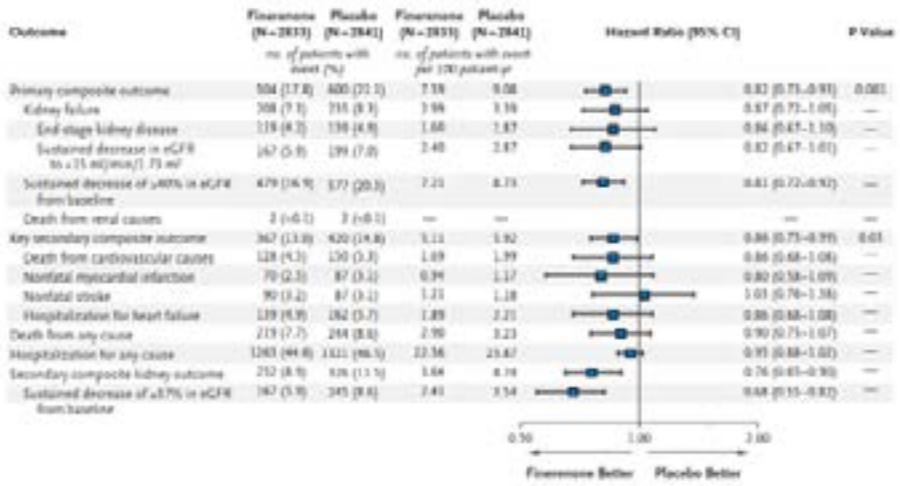
Biography

Dr. Robert J. Chilton, is a renowned Professor of Medicine with a distinguished career in Cardiovascular Disease, Heart Failure, and Diabetes, particularly type 2 diabetes (T2DM). Dr. Chilton trained at the University of Oklahoma and Wilford Hall USAF, later leading key studies on Coronary Artery Disease (CAD) and Heart Failure. Dr. Chilton has contributed over 100 publications and participated in pivotal trials, such as COURAGE, ISCHEMIA, and BARI-2D, shaping global CAD and diabetes treatment. Also, associate editor for CCI, Journal of Diabetes and CV Metabolism. Moreover, in 2024 Best Teacher Award recipient, his research focuses on SGLT2 inhibitors for T2DM and heart failure, as well as proteomics in acute myocardial infarction.

including heart failure hospitalizations and deaths related to cardiovascular issues, were reduced by approximately 18% in the finerenone group.

FIGARO-DKD, involving nearly 7,500 patients, also demonstrated that finerenone was effective in reducing cardiovascular outcomes by around 13% compared to placebo. The trial particularly highlighted the drug's effect on reducing heart failure hospitalization, a key concern in patients with CKD and type 2 diabetes. Importantly, both trials reported that finerenone's safety profile was favorable, showing lower incidences of hyperkalemia compared to traditional MRAs, thus making it a safer choice for CKD patients at risk of potassium retention issues.

With these results, finerenone offers a promising therapeutic option, not only for slowing CKD progression but also for managing cardiovascular risks in patients with type 2 diabetes and CKD. Its dual role in reducing both kidney and cardiovascular complications positions it as an essential part of the therapeutic landscape for high-risk heart failure patients.



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Biography

Sekib Sokolovic

ASA Hospital Sarajevo, Bosnia and Herzegovina

Prof. Dr. Sekib Sokolovic studied Medicine at the Sarajevo University, Bosnia and Herzegovina and graduated in 1983. He received his PhD degree in 2004 at the same institution. Also, obtained the position of an Professor in Internal Medicine, Cardiology, Vascular Disease and Rheumatology at the same institution. Dr. Sekib Sokolovic gained subspecialty training in Rheumatology at University of California Irvine, L.A. And later subspecialty in Cardiology at Medical Faculty of Sarajevo. Has published research articles in SCI(E) journals.), reviewer of many scientific journals worldwide and invited speaker at domestic and international medical scientific conferences and symposia.

The low grade chronic inflammation and atherosclerosis

Introduction: The Low Grade Chronic Inflammation (LCGI) is response to the underlying disorders, injuries, antigen and is result of the failure to acute infection, viruses, tuberculosis, protozoa, fungal and foreign material. The risk factor of LCGI are smoking, obesity, high salt diet, stress, lack of sleep, sedentary lifestyle, alcohol, dental impairment, mild chronic infections etc. Laboratory tests reveal slighty increased non-specific parameters of inflammation like hs-CRP, amyloid, fibrinogen, polyclonal gammopathy, hypoalbuminemia, proinflammatory cytokines, increased volume of platelets (MVP) and low sera vitamin D. MVP may be considered as an inflammatory marker of LCGI. In obese patients with a glucose intolerance and metabolic synrome there is high level of pro-inflammatory cytokines, insulin resistance, hyperinsulinemia, the propagation of atherosclerosis through the leucocyte activation, altered macrophage and endothelial adhesion molecules expression. The LCGI is the main feature of post-covid and fatigue is a typical clinical manifestation. The efficiancy of colhicine is the evidence of hypothesis.

Objective: To emphasize the relation of LCGI and atherosclerosis responsible for the increased morbidity and mortality.

Material: The review evidence based scientific material, expert opinion and personal expirience.

Conclusion: The LCGI plays a key role in atherosclerosis , metabolic and other disorders. Although there is no specific biomarkers recognized, the relationship between inflammation and atherosclerosis may be outlined by non-specific laboratory inflammatory markers. Treatment of advanced atherosclerosis should include anti-inflammatory properties.

Sergey Suchkov[1-6,13*], R. Holland Cheng[12], Matt Springer[11], Roger D. Kamm[9], Shawn Murphy[7,8], David Smith[10]

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Personalized and Precision Medicine (PPM) as a unique healthcare model through bio design-driven and inspired biotech, translational applications and cardiology-related marketing to secure the human healthcare, wellness and biosafety

A new systems approach to diseased states and wellness result in a new branch in the healthcare services, namely, Personalized and Precision Medicine

Biography

Sergey Suchkov was born in the City of Astrakhan, Russia, in a family of dynasty medical doctors. In 1980, graduated from Astrakhan State Medical University and awarded with MD. In 1985, maintained his PhD as a PhD student of Sechenov University and Institute of Medical Enzymology. In 2001, maintained his Doctor Degree at the National Institute of Immunology, Russia. From 1989 through 1995, was a Head of the Lab of Clinical Immunology, Helmholtz Eye Research Institute in Moscow. From 1995 through 2004 - a Chair of the Dept for Clinical Immunology, Moscow Clinical Research Institute (MONIKI). Currently, Dr. Sergey Suchkov, MD, PhD, is a professor at the Russian University of Medicine in Moscow. He is also an active member of several prestigious organizations, including the Russian Academy of Natural Sciences, the New York Academy of Sciences, the American Chemical Society (ACS), the American Heart Association (AHA), the European Association for Medical Education (AMEE), and the European Association for Predictive, Preventive and Personalized Medicine (EPMA).

(PPM). To achieve the implementation of PPM concept, it is necessary to create a fundamentally new strategy based upon the recognition of biomarkers and thus biomarker-driven targeting to secure the grand future of drug discovery.

It would be extremely useful to integrate data harvesting from different databanks for further treatment to thus provide more tailored measures for the patients and pre-illness persons-at-risk, resulting in improved patient outcomes, reduced adverse events, and more cost effective use of the latest health care resources including diagnostic (companion ones), preventive and therapeutic (targeted molecular and cellular) etc. In this context, the need for innovative heart disease treatments has become critical since the diseases remain the world's biggest killer. The pace of innovation in Personalized & Precision Cardiology (PPC) is becoming fast.

A major paradigm shift has become the increasing recognition of the potential therapeutic utility of the targeted drugs for cardiovascular diseases, whilst opening up new avenues of therapeutic implications. As PPM continues to drive targeted immunotherapy development and cardiac biomarker discovery for healthcare services, cardiologists could indeed see their own PPM-based renaissance very soon.

In cardiovascular disease globally, PPM may result in much-needed innovation in the field and has the potential to eventually change the way we treat heart diseases altogether. So, PPC is thus poised to become the next great revolution in the daily practice, as well as in the maintenance of cardiovascular health and the prevention and cure of cardiovascular disease. PPM disrupts standard practice and draws from clinical testing, electronic health records, multi-OMICS profiling, big datasets, and novel analytical methods, to create a person-specific phenotype to identify an optimal intervention with minimal risk.

The promise of PPM and PPC is well understood but the newest tools will be needed for describing the Cardiovascular health status of individuals and populations, including transdisciplinary 'OMICS' data, exposome-related datasets and social determinants of health, behaviours and motivations, patient-generated data, and the array of data in EMRs. Innovative cardiology and cardiac nano surgery currently lead the way in PPC advancements, and health care under PPM-related armamentarium will become a more integrated, dynamic system, in which patients are becoming central stakeholders who contribute data and participate actively in shared decision-making. The proposal would ideally be suited for practitioners who already incorporate integrative approaches in their practice, as well as more traditional clinicians who want to learn more about PPM and PPC as a growing area.

PPM will need to demonstrate that phenotype-based person-specific interventions are superior to the current standard of care and, ultimately, have a population effect by moving the mean on the disease spectrum towards health. Education, affordability, and public acceptance of the strategy all play key roles in its ultimate implementation. This is the reason for developing global scientific, clinical, social, and educational projects in the area of PPM-based and PPC-guided clinical cardiology to elicit the con-tent of the new branch. In short, PPM will transform the way the physicians practice and will shake up the entire pharmaceutical value chain.

Dr Syed Raza, MD, MRCP, FRCP, CCT, FACC, FESC, FESCVI

Awali Hospital, Bahrain

Novel ways of cardiovascular risk assessment

Cardiovascular Disease (CVD) is the leading cause of death and disability worldwide. The primary prevention of the development of overt events. This highlights the need for accurate risk stratification.

For a number of year's healthcare professionals have been using a wide range of traditional methods and tools for assessing and calculating individual's predicted future risk for cardiovascular disease including coronary and cerebrovascular disease. They include taking into account presence of co-morbidities such as diabetes mellitus, hypertension, dyslipidaemia, smoking and family history. Risk scoring tools such as Framingham and risk score and also utilization of some basic cardiac investigations. These methods have been useful but we realise that they always do not adequately and accurately predict the cardiovascular risk.

Critical evaluation of risk markers and risk assessment methods have become even more important as novel markers of cardiovascular risk are identified by technological advances in genetics, genomics, proteomics, and non-invasive imaging. They have been shown to evaluate the risk of an individual in more depth than the traditional methods and perhaps also provide insights into the unexplored and hidden risks.

However, these novel methods of cardiovascular risk assessments are costly and not readily available and hence they must be judiciously utilised to provide a more individualized and personalised approach so that this strategy is more cost effective.

Biography

Dr Syed Raza graduated from Aligarh University in India in 1993. After completing his postgraduate degree in Medicine from the same university, then moved to the UK for higher specialist studies. Dr Raza successfully completed MRCP and CCT and later also awarded Fellow of the Royal College of Physicians of Edinburgh. Also, awarded as professor John Goodwin prize for outstanding performance in Diploma Cardiology exam at Hammersmith Hospital, University of London in 2001. Dr Raza is Fellow of American College of Cardiology, Fellow of European Society of Cardiology and Fellow of European Society of Cardiovascular Imaging. Dr Raza is also on the committee of Acute Cardiovascular Care, Heart Failure and Cardiovascular Imaging (European Society of Cardiology). He is Review author for abstracts for European Society of Cardiology for the past three years. Obtained Diploma certificate in Medical Education from University of Cardiff, Wales in 2015. Consultant Cardiologist and Head of the department of Medicine at Awali Hospital, Bahrain. Dr Raza is the regional educational Coordinator

and Examiner for MRCP (PACES) exam for the Royal College of Physicians of Edinburgh. Certified Educational and Clinical supervisor, NHS-UK. He has to his credit numerous publications and he has presented his scientific work in different parts of the world. Dr Raza is peer review author for some well-respected International journals. He is American Board certified in Medical Quality and is involved in patient safety and quality improvement assignments during his current and previous jobs. He participates in key decision making for quality improvement. His special interests are Cardiovascular Imaging, Heart Failure and Acute Cardiovascular Care.

Thomas Bernd Dschietzig

Relaxera GmbH & Co. KG, Bensheim & Berlin, Germany

The development of human relaxin-2 for heart failure with preserved ejection fraction, HFpEF

Human Relaxin-2 (hRlx-2) is a hormone of pregnancy that has engendered a great deal of interest as a therapy for various cardiovascular and inflammatory diseases, among them acute heart failure and systemic scleroderma. Here, we propose and summarize data showing that Rlx-2 represents a strong drug candidate for the treatment of HFpEF, a hitherto unmet medical need, and outline the upcoming pharmacological development.

In particular, the talk summarizes data obtained in the rat ZSF1 and aged rat HFpEF models as well as in human cells. ZSF1 rats (9-weeks old, either sex) were placed on a high fat diet for 11 weeks and serial echocardiograms were used to track the development and severity of Diastolic Dysfunction (DD). Once severe HFpEF was established rats received daily sc. injections of hRlx- 2 (100 µg/kg) or vehicle. After 2 weeks, hearts were perfused with a voltage-sensitive dye (RH237) and a Ca2+ indicator (Rhod-2/AM) to optically map action potentials and Ca2+ transients to analyze the arrhythmia phenotype. Tissue sections for immunofluorescence and Westerns were used to measure changes in fibrosis (collagen 1), Nav1.5, connexin 43, Wnt1 and β-catenin. Rlx-2 suppressed atrial and ventricular arrythmia and significantly increased Cx43 expression, Nav1.5 and β-catenin at intercalated disks. It reduced collagen deposition back to normal levels and increased myocardial Wnt1 expression. In summary, the ZSF1 diabetic rat on a high-fat diet recapitulates human HFpEF with lung

Biography

Thomas Bernd Dschietzig studied Medicine at Charité, the Medical Faculty of the Humboldt University of Berlin, Germany, and is a specialist of Internal Medicine focused on cardiovascular research. His lab and clinical work has been focused on the study of physiology and pathophysiology of the naturally occurring peptide hormone human relaxin-2. Thomas Bernd is Chief Executive Officer and Co-Founder of Relaxera, a pharma company dedicated to develop synthetic human relaxin-2 for chronic clinical use in Cardio-Vascular disease, especially in Heart Failure with Preserved Ejection Fraction, HFpEF.

edema, fibrosis, and DD as well as atrial and ventricular arrhythmias. Rlx-2 injections reversed DD, left atrial enlargement, and fibrosis. Rlx-2 also abolished the pro-arrhythmic phenotype by increasing conduction velocity, Cx43, and Nav1.5.

In a second part, data on relaxin-2 effects on energy metabolism of human immune cells are summarised.

In summary, hRlx-2 is highly effective as a candidate therapy for HFpEF. A phase-II clinical trial in HFpEF/HFmrEF patients will start in late 2025.

Amesz J[1,2], Zhou Z[1,2], Van Doorn E[1,2], Shi Qi[1,2], Knops P[2], Van Schie M[2], De Groot N[2], Manintveld O[3], Taverne Y[1,2]*

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Ex-situ organ perfusion and cardiac performance improvement

Cardiac transplantation remains the golden standard for patients with end-stage heart failure when therapeutic approaches and interventions fail to reverse HF progression. Traditionally, hearts are transplanted from Brain-Death (DBD) donors where the heart is beating at time of procurement and cardiac arrest is controlled, enabling immediate cardio protection of the donor heart from start of the procedure. However, the worldwide shortage in donor hearts for transplantation persists and the number of patients with end-stage HF is still increasing. DCD hearts provide an additional donor pool, but these hearts can only be procured after cardiac arrest of the donor, resulting in warm ischemia of the organ before cardioplegic protection. In order to use such hearts, a perfusion intermediate is needed where, worldwide, only 1 commercially available heart perfusion machine is available dictating warm perfusion. Despite the increase in number of transplantations, several inconsistencies still exist in terms of supraphysiological coronary blood flow on machine perfusion, perfusate

Biography

Dr. Y. Taverne currently work as a pediatric and adult congenital cardiothoracic surgeon and cardiac morphologist at the department of Cardiothoracic Surgery at the Erasmus MC, Rotterdam, the Netherlands. As a clinical epidemiologist and associate professor, he is leading the Translational Cardiothoracic Surgery Research Lab. His surgical focus encompasses minimally invasive (pediatric) procedures, cardiac transplantation including ex-situ heart perfusion, and Ross surgery. His research focusses on excitation-contraction coupling with strong interest in Congenital Heart Disease (CHD) and heart failure. Current projects include RV form and function in (CHD), ex-situ heart perfusion and living myocardial slices in a biomimetic culture system.

composition, optimal preservation temperature and how to objectively measure allograft quality and viability.

In such, our lab focusses on: a) determining improved cardiac perfusion strategies, b) optimization of perfusion hemodynamics, c) altering cardiac performance, and d) defining optimal real-time biofeedback on allograft viability. This presentation addresses our experiences with the DCD program and pinpoints specific obstacles. Next, novel therapies and modifications will be discussed to improve cardiac function and longevity, including alternative perfusion modalities. Finally, results from our unique real-time biofeedback system on allograft functionality will be discussed to allow for patient-tailored medicine.

Biography

Yong-Xiao Wang

Department of Molecular and Cellular Physiology, Albany Medical College, Albany, New York, USA

Dr. Yong-Xiao Wang has been a Full Professor in Department of Molecular and Cellular Physiology at Albany Medical College since 2006. Dr. Wang obtained his MD at Wannan Medical University, PhD at Fourth Military Medical University, and postdoctoral training at Technology University of Munich as well as University of Pennsylvania. Dr. Yong-Xiao has made many important findings using complementary molecular, biochemical, physiological, and genetic approaches at the molecular, organelle, cellular, tissue and organism levels in animals and human samples, had numerous publications in Nature Commun (impact factor: 17.694), Antioxid Redox Signal (7.675), Proc Natl Acad Sci USA (11.205), Nature (69.504), Circ Res (23.218), and other highly peer-reviewed journals and academic books, and served as the editorial board member and/or section editor as well as the executive committee member and/or subcommittee chair for professional societies.

Novel important cellular responses, signaling mechanisms and therapeutic options for pulmonary hypertension and right heart failure

As a common and devastating lung disease, Pulmonary Hypertension (PH) has a significant rate of both morbidity and death mortality. The current primary interventions for this disease are to use non-specific vasodilators, but patients do not always respond well to these non-specific vasodilators. Voltage-dependent potassium channels and store-operated calcium channels may increase intracellular calcium concentration ([Ca2+]i) in Pulmonary Arterial Smooth Muscle Cells (PASMCs) to mediate the development of PH; however, experimental findings are uncertain. In a series of studies, we have explored the potential important role of Ryanodine Receptor 2 (RyR2) Ca2+ release channel in PH and its inhibition as therapeutic strategies for this disease. Our findings reveal that Rieske Iron-Sulfur Protein (RISP) serves as a primary molecule to increase mitochondrial Reactive Oxygen Species (ROS) generation, disassociate FKBP12.6 from RyR2, enhance the channel activity, and then induces calcium release from the sarcoplasmic reticulum (a major intracellular Ca2+ store), hereby causing PA vasoconstriction, remodeling, and ultimately hypertension. Moreover, the increased RISP-dependent ROS can also cause DNA damage to activate Ataxia Telangiectasia Mutated (ATM) kinase, phosphorylate Checkpoint Kinases 2 (Chk2), and cause cell proliferation in PASMCs, leading to PA remodeling and hypertension. Our results further indicate that specific pharmacological and genetic RISP, RyR2, FKBP12.6 dissociations, ATM, and Chk2 inhibition may become specific and effective treatment options for PH and other relevant vascular diseases.

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ORAL PRESENTATIONS

Abdul Wahed Sediqi[1,2*], MD, MSc, FESC, Manizha Noorandish[2], MD, Nommanudien Naibkhil[3,4], Pharm. D., MSc, Asma Rahbeen[2], MD, Mehernegar Haqyar Mohammadi[2], MD, Sajeda Sediq[2], MD, Zohal Sediqi[2], MD, Susan Ahmadzai[2], MD, Hussain Hussaini[2], MD, Madina Omar[2], MD, Negara Nabi[3,4] Pharm. D.

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The hidden burden of congenital heart disease in Afghanistan: A three-year analysis of clinical patterns and healthcare access barriers

Background: Congenital Heart Disease (CHD) is the most common type of birth defect and the leading cause of infant mortality related to congenital anomalies worldwide. Despite the high burden of CHD in Afghanistan, epidemiological data from the country remain extremely limited. This study aimed to characterize the spectrum of CHD in Afghanistan and discuss systemic barriers to timely diagnosis and management. The findings are intended to provide insights that can guide future research, enhance early detection efforts, and inform the development of evidence-based clinical strategies.

Methods: A retrospective observational study was conducted at Ariana Medical Complex, reviewing medical records of patients diagnosed with CHD between March 2022 and December 2024. The analysis included a total of 4,830 echocardiographically confirmed patients of CHD. Data were extracted on patient age, gender, and CHD subtypes. CHD lesions were identified based on the type of defect. Cases were further categorized as Acyanotic and Cyanotic, with Cyanotic CHD defined as complex structural abnormalities of the heart present from birth, characterized by inadequate oxygenation of systemic blood due to right-to-left shunting or impaired pulmonary circulation, and generally necessitating staged surgical correction or palliative interventions to ensure survival and improve long-term outcomes. Descriptive statistical methods were used to analyze patterns in disease distribution, and potential gaps in timely diagnosis and care were highlighted based on professional experience and observation.

Results: Of the total cases, 54.4% were male (male-to-female ratio 1.2:1). CHD was most frequently diagnosed after infancy (58%); however, 27.6% of acyanotic and 24.4% of cyanotic cases were identified after the age of five, and 7.3% of cyanotic and 8.1% of acyanotic cases were diagnosed after age eighteen. Acyanotic CHDs accounted for 73.6% of cases, with ASD (28.5%), VSD (25.6%), and PFO (17.4%) comprising nearly two-thirds of the cohort. Patent

ductus arteriosus (9.4%) and less common anomalies, including pulmonary hypertension, bicuspid aortic valve, and coarctation of the aorta, were also reported. Cyanotic CHDs accounted for 26.3% of cases, with the most frequent diagnoses being TOF (5.5%), dextro-transposition of the great arteries (D-TGA, 2.6%), complete atrioventricular canal defect (2.5%), and double outlet right ventricle (1.7%). Rare but clinically significant lesions included truncus arteriosus, total anomalous pulmonary venous connection, hypoplastic left or right heart syndrome, and Ebstein's anomaly. Overall, 18.3% of cyanotic cases presented with multiple defects, whereas among acyanotic cases, 54.3% occurred as isolated lesions and 45.6% were associated with additional acyanotic defects. Additionally, approximately 13.1% of primarily acyanotic CHDs, when diagnosed late, presented clinically as cyanotic CHDs. Significant barriers included limited diagnostic capacity, a shortage of specialized workforce, financial constraints, and the lack of in-country surgical services, collectively constituting a public health emergency.

Conclusion: This study provides a foundational overview of the CHD spectrum in Afghanistan, demonstrating a predominance of acyanotic lesions alongside a significant burden of cyanotic cases with delayed diagnosis. Beyond the descriptive findings, professional insights underscore critical systemic challenges, including limited specialist availability, the lack of in-country pediatric cardiac surgical capacity, significant access barriers, and economic constraints that continue to impede timely diagnosis and optimal care. Addressing these issues requires not only investment in local diagnostic and treatment infrastructure but also active collaboration with international cardiology associations and healthcare institutions. Strengthened global partnerships can support capacity-building, training, and sustainable care models to improve outcomes for children with CHD in Afghanistan.

Keywords: Congenital Heart Disease, Afghanistan, Diagnostic Delay, Healthcare Barriers, Acyanotic CHDS, Cyanotic CHDS, Resource-Limited Settings, Pediatric Cardiology.

Biography

Dr. Abdul Wahed Sidiqi, a Kabul University MD graduate (2001), became a key figure in Afghan cardiology. He founded Ariana Hospital in 2009, pioneering a cardiology practice and echocardiography training, significantly advancing opportunities for female doctors. After further training in the Netherlands and South Korea, he introduced BLS and ACLS training in Afghanistan. In 2018, he established the state-of-the-art Ariana Medical Complex. A Fellow of the European Society of Cardiology (2023), he has published extensively, including a notable 2025 article "Global Rounds Afghanistan: A Critical Overview of Cardiovascular Medicine," in the American Heart Association's Circulation Journal. He serves on the editorial board of the Cardiology Research Journal and received the Best Oral Presentation Award from Cardio Hub 2025.

Abhinav Grover, MD, MS

University of Pennsylvania, Philadelphia, Pennsylvania, USA

Role of ACE inhibitors in COVID-19 patients with hypertension

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV2) causes coronavirus disease (COVID-19), a potentially fatal disease that is of immense global public health concern. Angiotensin-Converting Enzyme Inhibitors (ACEIs) and Angiotensin Receptor Blockers (ARBs) share their target receptor site with the SARS-CoV-2 virus, that may cause ACE2 receptor up-regulation which raised concerns regarding ACEI and ARB use in COVID-19 patients. However, many medical professional societies recommended their continued use given the paucity of clinical evidence, but there is a need for a systematic review and meta-analysis of the latest clinical studies. A search was conducted on PubMed, Google Scholar, EMBASE, and various preprint servers for studies comparing clinical outcomes and mortality in COVID-19 patients on ACEIs and/or ARBs, and a meta-analysis was performed. A total of 16 studies were included for the review and meta-analysis. There were conflicting findings reported in the rates of severity and mortality in several studies. In a pooled analysis of four studies, there was a statistically non-significant association of ACEI/ARB use with lower odds of developing severe disease vs. non-users [odds ratio (OR)=0.81, 95% confidence interval (CI): 0.41-1.58, I2=50.52, P-value=0.53). In a pooled analysis of six studies, there was a statistically non-significant association of ACEI/ARB use with lower odds of mortality as compared with non-users (P-value=0.55). Several hypotheses have been put forward explaining the positive and negative aspects of ACEI/ARB administration in COVID-19 patients. Positive effects include ACE2 receptor blockade, disabling viral entry into the heart and lungs, and an overall decrease in inflammation secondary to ACEIs/ARBs, suggesting that the use of an ACEI might be protective against respiratory complications. Negative effects include a possible retrograde feedback mechanism, by which ACE2 receptors are up regulated, which may lead to severe pneumonia, increasing the risk of severe outcomes and mortality. It is concluded that ACEIs and ARBs should be continued in COVID-19 patients.

Biography

Dr. Abhinav Grover studied medicine and completed residency at the University of Delhi, India and graduated with MBBS and MD in 2016. He then completed a graduate program in translational medicine at the University of California, Irvine. He received her MS degree in 2018 at the same institution. After one year of research fellowship at the Allegheny Health Network, USA, he obtained a clinical position at the Medical College of Wisconsin and subsequently at the hospital affiliated with the University of Pennsylvania. He has published more than 30 research articles and peer-reviewed abstracts in reputable journals.

Abhishek Dey[1*], Wilsonne Chua[2], Saad Mansoor[2], Naser Elameri[2]

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Requirement of serial high-sensitivity troponin assays in low-risk patients for ACS with non-ischaemic ECG changes: Are we compliant with the recent guidelines?

Background: The leading symptom triggering the evaluation cascade in patients with suspected Acute Coronary Syndrome (ACS) is acute chest pain. An accurate clinical history, serial Electrocardiograms (ECG) and high sensitivity Troponin assays are the cornerstones of prompt and accurate diagnosis guiding further management options.

As per ESC's (European Society of Cardiology) 0h/1 h rule-out and rule-in algorithm for ACS using high- sensitivity cardiac troponin assays in haemodynamically stable patients, 'NSTEMI can be ruled out at presentation if the hs-cTn concentration is very low.'

Despite endorsement by various international organisations and studies, a trend is observed where patients with low suspicion of ACS clinically, coupled with non-ischaemic ECG changes and 0h Troponin value below level of detection undergo serial troponin level measurements and prolonged observation. This adversely affects cost optimization, promotes layered testing, and encourages testing when the diagnostic yield is low based on patient characteristics. All of these have the potential to compromise patient safety.

Purpose: The study aims to evaluate compliance with ESC's rule-out algorithm regarding interpretation of single/serial high-sensitive troponin assays in young patients (age<50 years) with low suspicion of ACS and non-ischaemic ECG changes. We further aimed to explore patient outcomes for those undergoing serial Troponin level evaluation (with non-diagnostic value of 1st Troponin assessment) - 2nd diagnostic value of Troponin, length of stay, true incidence of ACS +/- Invasive Coronary Angiography (ICA), true positive ICA.

Methods: A retrospective case note analysis was conducted for all patients aged <50 years with low clinical suspicion of ACS and non-ischaemic ECG changes with non-diagnostic 0/1h Troponin values presenting with chest pain in acute admissions unit of large tertiary care centre from January to February, 2022. We further evaluated their in-patient management, serial investigations, duration of admission and followed up the study population for readmissions, further outpatient cardiac investigations to access coronaries for 1 year.

Results: 207 patients with a mean age of 36.4+/-8.8 years fulfilled the inclusion criteria; 13 patients being excluded due to insufficient clinical information and attrition. 9.66% (20) of the study population underwent serial 2nd Troponin level measurements with non-diagnostic 0/1h Troponin levels and non-ischaemic ECG changes. However, none of the patients from this cohort had a diagnostically raised 2nd Troponin value for ACS or underwent ICA in index admission. Baring protracted admissions (>60 hours), the mean length of stay was prolonged by 3.68 hours in the patient cohort undergoing second Troponin measurements compared to the total study population. The primary discharge diagnosis for 2/3rd (67.6%) of all patients was musculoskeletal/non-cardiac chest pain. 50% of patients undergoing serial Troponin levels underwent further OP cardiac investigations, and 3 eventually had a cardiac diagnosis (small calcific plaque in proximal LAD, AVR, Mod–severe LV impairment, 2nd degree HB). 17.3% of the study population represented with chest pain promoting further OP cardiac investigations in 58.3% of them.

Conclusion(s): The study highlights the high diagnostic accuracy of a very low 0/1h Troponin value coupled with non-ischaemic ECG changes in young patient and endorses safe discharge strategy from acute admissions unit.

Biography

Dr Abhishek Dey is an IMT-3 resident doctor working in Northampton General Hospital. He wishes to pursue Cardiology as a specialist trainee.

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A single-center study for assessing and improving appropriateness of rejected transthoracic echocardiography requests and correlation with British society of echocardiography published clinical indications

Introduction: Transthoracic Echocardiography (TTE) is an indispensable non-invasive cardiac imaging modality that is widely utilized forming a crucial part of patient's care pathway throughout clinical practice. The rising prevalence of cardiovascular diseases has resulted in an increased burden on TTE services which has shown a meteoric surge of 5.7% per annum between 2014 and 2019 resulting in a breach of the 6-week maximum diagnostic wait policy. This demand-supply mismatch is further compounded by inappropriate TTE requests which lead to eventual difficulties in triaging resulting in cancellation. To standardise the triage system and better define indications of TTE, the British Society of Echocardiography (BSE) has released a set of guidelines.

Purpose: The aim of our study was to determine the appropriateness of TTE requests and to evaluate factors responsible for rejection, devise interventions to improve acceptance rates, and evaluate their effectiveness. We further assessed perception and knowledge among requesting clinicians regarding rejected requests.

Methods: A retrospective analysis was conducted of all rejected TTE requests in a tertiary care cardiology- unit for the months of January-September, 2023. The rejected requests of the initial study period (January-February,23) were sub-categorised into in-patient vs out-patient, site-specific and requesting specialty-specific cohorts and compared based on reasons of rejection and BSE guidelines specified indications. An anonymous survey was also conducted among requesting clinicians. The dataset was analysed to identify areas of improvement, and 3 interventions were designed and implemented to improve acceptance rates: Educational sessions with dissemination of BSE guidelines, TTE requesting memory aids and greater access to community performed TTE reports to avoid duplication.

Results: 455 TTE requests were rejected in the initial 2 month's trust-wide-majority of them (71.6%) were for in-patient admissions. Cardiology (173) and Respiratory Medicine (67) were the leading specialties with rejected requests–possibly a reflection of their admitted patient cohort requiring cardiac imaging more frequently. Insufficient clinical information and duplicate

scan (in community/recent admission) contributed predominantly as the reasons for rejection at 36.1% and 20% respectively. Suspected heart failure, suspicion of acute mechanical valvular pathology and assessment of left ventricular function were the 3 leading indications of rejected TTE requests according to BSE guidelines.

A large proportion of survey responders (72.8%) felt they were assigned responsibility to request an echo for a patient they have limited knowledge about–most of them being junior clinicians(grade<ST3). The popularity of BSE guidelines remained low with 79.6% of the responders remaining unaware of them. Half of the senior clinicians/responders did not access to community-performed TTE reports. Lack of adequate clinical information was identified as the primary reason of rejection in other similar studies as well, but promoting awareness about TTE indications and BSE guidelines improved rejection rates.

In our study, a transient improvement was noted in rejection rates only restricted to the acute-cardiology- take-area in the immediate post-intervention period, however it was not statistically significant or sustained.

Conclusion(s): The study highlights the importance of a standardised guideline-centric framework for requesting TTEs to streamline service provision and reduce diagnostic delays thereby improving patient care.

Biography

Dr Abhishek Dey is an IMT-3 resident doctor working in Northampton General Hospital. He wishes to pursue Cardiology as a specialist trainee.

Sheeba Khan, Aditya Kapoor*, Arpita Katheria, Harshit Khare, Arshad Nazir, Ankit Sahu, Roopali Khanna, Satyendra Tewari, Naveen Garg

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Ivabradine versus standard rate control therapy in rheumatic atrial fibrillation

Introduction: Rate control in Rheumatic Atrial Fibrillation remains a big challenge. Ivabradine can have a role for rate control in AF by suppression of increased automaticity in Pulmonary Veins and Left atrium and its action on Hyperpolarization-Activated Cyclic Nucleotide gated channel 4 current (HCN4) in AV node. We have previously demonstrated its benefit when added to maximally tolerated conventional therapy in rheumatic AF. (Katheria et al Indian Heart J. 2023). In this study we explored the role of ivabradine as monotherapy in rheumatic AF patients compared to standard rate control agents.

Methods: After institutional ethics approval, patients of persistent and/or permanent AF (HR>100 bpm) with rheumatic mitral stenosis and/or mitral regurgitation and not planned for a mitral valve intervention in next 3 months were prospectively randomized into two groups.

- **Group A (Ivabradine, n=41):** Patients underwent washout of previous rate control medications (5 half-lives) before initiating ivabradine 2.5 mg twice daily. After one week, the dose was titrated to 5 mg twice daily based on HR response. At 1 month, patients with<10% HR reduction were titrated to 7.5 mg twice daily.
- **Group B (Standard Therapy, n=42):** Patients continued or were initiated on beta-blockers or non-dihydropyridine CCBs at maximally tolerated doses.

The subjects were followed up for 6 months.

Results: Of 102 patients screened, 83 were included (41±9.2 years, 26% males, AF duration 5.9±2.3 years, baseline HR 101±17 bpm, baseline LA 47.4±5.8 mm, baseline LA strain 20.2±1.34%). Mean ivabradine dose was 9.8+1.6 mg, metoprolol 102±18 mg, diltiazem 131±38 mg and digoxin 0.25 mg. Both groups achieved significant reduction in absolute HR from baseline to 6 months: Ivabradine (105.98±22.77 to 86.34±7.86 bpm, absolute reduction 19.64 bpm, % reduction 18.5%, p<0.0001), HR reduction in standard therapy group (92.43±23.54 to 82.95±10.04 bpm, absolute reduction 9.48 bpm, % reduction 10.2%, p=0.001). Final HR was similar in both groups.

Secondary Endpoints:

- 6 MWT significantly improved with ivabradine (334.39±80.78 to 360.73±69.51 m p<0.001), while there was no change with in standard therapy (376.90±82.21 to 383.57±76.25 m, p=0.115).
- Only the ivabradine group demonstrated significant decrease in BNP at 3 month

(334.83±185.70 to 312.20±165.35 pg/ml, p=0.006) and sustained decrease till 6 months (302.70±150.28 pg/ml, p=0.01). In the standard therapy group, there was no significant change on BNP at 3 months, and only by 6 months did the BNP level decrease (296.31±200.15 pg/ml, p=0.016).

- Symptom Assessment - The proportion of patients with EHRA 2a, 2b and 3 were nearly similar in the two groups at baseline (17, 39 and 44% vs as 19,43 and 38% respectively).
    - Amongst those on ivabradine, at 6 months, only 17/41 (41%) had residual EHRA Class 2b/3 symptom class, reflecting a symptomatic improvement in 42%.
    - In the standard group, 22/42 (52%) had residual Class 2b/3 symptoms, reflecting an overall improvement in 29%.
- LA strain significantly improved in both groups (22.4±1.8% vs 21.9±2.3%, p=ns) and was comparable at follow up.

There was no safety issues encountered in any arm, and patients tolerated the drugs well.

Conclusions: Ivabradine was found to be safe and equally effective in comparison to standard rate control therapies in rheumatic AF.

Biography

Prof. Aditya Kapoor is the Head of the Department of Cardiology at SGPGIMS, Lucknow. A distinguished clinician and academician, he specializes in electrophysiology and coronary interventions. With a keen interest in arrhythmia management and device therapies, he has significantly contributed to advancing cardiac care in India. Prof. Kapoor has authored over 260 peer-reviewed publications in reputed national and international journals. He is also actively involved in clinical research, teaching, and mentoring young cardiologists. Widely respected for his clinical expertise and academic rigor, he continues to play a pivotal role in shaping cardiovascular medicine at both institutional and national levels.

Agustin Joison

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Evaluation and prediction of cardiovascular risk prognosis in type ii diabetic patients by evaluating glycosylated hemoglobin and cardiac troponin

Introduction: Diabetes is a major comorbidity for heart failure and is more common than myocardial infarction with an increased risk of more than 50% in cardiovascular disease. Recently, High-Sensitivity Cardiac Troponin T (hs-cTnT) has been shown to be associated with the incidence of CVD. Elevated glycated hemoglobin (HbA1c) is considered an independent risk factor for acute coronary syndrome in patients with diabetes mellitus.

Method: 12 control patients and 12 patients with type II diabetes were studied to evaluate residual cardiovascular risk prognosis. The levels of cTnIus levels and %HbA1c were analyzed and compared in the assessment of cardiovascular risk. CVR: (0 to 1), closer to 1 the better prognosis.

Results: Controls showed a prognosis of increased cTnI (294.1 to 352.2 ng/ml) and HbA1c (5.46 to 5.51%) with a CVR (0,65 to 0,62) compared to diabetes patients (288,8 to 359,2 ng/ml) and HbA1c (7,91 to 8,20%) with CVR (72 to 68) in a 3-month period. ANOVA II post test Sidak showed showed an increase significant difference between diabetic and control patients regarding cardiovascular risk (0,74±0,03 vs 0,64±0,03), P=0.024.

Conclusion: %HbA1c is a more efficient marker in the prediction of cardiovascular risk compared to cTnI in the long term.

Biography

Dr. Joison studied biochemistry at Cordoba National, Argentina and graduated as Clinical Biochemistry in 1980. Then joined the research group of Health Science Faculty, Cordoba Catholic University as assistant and researcher. Dr. Joison received his PhD degree in 2017 at Cordoba National University. Has published more than 25 research articles in different Journals.

Ahmad Zainal Mazlam[1*], Aqib Vayani[1], Fiyona Panchal[1], Bruno Chan Chin[1], Mohamed Omar Abdelaziz[1], Haswadi Hassan[1], Ontefetse Ntlholang[1,2]

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Evaluation of echocardiography appropriateness in acute medical unit: A retrospective cohort study

Background: Echocardiography is a widely used diagnostic tool in Acute Medical Units (AMUs), but its inappropriate use can strain healthcare resources. The Appropriate Use Criteria (AUC) for echocardiography, developed by the American College of Cardiology (ACC) and the American Society of Echocardiography (ASE), provides evidence-based guidance to optimize utilization.

Methods: Our institution's clinical audit office approved the study (ref 6; dated 18/09/2024). We conducted a retrospective review of 93 consecutive patients who underwent bedside echocardiography in an AMU over five months. According to AUC guidelines, indications were classified as appropriate, inappropriate, or uncertain. Demographic data, clinical indications, echocardiographic findings, and patient outcomes were analysed.

Results: The majority of echocardiograms (87.1%, n=81) were deemed appropriate, while 12.9% (n=12) were inappropriate ($p<0.001$). Patients with appropriate studies were significantly older (median age 72 vs. 54 years, $p<0.001$). Common indications included syncope/presyncope (21.5%), dyspnea (15.1%), and chest pain (12.9%). Significant findings were detected in 36.6% of studies, with 91.2% occurring in appropriate requests. Worthly, 8.8% of inappropriate studies still revealed clinically significant abnormalities. Follow-up departmental echocardiograms were required in 10.75% of cases, primarily for appropriate indications. Patients with inappropriate studies had longer post-echocardiography hospital stays (median 2.0 vs. 0.0 days, $p=0.01$).

Conclusion: Whereas most echocardiography requests in our AMU adhered to AUC guidelines, 12.9% were inappropriate, potentially contributing to resource wastefulness. Nevertheless, detecting significant findings in some inappropriate studies suggests clinical judgment remains essential. Implementation of AUC-guided request forms and clinician education may further optimize utilization.

Keywords: Echocardiography, Appropriate Use Criteria, Acute Medical Unit, Resource Utilization

Biography

Dr. Ahmad Zainal Mazlam is a Medical Senior House Officer (SHO) currently undergoing Basic Specialist Training under the Health Service Executive (HSE) at Beaumont Hospital, Dublin. Dr. Mazlam completed his undergraduate medical degree at the National University of Ireland, Galway. Dr. Mazlam is actively engaged in clinical training with a strong interest in internal medicine and acute care. As part of his ongoing professional development, he is involved in a variety of teaching and training initiatives, and is committed to delivering high-quality, evidence-based patient care. With a keen interest in research, education, and continuous professional growth, Dr. Mazlam looks forward to contributing to and learning from the diverse experiences shared at this medical conference.

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Epoprostenol infusion in pulmonary hypertension: A case of mechanical complication and management

Introduction: Pulmonary hypertension is a chronic progressive disease characterized by raised pulmonary vascular resistance ultimately leading to right sided heart failure. Amongst the current available options for treatment, epoprostenol has been widely proven to improve symptoms, increase exercise capacity and reduce mortality in idiopathic pulmonary arterial hypertension. However, its short half-life (3 minutes according to BNF), and hence the need for continuous infusion has been a challenging and ongoing concern. The incidence rate for mechanical complications of epoprostenol infusion via hickman line was reported at 0.23 per patient/year in one study (1). In our case report, we discuss a case of pulmonary hypertension on continuous epoprostenol infusion who presented to the emergency departement in a district general hospital on a weekend with infusion interruption secondary to line blockage and how it was managed according to the current available data.

Case summary: This is a 59-year-old gentleman with background of systemic sclerosis, Raynaud's disease and pulmonary hypertension. He has been on continuous epoprostenol infusion through a hickman line with a portable infusion pump for 10 years along with long term oxygen therapy; 2litres. He presented to our emergency department when he got alarmed by his infusion pump of an intermittent downstream occlusion every 2-3 minutes. A trial with a different infusion pump was not effective. His observations were stable at this stage with no increased oxygen requirement, and he remained clinically asymptomatic.

Given the short half-life of the epoprostenol, he was at increased risk of rebound severe pulmonary hypertension, right ventricular failure, reduced cardiac output and subsequent shock.

The patient was then moved to the resuscitation room, he was connected to continuous blood pressure and pulse oximetry monitoring, and his oxygen flow was increased to 5litres to reduce the risk of pulmonary vasoconstriction.

Two large wide bore cannulas were inserted and the epoprostenol infusion was removed from the hickman line and connected to the pre-flushed wide bore cannula.

Clear instructions were distributed through the team to help mitigate the above mentioned risks including; avoid flushing the hickman line to avoid over-dosing, do not flush the cannula's smart-meter with the epoprostenol infusion to avoid over-dosing, do not give any solutions or medications through the same line with the epoprostenol infusion, avoid interruptions to the epoprostenol infusion, finally safety netting for symptoms of overdosing and underdosing were distributed including, pallor, flushing, drop in systolic blood pressure, jaw pain, diarrhea or collapse for over-dosing and cyanosis, lethargy, increased work of breathing for under-dosing.

The patient's primary pulmonary hypertension was contacted to arrange for safe transfer for continued observation till the hickman was repaired or replaced.

Discussion: Whilst the incidence of mechanical complications in continuous infusion through a hickman line can appear relatively small, the short half-life of epoprostenol and the patient's dependence on it poses a life-threatening risk of rebound pulmonary hypertension and severe right sided heart failure. Therefore, direct communication with a specialized unit is mandatory when the patient presents to a non-specialized centre. Extensive patient counselling and understanding around the treatment remains a cornerstone in epoprostenol therapy.

Biography

Ali Elshamy studied medicine at Menofia university, Egypt, and graduated in November 2020. Ali finished my UK medical license exams and started working in the UK in November 2022. Ali has recently joined internal medicine training in east midland deanery, UK from august 2024, aspiring to pursue career in cardiology.

Saleh Altaf[1], Anoosha Nair[2*]

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Mitral TEER as a bridge-to-recovery: A life-changing alternative to transplantation in advanced heart failure

Advanced Heart Failure (AHF) remains a major clinical challenge due to its high morbidity and mortality. While Guideline-Directed Medical Therapy (GDMT) has improved patient outcomes, those with secondary Ischaemic Mitral Regurgitation (IMR) continue to have a poor prognosis. Timely and strategic interventions in these patients are critical to delay or avoid the need for advanced therapies such as cardiac transplantation.

We present a compelling case of a male patient in his mid-30s with heart failure due to ischaemic heart disease, complicated by severe mitral regurgitation. The patient was admitted with New York Heart Association (NYHA) class IV heart failure and was being considered for cardiac transplantation. After initial haemodynamic optimization using intravenous diuretics and inotropes, Right Heart Catheterization (RHC) was performed, which showed a marked improvement in cardiac and pulmonary pressures during a milrinone challenge.

Given the favorable RHC profile and fulfilment of COAPT trial criteria, the patient was considered for Mitral Transcatheter Edge-To-Edge Repair (m-TEER) as a Bridge-To-Decision (BTD) therapy. Following the procedure, the patient experienced significant improvements in NYHA class, cardiac pressures, peak oxygen consumption, and tolerance to prognostic medications. Remarkably, these improvements enabled the patient to be removed from the cardiac transplant list.

This case aligns with findings from the international Mitra Bridge registry, which supports m-TEER as a safe and effective strategy in selected AHF patients with severe IMR, showing benefits in survival, hospitalization rates, and reduction in the need for advanced heart failure therapies. Our case reinforces the importance of multidisciplinary team evaluation and early procedural intervention to optimize outcomes in high-risk heart failure patients.

Biography

Dr. Anoosha Nair is a clinical fellow in cardiothoracic surgery at Harefield Hospital, London. With a strong academic background and practical experience in advanced heart failure and surgical interventions, she is passionate about innovative therapies that improve outcomes in high-risk cardiac patients. Dr. Nair is actively involved in multidisciplinary cardiac care and has co-authored impactful clinical case studies.

Arva Zahid*, Atiriya Sarkar, Aditya Menon, Achsah Raj Chandralekha, Ghulam Shabaz, Elmi Abdi, Kanwaraj Singh, Danyal Salim, Swati Anantrao Nandawadekar, Depa Vineeth Reddy

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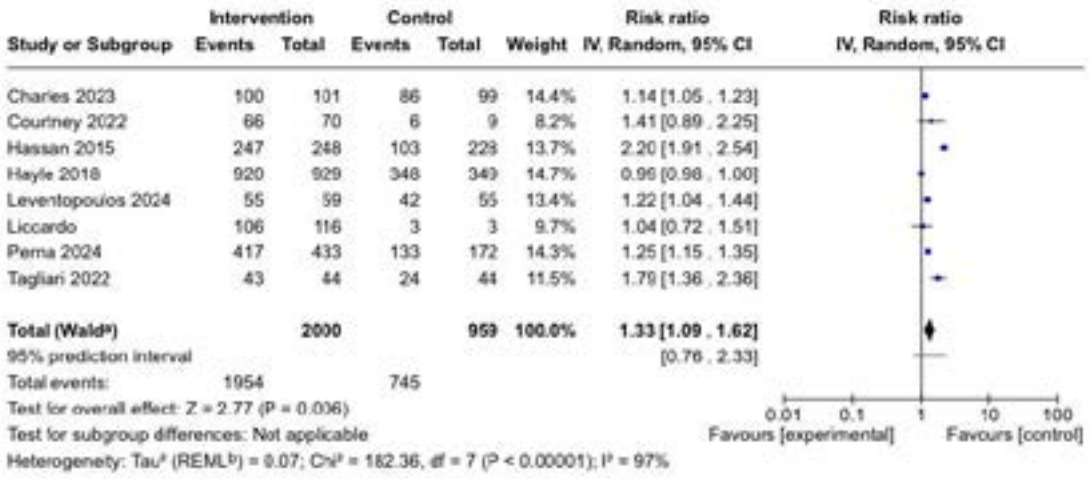
Ultrasound guided axillary vein puncture versus cephalic vein cutdown as venous access approach for implantation of CIED (Cardiac Implantable Electronic Devices)

CIEDs are integral to managing cardiac conditions and different venous approaches have been used for their implantation. Ultrasound-Guided Axillary Vein Puncture (US-AVP) has emerged as new venous approach. This meta-analysis aims to systematically compare these approaches concerning procedural success and complication rates. The primary endpoint of this study was the success rate defined as the successful placement of the CIED. The secondary endpoints of this study included time to venous access, fluoroscopy time and any peri and post procedure-related complications. Statistical analysis was performed using RevMan (Cochrane's Review Manager). The pooled results show that the success through axillary venous access was significantly higher (RR 1.33; 95% CI 1.09, 1.62) when compared to patients who underwent venous access through cephalic vein (Figure). For time taken to venous access the analysis showed reduced time taken for US-AVP (SMD -17.49 [95% CI: -36.37 to 1.40], p=0.07) although did not reach statistical significance, besides that it suggested that the effect of time on study group varies depending on the comparator. For fluoroscopy time overall results favoured axillary access with a pooled estimate of -2.30 [95% CI: -4.68, 0.07] (Z=1.90, P=0.06). Results showed that procedural complications were different with risk of pneumothorax, haemothorax, haematoma formation and rate of infection being more in the unexposed group. In conclusion it was evident that US-AVP is superior to conventional methods. This significantly improves vascular access, which is the leading challenge and reason for complications. Therefore, US-AVP for CIED implantation should be recommended for future practices.



Footnotes

[a]CI calculated by Wald-type method.

[b]Tau² calculated by Restricted Maximum-Likelihood method.

Biography

Dr. Arva Zahid is an International Training Fellow in the Cardiology Department at Birmingham Heartlands Hospital. She has been passionate about cardiology since the age of seven, long before she understood the dedication and hard work the specialty demands. Today, she is committed to building a long-term career in cardiology, with a particular focus on developing specialist expertise and contributing to advancements in cardiovascular care. In her current role, she is gaining broad experience across a diverse clinical setting while working toward improving patient outcomes and through her strong interest in research she is always exploring opportunities that advance knowledge and practice in cardiology.

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Impact of raised neutrophil/lymphocyte ratio and neutrophil x platelet/ lymphocyte ratio on outcomes following isolated urgent coronary artery bypass graft surgery

Objectives: Neutrophil to Lymphocyte Ratio (NLR) has been suggested as a strong predictor of cardiovascular disease risk. However, the evidence remains limited for the effect on post-operative outcomes in patients undergoing Coronary Artery Bypass Graft (CABG) surgery. This study analyses the effect of NLR and Neutrophil x Platelets/Lymphocytes Ratio (NPLR) on the outcomes of post-operative patients following isolated urgent CABG. NPLR is a relatively novel marker introduced to examine the effect on post-operative outcomes in patients undergoing urgent CABG surgery. The study will also identify the correlation between NLR versus NPLR and post-operative outcomes. The primary outcomes are in-hospital mortality and total length of hospital stay. The secondary outcomes include new post-operative atrial fibrillation, renal and neurological complications, wound infection, and re-admission to Intensive Care Unit (ICU).

Methods: We conducted a retrospective analysis for patients undergoing isolated urgent CABG. All patients undergoing isolated urgent CABG surgery from the year 2020-2025 were identified from our online database. Records were then matched to identify the pre-operative blood results, including neutrophils, platelets, and lymphocytes. This yielded a total of 612 patients. Univariate and multivariate analysis were performed using Logistic regression analysis to identify predictors for outcomes. Optimal Cut-off value for NLR and NPLR identified using Receiver Operating Characteristic (ROC) curve. High and low NLR and NPLR groups were compared. Independent t-test used for continuous variables and Chi-squared test for categorical values. A p-value≤0.05 was considered statistically significant for all comparisons.

Results: NLR≥ 3 was associated with longer duration of ventilation (4.9 vs 2.9 hours; p=0.002) and longer hospital stay (16.67 vs 15.81 days; p=0.036). NPLR correlated better with outcomes, showing significant difference for in-hospital mortality (5.6% vs 1.7%; p=0.007), duration of ventilation (6.1 vs 3.1 hours; (p<0.001), total hospital stay (17.7 vs 15.71 days; p=0.036), wound infection rate (4% vs 1%; p=0.010) and renal complications (5.6% vs 4.3%; p=0.003) for NPLR≥1167 vs NPLR<1167.

Conclusion: Advanced age, gender (male), pre-operative atrial fibrillation, use of intravenous nitrates, reduced left ventricular function, logistic Euro SCORE, Neutrophil/lymphocyte ratio, and Neutrophil x platelets/lymphocytes ratio were strong predictors of in-hospital mortality. Neutrophil x platelets/lymphocytes ratio correlates better with outcomes. These findings suggest that Neutrophil/lymphocyte ratio and Neutrophil x platelets/lymphocytes ratio are valuable tools in predicting post-operative outcomes for isolated urgent coronary artery bypass graft surgery.

Biography

Bothayna Amien completed her medical degree in 2020 and went on to join the Cardiothoracic Department as a research fellow and senior house officer. She is currently working as a Cardiothoracic Registrar at Castle Hill Hospital while pursuing a master's degree in Cardiothoracic Surgery. Her clinical and academic interests lie in advancing surgical techniques and improving outcomes in cardiothoracic procedures.

Dipak P. Ramji
Cardiff School of Biosciences, Cardiff University, Cardiff, UK

Molecular mechanisms underlying the anti-atherogenic actions of natural products

Atherosclerosis, a chronic inflammatory disease of the vasculature, is the leading cause of myocardial infarction and stroke, and remains the foremost cause of death worldwide. While lifestyle changes and pharmaceutical interventions have reduced its burden in recent years, the global rise in risk factors such as hypercholesterolemia, obesity, and diabetes threatens to reverse this trend. Current therapies, though beneficial, leave a substantial residual cardiovascular risk and are often limited by side effects. Moreover, many promising pharmaceutical agents have failed in clinical trials, underscoring the need for deeper mechanistic understanding and novel therapeutic strategies.

Our laboratory focuses on elucidating the molecular mechanisms underlying the protective, anti-atherogenic effects of natural products. Using a combination of in vitro and in vivo models, alongside biochemical, molecular, and immunological techniques, we have uncovered novel insights into how specific nutraceuticals modulate lipid metabolism and inflammation. This presentation will explore the molecular basis of atherosclerosis, limitations of current treatments, and emerging therapies targeting key pathogenic pathways. Special emphasis will be placed on the potential of probiotic bacteria as both preventative and therapeutic agents in cardiovascular disease.

Biography

Dipak Ramji is Professor of Cardiovascular Science and Deputy Head at the School of Biosciences in Cardiff University. He is also Fellow of the Learned Society of Wales and the Indian Society of Chemists and Biologists. He received his BSc (Hons) degree (Biochemistry) and his PhD (Molecular Biology) from the University of Leeds. This was followed by post-doctoral research at EMBL (Heidelberg) and IRBM (Rome) with fellowships from the Royal Society and the EU. His current research is focused on understanding how natural products regulate cellular processes in heart disease with the goal of attaining deeper mechanistic insight and identifying preventative/therapeutic agents. He has published over 150 research articles (h index 44 and i10 index 86 with over 9,725 citations), including 880-page book in 2022 on Methods in Atherosclerosis. He is an Editorial Board member of 16 international journals; regular organising committee member, speaker, and track/session chair at international conferences on heart disease; involved in grant evaluation for over 20 organisations; and supervised over 25 PhD students.

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Multidisciplinary management of total anomalous pulmonary venous return: Acute effects of early postoperative physiotherapy

Total Anomalous Pulmonary Venous Return (TAPVR) is a rare congenital heart defect characterized by the failure of pulmonary veins to connect normally to the left atrium. We report the case of a 22-year-old patient diagnosed with TAPVR, without any family history of the condition. The patient had previously undergone an exercise stress test and had been receiving hormone therapy, including a two-year course of testosterone. Clinically, the patient presented with tachycardia and exertional dyspnea. Health-related quality of life was initially assessed using the MacNew Heart Disease Health-related Quality of Life Questionnaire, yielding a mean score of 4.44. Psychological assessment with the Tampa Scale for Kinesiophobia revealed a total score of 40, indicating a high level of kinesiophobia, while body awareness was evaluated with a standardized scale, with a total score of 75 (out of 90), reflecting a moderate level of body awareness despite physical limitations. Postoperatively, a structured cardiopulmonary physiotherapy program was initiated within 48–72 hours. The early rehabilitation protocol included cycles of active breathing techniques, PEP/Bubble PEP therapy, incentive spirometry, early mobilisation, posture and thoracic mobilisation exercises, as well as family education. The acute effects of these interventions were favorable, leading to improvements in respiratory function, reduction of dyspnea, enhanced thoracic expansion, and earlier functional mobilisation. Follow-up assessments demonstrated a decrease in kinesiophobia from 40 to 28 points (30% reduction), an increase in body awareness from 75 to 82 points (9.3% improvement), and an improvement in health-related quality of life (MacNew) from 4.44 to 5.20 (17% increase in mean score).

This case highlights the complexity of managing adult patients with congenital cardiac anomalies, particularly when compounded by prior hormonal therapy and psychological factors such as kinesiophobia. Furthermore, it emphasizes that early, structured cardiopulmonary rehabilitation can play a pivotal role in enhancing postoperative recovery, reducing psychological barriers, and optimizing quality of life in patients with rare congenital heart diseases.

Biography

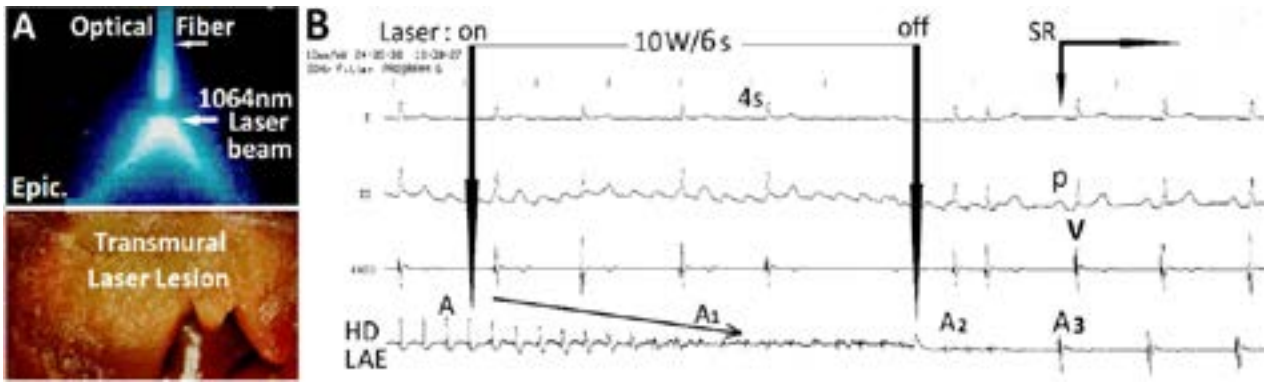
Dr. Elisa Calisgan completed her undergraduate education in Physiotherapy and Rehabilitation and subsequently obtained her MSc degree in the same field. She then joined the academic staff at Kahramanmaras Sütcü Imam University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, where she currently serves as an Assistant Professor. Her research interests include musculoskeletal system disorders, cardiopulmonary rehabilitation, and neurological rehabilitation. Dr. Calisgan has authored and co-authored several articles in peer-reviewed international journals and has presented her studies at national and international congresses.

Dr. Helmut Weber*, Dr. Michaela Sagerer-Gerhardt

CCEP Center Taufkirchen, Bavaria, Germany

Open-irrigated laser catheter mapping and ablation

Practicability and efficacy of open-irrigated transcatheter 1064nm Laser treatment of cardiovascular diseases including long-lasting persistent Atrial Fibrillation (l-lp AF) were investigated.



A top Genuine 1064nm laser beam bottom transmural lesion induced at 15W/15s in the LV dog heart.

B HD lasermapping during ablation of l-lp AF: Gradual abatement and abolishment of electrical potentials.

Based on our experiences with HD-mapping by using catheters with ≤2.0 mm interelectrode distances in pediatric patients since 1976, and tissue selective absorption of 1064nm laser photons in myocardium, laboratory tests, simulations, in-vitro and in-vivo animal experimental tests in 104 dog, 6 pig and 4 ovine models were performed in the past five decades. Over 1000 lesions were evaluated and a non-contact, open-irrigated, electrode-laser, mapping and ablation catheter RytmoLas® was developed.

Over 800 laser applications at 10-20W/5-30s were performed without complications in 108 severely ill patients with various multiple comorbidities (mean age 59±17 y, f=32). Mean procedure duration was 118±72 min and X-ray exposure times 13.2±12.2 min.

Laser applications at 15-20W (7.2±6.2/patient); irradiation times were 155±186s. Total energy applied was 2769±2862 Joule/patient. There was no D-dimer serum level elevation. All the results were published in peer reviewed journals or books. Redo procedures were needed because of another arrhythmia in 9 and because of paroxysmal AF in two asymptomatic patients.

1064nm laser ablation by using the RytmoLas® is an open-irrigated, minimally invasive, painless, non-contact, HD-Lasermapping guided, low power (10-15W), short duration (5-30s) ablation procedure performed under normothermic conditions, the catheter is not heated up! Lesions are created by selective

ablation of 1064nm photons in myocardium sparing adjacent tissues Esophagus, lungs and nerves but modulating retrocardiac ganglion plexi. Clear-cut transmural lesions of homogenous coagulation necrosis are achieved within seconds, even in fibrous myocardium. Gradual abatement of electrical potential amplitudes is visualized on the monitor during laser application, without interfering with electrophysiologic monitoring principles. Continuous monitoring of lesion formation allowed immediate, real-time verification of initial success. Lesions are reversible only when radiation is stopped prematurely. Permanent lesions are healing in dense fibrous scars without shrinking or aneurysm formation. Laser lesions are not arrhythmogenic, are not thrombogenic. Catheter contact force or catheter orientation are not major determinants for laser lesion formation.

Open-irrigated electrode-laser catheter ablation with its unprecedent safety and efficacy positions the Laser as a superior alternative to the other ablation techniques. It is the only true non-contact tissue specific ablation technique producing lesions within seconds limited to the culprit pathologic substrate under visual control: HD-Lasermapping! However, more research and clinical experience is needed.

Biography

Dr. Weber graduated 1962 at the University Victor Babeş, Timişoara, Rumania and joined the research group University of Bucharest 1965 with examination Specialist in Epidemiology 1966. Dr. Weber relocated in Germany 1969, specialized in Internal Medicine 1974. Project leader 1976 DFG 89 R2, University of Göttingen and developed high density catheter mapping and ablation. Dr. Weber was BMFT project leader 1984-90 Cardiovascular Laser Application, in the Central Laser Laboratory Helmholtz Center Munich, specializing in cardiovascular laser catheter interventions. 1990 joined Laser and Applied Technologies Center Hospital Harlaching, teaching Hospital of the Ludwig-Maximillian-University Munich. Since August 2003 Director of the CCEP Center Taufkirchen.

Iyah Totounji, OMS-II
Idaho College of Osteopathic Medicine, Meridian, Idaho, United States

Acute inferior STEMI in a young male with factor V leiden mutation and testosterone-induced hypercoagulability: A case report

Acute ST-Elevation Myocardial Infarction (STEMI) in young adults is uncommon and often driven by nontraditional risk factors, such as inherited thrombophilias and exogenous hormone use. This case report describes a 27-year-old Middle Eastern male who presented with acute inferior STEMI despite an absence of atherosclerosis. His medical history was notable for long-term testosterone therapy for hypogonadism and a newly discovered family history of heterozygous Factor V Leiden (FVL) mutation. Initial angiography revealed a large obstructive thrombus in the proximal Right Coronary Artery (RCA) with TIMI-0 flow. Radial artery access was initially attempted but failed due to anatomical abnormality, necessitating femoral access. Manual thrombectomy restored TIMI-3 flow, and he was placed on continuous heparin infusion.

Despite appropriate anticoagulation, persistent RCA thrombus was noted on repeat angiography. The clinical course was complicated by post-testosterone withdrawal thrombocytosis (>850,000/μL), contributing to refractory thrombus formation. A third angiogram revealed continued thrombus burden and impaired coronary flow, prompting the placement of a drug-eluting stent, which successfully restored perfusion. Following the stent, heparin therapy was discontinued. Five hours after the discontinuation of heparin therapy, the patient developed an approximately 90% radial artery occlusion, which persisted for 2–3 weeks despite treatment.

Following stabilization, the patient was discharged on rivaroxaban (2.5mg BID) in addition to dual antiplatelet therapy with aspirin and ticagrelor, along with high-intensity statin therapy for dyslipidemia management. His follow-up plan included evaluation for additional thrombophilic disorders and discussion of alternative hormone management strategies.

This case highlights the need for heightened clinical awareness of hypercoagulable states in young patients presenting with myocardial infarction, particularly those on exogenous testosterone therapy. It emphasizes the importance of early genetic screening, careful monitoring of thrombotic complications, and individualized management strategies to optimize outcomes. Moreover, this case underscores the potential risks associated with testosterone use in individuals with inherited thrombophilias and raises important considerations for the safety of long-term hormone therapy in high-risk populations.

Biography

Iyah Totounji earned her B.S. in Neurobiology from the University of California, Irvine, in 2020. While still an undergraduate, she joined the Sue & Bill Gross Stem Cell Research Center under Dr. Aileen Anderson and continues to collaborate with Dr. Atena Zahedi on ongoing projects investigating mitochondrial health and neural stem cell therapeutics for spinal cord injuries. She is currently pursuing her Doctor of Osteopathic Medicine (DO) at the Idaho College of Osteopathic Medicine. Iyah has presented her research at numerous prestigious conferences and is actively contributing as a co-author on multiple publications.

João Rafael de Oliveira Rocha da Silva[1]*, Mariana de Oliveira Rocha da Silva[2]

[1]Physiotherapist Researcher and Clinician, Connect Life Rehabilitation and Performance, Ubatuba, São Paulo, Brazil

[2]Mariana de Oliveira Rocha da Silva, Personal Trainer, Connect Life Rehabilitation and Performance, Ubatuba, São Paulo, Brazil

Rehabilitation of patients with chronic pain and cardiovascular dysfunction

Chronic pain is associated with the leading cause of disability in the world, just as cardiovascular diseases represent the highest incidence of death in the world.

Both pathologies generate a high demand for health services and represent a high global population risk.

In previous studies, it was possible to observe a high incidence of the development of cardiovascular diseases in individuals with chronic pain, which was also correlated with the high incidence of the development of chronic pain in individuals with cardiovascular dysfunctions.

In order to better approach these patients, it is necessary to understand these pathologies better.

For this reason, recent studies have observed pathophysiological changes and changes in motor control in individuals with chronic pain that must be evaluated and taken into account when developing rehabilitation protocols.

Knowledge of possible limitations and adaptations is necessary in individuals with heart disease, using treatment methods such as the practice of therapeutic exercises, which optimize functional capacity and improve the cardiovascular system, with the aim of optimizing the health and quality of life of these individuals, so that they have the physical capacities necessary to change habits and include the practice of physical activities.

We will discuss important aspects in the rehabilitation of individuals with chronic pain and cardiovascular dysfunction, in a multimodal manner, in an outpatient phase, highlighting the importance of prevention and treatment, presenting the main current scientific references.

Biography

Pt. João Rafael de Oliveira Rocha da Silva has been a clinical physiotherapist for over 15 years, with a postgraduate degree in rehabilitation applied to sport from the Department of Orthopedics and Traumatology at the Escola Paulista de Medicina CETE- UNIFESP, also having a postgraduate degree in Improvement in assessment and interdisciplinary treatment in Pain at the Hospital das Clínicas of the Faculty of Medicine of the University of São Paulo HC-FMUSP. He recently published five studies related to the treatment of Pain, which were presented at more than five international conferences and congresses. Scientific reviewer for international journals.

Jun Feng*, Yuhong Liu

Department of Surgery/Division of Cardiothoracic Surgery, Alpert Medical School of Brown University, Providence, RI, USA

Use of mitochondrial ROS inhibitor to protect coronary microvascular/ endothelial function

Cardioplegic Ischemia/Reperfusion (I/R), Hypoxia/Re-oxygenation (H/R) and Diabetes Mellitus (DM) are associated with increased oxidative stress which contribute to coronary microvascular/endothelial dysfunction. Mitochondrial Reactive Oxidative Species (mROS), a major source of ROS in the endothelium following I/R and DM plays an important role in vascular endothelial dysfunction. Thus, we hypothesized that inhibition of mROS may protect against coronary microvascular endothelial dysfunction/relaxation. Using cell and vessel models of cardioplegic I/R in the setting of mouse T2DM, we found that acute inhibition of mROS with Mito-Tempo reduced cardioplegic H/R-induced endothelial mROS and Ca2+ overload in both the nondiabetic and diabetes mellitus groups, respectively (P<.05). Inhibition of significantly increased vasodilatory responses of coronary arterioles to the endothelium-dependent vasodilator ADP and the SK channel activator NS309 along with enhancement of endothelial SK channel activity (P<.05). In-vivo study indicate chronic inhibition of mROS with Mito-Tempo for 4 weeks remarkedly improved the relaxation responses of mouse coronary microvessels to ADP and SNP at dose-dependent manner. Furthermore, chronic inhibition of mROS also increased endothelial SK channel current density along with reduced mROS levels. Treatment with mito-TEMPO significantly reduced pro-apoptosis protein/gene expression, and increased anti-apoptosis protein/gene expression in endothelial cells in the setting of H/R. Thus, mROS inhibition may be a novel therapeutic approach for coronary endothelial protection against cardioplegic-I/R injury in patients with and without DM.

Biography

Dr. Feng received his PhD degree in cardiovascular physiology from University of Montreal, Quebec, Canada in 1998. Then joined in Medical School of SUNY at Buffalo as research postdoctoral fellow. He was then recruited to University of Miami/School of Medicine as research assistant professor in 2000 to Harvard Medical School as instructor in 2002. He was then recruited to by Alpert Medical School of Brown University as assistant professor (2009), associate professor (2016) and professor (2024). He is a Fellow and American Heart Association (FAHA) and has published more than 150 research articles in SCI journals.

Karen Lizeth Andrade Arizmendi[1*], Montserrat Meyer Roqueñí[2*], Emilio Rivas Cruz[2], Cintia Carina Garista Solís[2], Francisco Javier Roldán Gómez[3], Maria Cecilia Escalante Seyffert[3], Enrique Alexander Berríos Bárcenas[4]

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[4]Head of Outpatient Department, Instituto Nacional de Cardiología Ignacio Chávez, Mexico City, Mexico

Peripartum cardiomyopathy as initial presentation of familial dilated cardiomyopathy type 3

Background: Peripartum Cardiomyopathy (PPCM) is a rare form of heart failure occurring in the last month of pregnancy or early postpartum. Though traditionally idiopathic, recent studies show genetic overlap with Familial Dilated Cardiomyopathy (FDCM).

Case 1: A 28-year-old woman with no prior medical or family history developed severe preeclampsia requiring cesarean delivery. On postpartum day 3, she presented with respiratory failure and cardiogenic shock requiring mechanical ventilation and levosimendan. Echocardiography revealed a dilated Left Ventricle (LV), LVEF of 14%, grade III diastolic dysfunction, and severe mitral regurgitation. Cardiac MRI showed LV noncompaction, mild non-ischemic Late Gadolinium Enhancement (LGE), increased T1/T2 mapping values, and 33% Extracellular Volume (ECV).

Case 2: Her 33-year-old sister developed dyspnea, leg edema, and chest pain shortly after learning about her sibling's condition. She was diagnosed with pulmonary embolism and had a dilated LV with LVEF of 24%. She also progressed to cardiogenic shock and required vasopressors and mechanical ventilation. Differential diagnoses including Takotsubo, thrombophilia, connective tissue disease, and Chagas were ruled out. MRI showed LV noncompaction, mild non-ischemic LGE, elevated T1/T2 values, and 37% ECV.

Discussion: Both sisters improved clinically but had persistent LV dilation and dysfunction. Genetic testing in Case 1 revealed a pathogenic variant in the TNNT2 gene, associated with FDCM type 3 and LV noncompaction. Case 2's genetic results are pending.

Conclusion: This case highlights the clinical and genetic overlap between PPCM and FDCM. Early genetic screening in at-risk relatives allows for timely diagnosis, closer follow-up, and reproductive counseling in women of childbearing age.

Biography

Dr. Karen Andrade studied Medicine at the Universidad Autónoma del Estado de Morelos (2013–2019). Dr. Karen completed her Internal Medicine residency at Dr. Carlos MacGregor Sánchez Navarro Hospital (2020–2024), where she served as Chief Resident. Dr. Karen is currently a second-year Cardiology resident at Instituto Nacional de Cardiología Ignacio Chávez (2024–2027).

Dr. Kyle Koh Wei Xian[1*], Dr. Sean Koh Wei Song[2]

[1]Prince Charles Hospital, United Kingdom

[2]Royal Victoria Hospital, United Kingdom

Guideline directed management of acute coronary syndrome in 2025

Acute Coronary Syndrome (ACS) remains as a major contributor to cardiovascular mortality worldwide. It encompasses Unstable Angina (UA), Non-ST Elevation Myocardial Infarction (NSTEMI) and lastly ST Elevation Myocardial Infarction (STEMI). Recent clinical guidelines evolve which effects the way future management and treatment modalities are carried out. With the latest European Cardiology Society (ESC) guidelines, this reflects the latest research trials and data which ultimately provides us clinicians an evidenced based approach to ACS care for patients and the introduction of risk stratification scoring systems as well as various types of strategy selections (invasive vs non-invasive).

The clinical importance of including comparisons of high-sensitive troponin assays and refined criteria involving risk stratification scores has demarcated treatment algorithms for various scenarios. Having early rule-in/rule-out pathways now allow better clinical decision making for healthcare professionals. The guidelines involve a more personalized approach for patients including antiplatelet therapy, bleeding risk, timing-related strategies as well as secondary prevention methods in a public health view. Furthermore, this has provided clearer distinction between high, medium and low-risk patients which defers in treatment strategies.

Subsequently, this includes the clinical presentations and differentiating typical vs atypical chest pain alongside investigation modalities. Special considerations for conditions complicating ACS (e.g. Myocardial Infarction with Non-obstructive Coronary Arteries, Multi-Vessel Disease) and its methods of further investigations differs from one another which ultimately differs in treatment plans. Cardiovascular imaging including coronary angiograms and cardiac MRIs continues to serve deep purpose in this case.

Moreover, it is essential to note the equal importance of the public health sector in secondary prevention. Having guidelines which also includes continuity of care and long-term cardiovascular risk reduction is crucial in overall reduction in the prevalence of cardiovascular disease leading to ACS. This presentation highlights these key changes which allows healthcare professionals involved in patient interaction to have better clinical acumen. Overall, this is also aimed to reduce the burden on recurrent cardiovascular events. These updated guidelines continually prove to be critical for health systems to also run effectively for all populations alike.

Biography

Dr. Kyle Koh Wei Xian is currently a Senior House Officer with the NHS. He completed his undergraduate medical training at University College Dublin, National University of Ireland, graduating in 2022 with First Class Honours in Medicine (MB BCh BAO). Dr. Koh has a strong interest in cardiology and is particularly passionate about evidence-based clinical practice. He is committed to continuous professional development and is actively building a portfolio in both research and medical education. Dr. Koh aims to integrate academic learning with frontline clinical care to improve outcomes in cardiovascular medicine.

Leonardo Juan Ramirez López[1*], Javier Rodriguez Velasquez[2]

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New probabilistic diagnostic aid tool for cardiac dynamics

Background: Probability theory and dynamical systems theory have been applied to cardiac dynamics, leading to the development of new methodologies that differentiate patients with normal medical diagnoses from those with chronic and acute conditions.

Materials: A total of 120 Holter monitor recordings, each lasting 21 hours, were analysed from patients aged over 21. Three prototype cases were selected, corresponding to normal, chronic, and acute diagnoses. An induction process was carried out to develop a general probability space using repetition ranges of 1001–2000 and 2001–3000 in heart rate data. The probability for each range was calculated, and the results of the most frequent probabilities were summed.

Method: A blind study was conducted using the remaining Holter records. Diagnostic outcomes were concealed, but cardiac dynamics were made available. The same methodology used on the prototypes was applied to the blind study data. The probability results from the blind study were then compared with those from the prototypes, and their agreement was confirmed through statistical analysis, including sensitivity, specificity, and kappa coefficient.

Results: In normal dynamics, repetition ranges from 1001 to 2000 varied between 14 and 11, and from 2001 to 3000 between 3 and 0. In chronic dynamics, repetitions ranged from 31 to 21 (1001–2000) and from 14 to 10 (2001–3000). In acute dynamics, the 1001–2000 range varied between 11 and 9, and the 2001–3000 range from 6 to 3. The probability loads for normal dynamics in the 1001–2000 range were between 0.46 and 0.35, and in the 2001–3000 range between 1 and 0. For chronic cases, probabilities in the 1001–2000 range were between 0.48 and 0.35, and between 0.7 and 0.54 in the 2001–3000 range. For acute cases, the 1001–2000 range showed probabilities between 0.6 and 0.5, and the 2001–3000 range between 0.75 and 0.46. The probability loads in the 1001–2000 frequency range were between 55 and 95 for normal cases, 65 and 105 for chronic, and 75 and 100 for acute. In the 2001–3000 range, loads varied from 65 to 95 (normal), 65 to 85 (chronic), and 80 to 100 (acute). The statistical analysis showed a sensitivity, specificity, and kappa coefficient of 1.

Conclusions: A clinical diagnostic support tool was developed, capable of distinguishing between normal, chronic, and acute states based on the probabilistic load of heart rate frequencies, with clinical applicability.

Biography

Leonardo Juan Ramírez López is a PhD in Biomedical Engineering from the University of Mogi das Cruzes in Sao Paulo (Brazil) in 2012. Certified in Innovation Readiness Series by the IC2 Institute of the University of Texas at Austin since 2015. Senior Investigator and leader of the Telemedicine Research group. Researcher in Biomedical, Telecommunications, Education, Sustainable Systems, Optical Routing, Blockchain, among the most important. Full Professor of Undergraduate, Masters and Doctorate in areas of innovation and research methodology. Author of more than 100 indexed publications, one international and two national patents, one national patent application, three scientific software, and speaker at international conferences.

Lilia Lagha*, Emanuela Alati

Cardiology Department, Wexham Park Hospital, Frimley Health NHS Foundation Trust, UK

A rare dual cardiac anomaly: Quadricuspid aortic valve and wenckebach AV block

Quadricuspid Aortic Valve (QAV) is an exceptionally rare congenital cardiac anomaly characterized by the presence of four cusps instead of the usual three, often leading to valvular dysfunction. Equally intriguing, Mobitz type I second-degree Atrio Ventricular (AV) block, or Wenckebach phenomenon, represents a distinct conduction abnormality within the AV node. To date, no documented case has reported the coexistence of these two conditions in a single patient.

We report the case of a young lady who presented with chest pain and shortness of breath. Clinical examination and investigations revealed a mild aortic regurgitation due to QAV, alongside evidence of Mobitz type I AV block on electrocardiography. This unique combination has not been described previously and raises important considerations about the interplay between valvular structure and conduction pathways.

This case highlights the importance of a comprehensive cardiovascular evaluation in patients with unexplained bradyarrhythmias or valvular abnormalities. The diagnosis of QAV requires a high index of suspicion and thorough echocardiographic assessment, while recognition of Mobitz type I AV block is critical to guide management and avoid unnecessary interventions.

In summary, this case contributes valuable insight into the spectrum of QAV presentations and emphasizes the necessity for vigilance in detecting associated conduction disturbances. Reporting such rare associations broadens understanding and may inform future diagnostic and therapeutic guidelines.

Biography

Dr Lilia LAGHA at Wexham Park Hospital, Frimley Health NHS foundation trust, graduated as MD in Algeria in 2015. She was then trained in Ophthalmology for over four years and developed strong clinical skills and a patient-centered approach. After which she joined an Ophthalmology research team at University Hospital Southampton NHS Foundation Trust and gained valuable experience in clinical research. However, driven by a growing passion for Cardiology. Dr Lilia is now excitedly shifting her professional path toward this dynamic specialty. Currently training in the UK as a resident in Internal Medicine Training (IMT). Dr Lilia is keen to contribute to cardiovascular research and clinical care, combining her diverse background with a commitment to advancing heart health.

Maria Borrell
Institut de Recerca Sant Pau - Centre CERCA, Barcelona, Spain

PCSK9 roles in blood cholesterol regulation and inflammation

Atherosclerosis, the leading cause of cardiovascular diseases, is driven by high blood cholesterol levels and chronic inflammation. The disruption of the hepatic interaction between Proprotein Convertase Subtilisin/Kexin 9 (PCSK9) and Low-Density Lipoprotein Receptor (LDLR) downregulates blood cholesterol levels and reduces cardiovascular events. Recent data suggest that other members of the LDLR superfamily may be targets of PCSK9.

In this presentation I will show that LDLR-Related Protein 5 (LRP5) is a PCSK9 target, and both proteins participate in foam cell formation and hence, in the mechanism of lipid accumulation and atherosclerotic plaque formation.

I will first show that LRP5 is needed for macrophage lipid uptake since LRP5-silenced macrophages have less intracellular cholesterol accumulation. Immunoprecipitation experiments will show that LRP5 forms a complex with PCSK9 in lipid-loaded macrophages opening the possibility that PCSK9 induces lysosomal LRP5 degradation in a similar manner than it does with LDLR. We have also studied the role of PCSK9 and LRP5 in the inflammatory response by TLR4/NFkB signaling pathway and show that PCSK9 gene interference decreases inflammation supporting a role for PCSK9 as an inflammatory mediator in atherosclerosis.

We then validated our results in an in vivo mice model. We analyzed the differential expression of cholesterol related genes and proteins including LRP5, PCSK9, VLDLR, LRP6, LRP2 and LRP1 in Wildtype(Wt) and LRP5 knock-out (Lrp5-/-) mice fed a Normocholesterolemic (NC) or a Hypercholesterolemic (HC) diet. Lipid uptake was studied in liver resident cells (HepG2) and in liver fat storing cells (hepatic stellate cells) with and without LRP5 and PCSK9. Results show that cholesterol accumulates in livers of Wt and Lrp5-/- mice. This accumulation can be explained by the increased expression of LRP receptors in HC Wt mice or scavenger receptors in HC Lrp5-/- mice. More importantly, PCSK9 and LRP5 bind intracellularly in fat storing liver cells but not in structural liver cells and both proteins are needed for lipid uptake.

Biography

Dr. Borrell is a senior investigator in the Cardiovascular Program at the Hospital de la Santa Creu i Sant Pau, Barcelona. Prior appointments include a postdoctoral position in the Neurology Department of the Curie Institut, Paris, France studying Huntington's disease. Dr. Borrell leads a project based in lipoprotein receptors role in cholesterol metabolism. In the recent years she has been developing a project that analyzes the function of PCSK9 beyond its canonical function in cholesterol lowering. These results have been published in different journals including EHJ, BRIC or CVR and lead to the concession of projects financed by both, the government and the industry.

Maria Del Pino[1,2*] MS, RN; Pablo Rivero PhD; Amy Taylor[1] MLS, AHIP; Rafael Gabriel[2] MD, PhD

[1]Center of Nursing Research Education and Practice. Houston Methodist Hospital, Texas, USA

[2]Department of Biomedical Science and Public Health. Universidad Nacional de Educacion a Distancia (UNED), Madrid, Spain

Impact of depression and cardiovascular risk factors on cognitive impairment in patients with atrial fibrillation: A systematic review and meta-analysis

Background: Atrial Fibrillation (AF) is a common cardiac arrhythmia associated with significant cardiovascular morbidity and mortality, as well as Cognitive Impairment (CI). The interplay between AF and CI is complex, involving various pathophysiological changes and numerous risk factors. Among them, depression has emerged as a significant contributor to both AF and CI, further complicating the relationship between these conditions.

Objectives: This systematic review and meta-analysis aimed to investigate the influence of depression on the development of cognitive impairment in AF patients and assess the predictive value of the CHA2DS2-VASc score for CI risk.

Methods: We searched PubMed, Scopus, and Web of Science for relevant studies without language or date restrictions. Ten studies, comprising 1,605,577 participants, were included. A random-effects model was used for meta-analysis, and heterogeneity was assessed using I2 statistics. Funnel plots and Egger's test evaluated publication bias.

Results: Depression significantly increased the risk of CI in AF patients (OR: 2.23, 95% CI: 1.54-3.21, p<0.01; I2=99%). This association persisted in studies excluding baseline CI (OR: 1.95, 95% CI: 1.33-2.85, p<0.01; I2=88%). Subgroup analysis confirmed these results for both prospective (OR: 1.78, 95% CI: 0.92-3.44, p=0.02; I2=65%) and retrospective studies (OR: 2.63, 95% CI: 1.75-3.93, p<0.01; I2=100%). Analysis of CHA2DS2-VASc risk factors showed associations with CI, particularly cerebrovascular disease (OR: 1.86, 95% CI: 1.61-2.16).

Conclusions: Our findings support the association between depression and cognitive impairment in AF patients, demonstrating the importance of addressing mental health in cardiovascular care. Future research is necessary for a comprehensive understanding of this

association.

Biography

Maria del Pino studied Nursing at the Universidad Autónoma de Barcelona, Spain, earning her Bachelor's degree in 2008. Then continued her education at the same institution, completing a Master's program in Emergency Health Services in 2011, followed by another Master's in Community Nursing and Public Health at the University of Barcelona that same year. Currently, Maria is pursuing her PhD in Biomedical Science and Public Health at the National University of Distance Education (UNED), Spain. Over the course of her career, she has held roles as a Professional Development Leader, Clinical Research Nurse, and Clinical Trial Manager, collaborating with multidisciplinary teams and focusing on the interplay between mental health and cardiac well-being.

Mas Ahmed, Mariana Da Cost Otero*

Paediatric Department, Queen's University Hospital, Romford, London, UK

Auditory disturbances and childhood vasovagal syncope

Objective: Literature on auditory disturbance and vasovagal syncope is sparse. Hence, our aim was to examine the Auditory Disturbances (ADS) during attacks of vasovagal syncope among healthy children and adolescents.

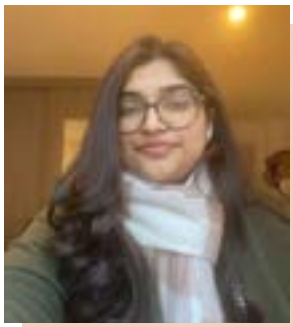
Methods: In this retrospective observational hospital-based study, we analysed data obtained from 112 children and adolescents with Vasovagal Syncope (VVS) who were referred to our local clinic between 2017–2024. All patients fulfilled the study eligibility. Information about ADS during attacks of VVS was directly obtained from the patients and witnesses of the attacks of VVS.

Results: 18/112 (16%) patients reported ADS during the attacks of VVS. Of these, there were 11 (61%) females, and their age ranges between 5.5 and 16.7 years (average=13.5). In addition to ADS, patients experienced between 3 to 5 other non-auditory symptoms and signs during the prodromal phase of VVS. ADS were muffled hearing (n=11; 61%); tinnitus (n=6; 33%), hearing loss (n=6; 33%) and hyperacusis (n=1; 5.5%). Most ADS were bilateral apart from one patient who suffered right sided tinnitus. All patients experienced ADS during prodromal phase except one who had tinnitus throughout the prodromal phase but muffled hearing in the postictal period.

Conclusion: The intricate relationship between auditory function and VVS represents a fascinating intersection of sensory processing and neural activity and this might be crucial for both diagnostic accuracy and therapeutic intervention. Further study of the pathophysiology of patients with VVS in the presence and absence of ADS is needed to expand our knowledge of this common condition.

Biography

Mariana Otero is a fourth-year medical student at Queen Mary University of London (QMUL), expected to graduate in 2026. She graduated with first-class honours in Biomedical Engineering from QMUL, where she won the IMechE Award for her dissertation. Has participated in various research projects, including nano drug delivery systems for ocular drugs, collaborating with the World Health Organization to investigate emerging medical research areas, working with the neurosurgical department at the Royal London Hospital to assess ACDF surgery outcomes, and developing computer models for craniosynostosis with Great Ormond Street Hospital.

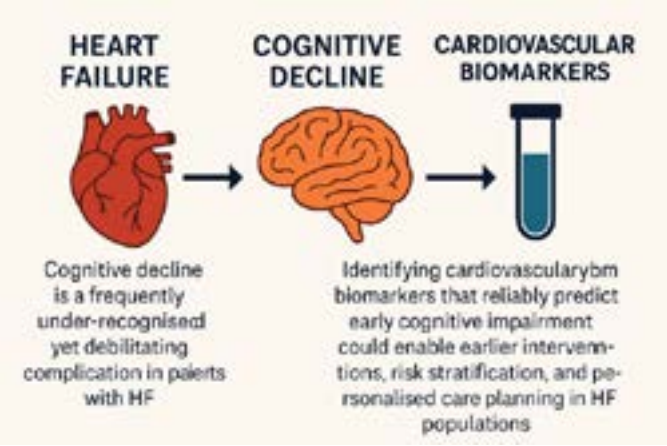


Meghana Obarsu*, Srijanita Maurya
Anglia Ruskin University, United Kingdom

Cardiovascular biomarkers as predictors of early cognitive decline in heart failure patients: A literature review

Background: Cognitive decline is a frequently under-recognised yet debilitating complication in patients with Heart Failure (HF), impacting quality of life, self-management, and long-term prognosis. Recent studies reveal a mechanistic overlap between cardiovascular dysfunction and neurodegeneration, particularly through the lens of the brain–heart axis. Vascular cognitive impairment in HF is increasingly attributed to cerebral hypoperfusion, neuroinflammation, and microvascular injury. Identifying specific cardiovascular biomarkers that predict early cognitive impairment offers potential for timely intervention, personalised risk stratification, and integrated cardiocognitive care pathways.

Methods:



A structured literature review was conducted using PubMed, Embase, and Web of Science to identify peer-reviewed articles published between 2013 and 2025. Studies were included if they evaluated adult HF populations and examined associations between cardiovascular biomarkers such as NT-proBNP, high-sensitivity troponins, galectin-3, ST2, and CRP and cognitive performance assessed through validated neuropsychological tools. Both cross-sectional and longitudinal data were analysed and synthesised thematically.

Results: Recent evidence demonstrates that elevated NT-proBNP and high-sensitivity troponins are strongly associated with deficits in memory, attention, and executive function. Inflammatory markers including galectin-3 and CRP have been linked with hippocampal atrophy, systemic neuroinflammation, and progressive cognitive decline. Vascular biomarkers correlate with cerebral hypoperfusion and white matter changes on neuroimaging. These

findings support the hypothesis that cardiovascular biomarkers reflect not only cardiac strain but also early cerebrovascular dysfunction.

Conclusion: Cardiovascular biomarkers show strong potential as non-invasive predictors of early cognitive decline in HF patients. Their clinical integration could enable earlier detection of neurocognitive risk, allowing for proactive monitoring, neuro-cardiology referral, and personalised management. These findings highlight the need for a biomarker-informed, multidisciplinary approach to managing the brain–heart axis in heart failure care.

Biography

Miss Obarsu is a final-year Forensic Science student at Anglia Ruskin University based in Cambridge with a growing interest in neurocardiology, cognitive resilience, and biomarker-driven healthcare. She brings an interdisciplinary perspective to clinical research, combining a scientific foundation with curiosity about brain–heart interactions. She is currently working at a cutting-edge company in Cambridge; Xampla, a sustainability-focused company producing biodegradable materials, and balancing her professional commitments with academic research and conference participation. She aspires to pursue postgraduate studies in neuropsychopharmacology or cardiovascular neuroscience, with a focus on translational approaches that improve patient care and long-term outcomes.

Mohamad Wahib
The Princess Alexandra NHS Trust, United Kingdom

Global longitudinal strain predicts prolonged ICU stay after mitral valve surgery for severe mitral regurgitation

Background: Mitral Regurgitation (MR) is one of the most common valvular heart diseases, affecting approximately 2–3% of the general population and rising to around 10% in individuals over 75 years. Surgical Mitral Valve (MV) intervention can markedly improve outcomes in severe MR. This study aimed to determine whether preoperative Global Longitudinal Strain (GLS) can predict prolonged Intensive Care Unit (ICU) stay in patients with severe MR undergoing MV surgery.

Methods: Fifty patients with severe degenerative MR scheduled for surgical MV replacement were prospectively studied. All patients underwent comprehensive echocardiography with speckle-tracking GLS assessment 2–3 days before surgery. Conventional metrics (including Ejection Fraction [EF]) and GLS values from the apical long-axis, 4-chamber, and 2-chamber views, as well as the global average, were recorded. The primary outcome was prolonged ICU stay, defined as>6 days in ICU postoperatively. Logistic regression and Receiver Operating Characteristic (ROC) curve analyses were used to evaluate predictors of prolonged ICU stay.

Results: Fifteen patients (30%) had a prolonged ICU stay (>6 days), with a median ICU stay of 7 days (range 6–10). In contrast, the remaining 35 patients had a median ICU stay of 2 days (range 1–5). Preoperative EF≤50% predicted prolonged ICU stay with an AUC of 0.781 (P=0.001), corresponding to 66.7% sensitivity and 77.1% specificity. By comparison, GLS metrics were stronger predictors. For example, in the apical long-axis view, a GLS threshold>–14.8% (less negative) identified patients with prolonged ICU stays, yielding 86.7% sensitivity and 94.3% specificity (AUC=0.935). Similarly, GLS cutoffs in the apical 4-chamber (>–15.3%, AUC=0.899) and 2-chamber (>–15.3%, AUC=0.937) views, as well as the global average GLS (>–15.8%, AUC=0.916), were significant predictors (P<0.001 for all). These GLS-based thresholds demonstrated high sensitivity (80–93%) and specificity (71–94%).

Conclusions: Both preoperative EF and GLS can identify patients at higher risk of prolonged ICU stay after MV surgery. However, GLS-based measures (i.e., less negative preoperative GLS values) showed greater sensitivity and specificity than EF. Incorporating GLS into preoperative assessment may improve risk stratification for postoperative ICU needs.

Keywords: Global Longitudinal Strain, Mitral Valve Surgery, Prolonged ICU Stay, Severe Mitral Regurgitation, Echocardiography.

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Countess of Chester NHS Foundation Trust, United Kingdom

Increased left ventricular mass as a marker of left ventricular hypertrophy in normotensive type 2 DM patients

Diabetes is one of the most important metabolic conditions causing Left Ventricular (LV) dysfunction, one of which is Left Ventricular Hypertrophy (LVH). Increased Left Ventricular Mass (LVM) and Left Ventricular Mass Index (LVMI) are significant predictors of LVH. Aim This study aims to illustrate the significance of using echocardiography to detect left ventricular hypertrophy (as a type of LV dysfunction) in normotensive patients with type 2 diabetes mellitus.

Materials and Methods: The study included 100 participants who were distributed into two groups: Group A included normotensive patients with type 2 DM and Group B included normotensive non-diabetic patients as a control group.

Results: LVM values were significantly higher in group A patients compared to group B (187.11±60.83 vs. 119.15±41.87, $p<0.001$). Also, LVMI values were significantly higher in group A in comparison to group B (96.64±29.84 vs. 63.17±20.38, $p<0.001$). The proportion of abnormal LVMI was higher in group A than group B (56% vs. 6%, $p<0.001$). There was a statistically significant positive correlation between LVM and several study parameters including disease duration ($r=0.369$, $p=0.008$), FBS ($r=0.478$, $p<0.001$), 2HPP (0.400, $p=0.004$), HA1C (%) ($r=0.589$, $p=0.003$), LVEDD ($r=0.790$, $p<0.001$), LVESD ($r=0.388$, $p=0.005$), SWT ($r=0.897$, $p<0.001$), PWT ($r=0.808$, $p<0.001$), and LA ($r=0.322$, $p=0.022$).

Conclusion: Left ventricular mass was found to be significantly higher in normotensive type 2 DM patients in comparison to the normotensive non-diabetic control group. LVM is a god marker of LVH among normotensive diabetics and significantly correlates with DM control and duration.

Keywords: Left Ventricular Hypertrophy, Left Ventricular Mass, Left Ventricular Mass Index, Diabetes Mellitus

Biography

Dr. Mohamed Mahmoud studied medicine in Faculty of medicine at Fayoum University, Egypt obtained his MBBch in 2014, and had training in university hospital from 2016 to 2020, then he received his master degree in internal medicine and cardiology, worked as a lecturer at faculty of medicine, until her received his PhD degree in 2024, he did research in cardiology and general medicine with 2 publications, then he moved to UK in 2024, and currently he works as Specialty Registrar at Countess of Chester NHS trust in United Kingdom.

Dr. Muhammad Abubakar*, Dr. Arva Zahid, Dr. Entsar Elbashir, Dr. Haseeb Ur Rahman, Dr. Bethan Freestone

University Hospital Birmingham, United Kingdom

Improving compliance with VTE prophylaxis prescribing in cardiology inpatients

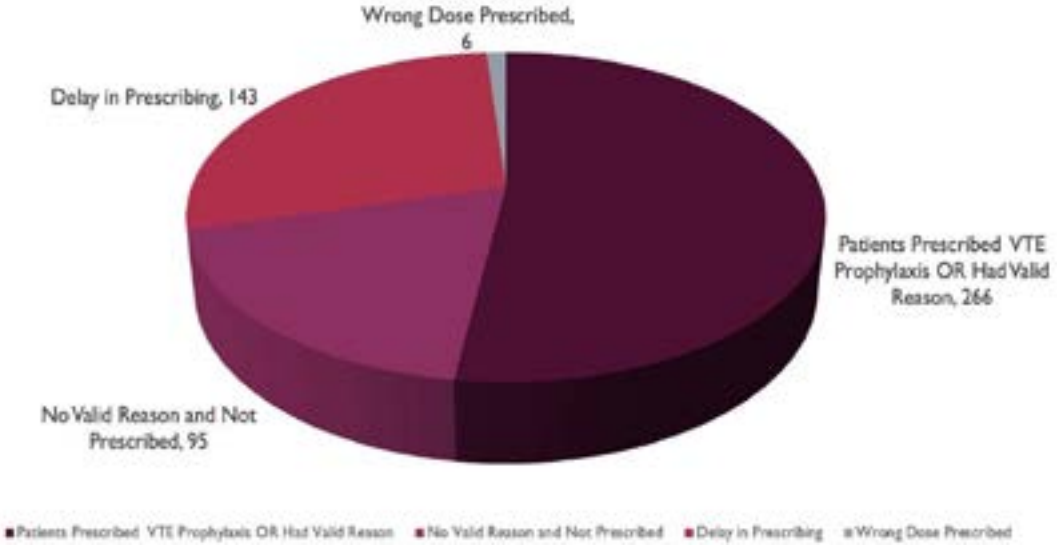
Background: Venous Thromboembolism (VTE) prophylaxis is a national patient safety priority. Cardiology inpatients are at particular risk of developing VTE due to prolonged immobility post myocardial infarction, heart failure and cardiac procedures. A spot-check audit was done in 2023 at Birmingham Heartlands Hospital (BHH) which revealed inconsistent prescription practices, prompting a formal re-audit and quality improvement plan.

Aim: To assess compliance with national VTE prophylaxis guidelines in cardiology inpatients and identify areas for intervention.

Methods: All patients admitted to cardiology department at BHH between January 1 and February 28, 2025 were included in the audit. Data was collected using electronic records and clinic letters.

Results: A total of 510 patients were admitted to three cardiology wards during the audited period. 53% (n=266) of patients received appropriate VTE prophylaxis on Day 0 of admission or had a valid reason not to have it, most common reason being therapeutic anticoagulation indication. 28% (n=143) had delay in prescribing with 87 receiving the first dose on second day. 18.6% (n=95) were never prescribed VTE prophylaxis with no valid reason. However, none of these patients were readmitted with VTE within four weeks of discharge. Dosing accuracy was high (≈95%) once prophylaxis was prescribed.

Conclusions: There is significant underutilisation of VTE prophylaxis at the time of cardiology admissions. Despite accurate dosing, we know delay or omission in prescribing VTE prophylaxis is strongly linked to worse patient outcomes1. Resident doctor's lack of familiarity with antithrombotic regimens is likely the main reasons for prescribing omissions at the time of admission. Structured prompts, improved documentation templates, and targeted education are planned as interventions. A follow-up re-audit is scheduled.



Biography

Dr. Muhammad Abubakar graduated in 2017 from Sharif Medical and Dental College, Pakistan. He is currently enrolled in the Fellowship of the College of Physicians and Surgeons Pakistan (FCPS) in Cardiology, having completed three years of training in Pakistan and Currently working as international training fellow in Cardiology in the United Kingdom. His research interests focus on acute coronary syndromes, conduction abnormalities, and imaging in structural heart disease. He has presented work at national and international forums and remains dedicated to advancing evidence-based cardiovascular care and involvement in research work.

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Prognostic impact of right bundle branch block in acute anterior wall STEMI: A cross-sectional study

Background: Right Bundle Branch Block (RBBB) in acute Anterior Wall ST-Segment Elevation Myocardial Infarction (AW-STEMI) may indicate extensive myocardial injury, yet its independent prognostic value remains uncertain.

Methods: We conducted a cross-sectional observational study at the Punjab Institute of Cardiology, Lahore, from January 2022 to June 2023. A total of 349 patients with AW- STEMI were stratified into two groups based on the presence or absence of RBBB on initial electrocardiogram. Baseline demographics, comorbidities, and reperfusion strategies were recorded. Primary outcome was in-hospital mortality. Secondary outcomes included cardiogenic shock, cardiac arrest, arrhythmias, Complete Heart Block (CHB), post-MI angina, and duration of hospital stay. Logistic regression was used to adjust for confounding variables.

Results: RBBB was present in 50 patients (14.3%). Baseline age and comorbidities (hypertension, diabetes, CKD, dyslipidemia, prior MI) were similar across groups. Compared with non-RBBB patients, those with RBBB had lower mean LVEF (40.9% vs 45.7%, p< 0.001) and higher peak troponin-I levels (33.5 vs 24.3 ng/mL, p<0.001). In-hospital mortality was significantly higher with RBBB (16% vs 5.7%, OR 3.16, 95% CI 1.28–7.78, p=0.009). Cardiogenic shock (36% vs 16.4%, OR 2.67, p=0.003) and arrhythmias (42% vs 19.7%, OR 2.95, p=0.001) were also significantly increased. Although rates of cardiac arrest (16% vs 11.4%), CHB (12% vs 8%), and post-MI angina (24% vs 15.4%) were higher in RBBB, these differences did not reach statistical significance. Notably, all RBBB patients managed with thrombolysis or conservative therapy died, whereas primary PCI markedly improved survival.

Conclusion: RBBB in AW-STEMI is associated with higher in-hospital mortality, cardiogenic shock, and arrhythmias, reflecting greater hemodynamic instability. Primary PCI offers a significant survival benefit in this high-risk subgroup, underscoring the importance of urgent invasive management.

Biography

Dr. Muhammad Abubakar graduated in 2017 from Sharif Medical and Dental College, Pakistan. He is currently enrolled in the Fellowship of the College of Physicians and Surgeons Pakistan (FCPS) in Cardiology, having completed three years of training in Pakistan and Currently working as international training fellow in Cardiology in the United Kingdom. His research interests focus on acute coronary syndromes, conduction abnormalities, and imaging in structural heart disease. He has presented work at national and international forums and remains dedicated to advancing evidence-based cardiovascular care and involvement in research work.

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Rare case of mitral valve aneurysm with perforation resulting in severe mitral regurgitation - A case report

Introduction: Mitral Valve Aneurysm (MVA) is a rare complication involving a discrete protrusion of the mitral leaflet towards left atrium with systolic expansion and diastolic collapse. Persistent MVA may result in perforation and rupture of aneurysm causing mitral regurgitation. Its formation is associated with congenital conditions like left ventricular outflow tract obstruction, connective tissue disorders like Marfan's syndrome, structural causes like mitral valve prolapse as well as acquired factors like rheumatic fever, Libman- Sachs endocarditis and Infective Endocarditis (IE). Despite advances in clinical practice, timely diagnosis and adequate management of IE remains challenging therefore this case highlights the importance of Transoesophageal Echocardiography (TEE) in better visualization of a complex condition such as valve perforation and management options for cases where surgical treatment is deemed unsuitable.

Case Presentation: A 72-year-old male with multiple comorbidities presented with fluid overload and renal dysfunction. He had a recent admission for sepsis, wet gangrene and atrial fibrillation, which were treated medically. Blood cultures at the time grew Staphylococcus aureus. Upon investigating, a transthoracic echocardiogram showed multiple echogenic structures attached to the posterior mitral valve leaflet, raising suspicion of vegetations, P2 scallop aneurysm- Figure 1. Subsequently a Transoesophageal Echocardiogram (TEE) was performed which confirmed the presence of a calcified Posterior Mitral Valve Leaflet (PMVL) with an aneurysm along with perforation, resulting in severe MR, likely due to Infective Endocarditis (IE)- Figure 2. Following multidisciplinary team discussion, the patient was treated with antibiotics (intravenous followed by oral) for 6-8 weeks course due to high surgical risk and multiple comorbidities with future consideration of surgery if functional status improves.

Discussion Mitral Valve Aneurysm (MVA) is a saccular outpouching of the mitral leaflet, with anterior leaflet being more commonly involved than the posterior leaflet and reported incidence of 0.2 to 0.29%. Various cardiac conditions and non-cardiac causes have been associated with formation of aneurysms. Large aneurysm is more likely to rupture than small ones. Infective Endocarditis (IE) is a fatal disease with a mortality rate of 20-25%. It is an infection of endocardium most commonly affecting aortic and mitral valves, whereas involvement of tricuspid and pulmonary valves is seen in less than 10% of the cases. Due to the non-specific

clinical manifestation and unexpected course, delayed diagnosis may have adverse outcome. Echocardiography is the primary investigation for establishing the diagnosis of IE. Real time three dimensional TEE has shown to provide spatial configuration of cardiac structures and their anomalies and is considered superior to TTE in diagnosing complex cardiac lesions.

Conclusion: MVA is an uncommon condition, resembling mitral valve prolapse or regurgitation clinically, and may occur as an isolated pathology. Our study highlights the diagnostic capability of TEE which is considered superior to TTE in delineating the diagnosis of mitral valve perforation as the former allows clear visualization of complex mitral valve lesions. Prompt recognition and timely management is crucial in the prevention of mortality in patients with IE leading to perforation. Management of IE must be individualized and the decision to opt medical or surgical course depends on risk-to-benefit balance. Although international guidelines have standardized management options for patients with IE, duration of medications and timing of surgery, there is need for involvement of multi-disciplinary team in cases where IE is accompanied by complex conditions. This case underscores the need for case by case assessment and management.

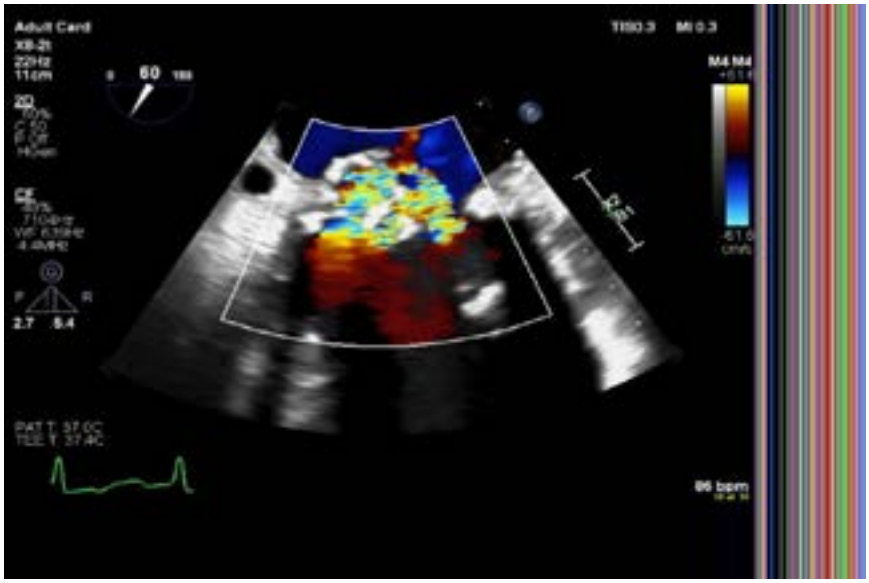

Figure 1 Transthoracic Echocardiogram: A: Parasternal Long axis view showing echogenic structures attached to posterior mitral valve leaflet extending from annulus to posterior leaflet. B: Apical 4 chamber view, showing multiple echogenic structures attached to posterior mitral valve leaflet

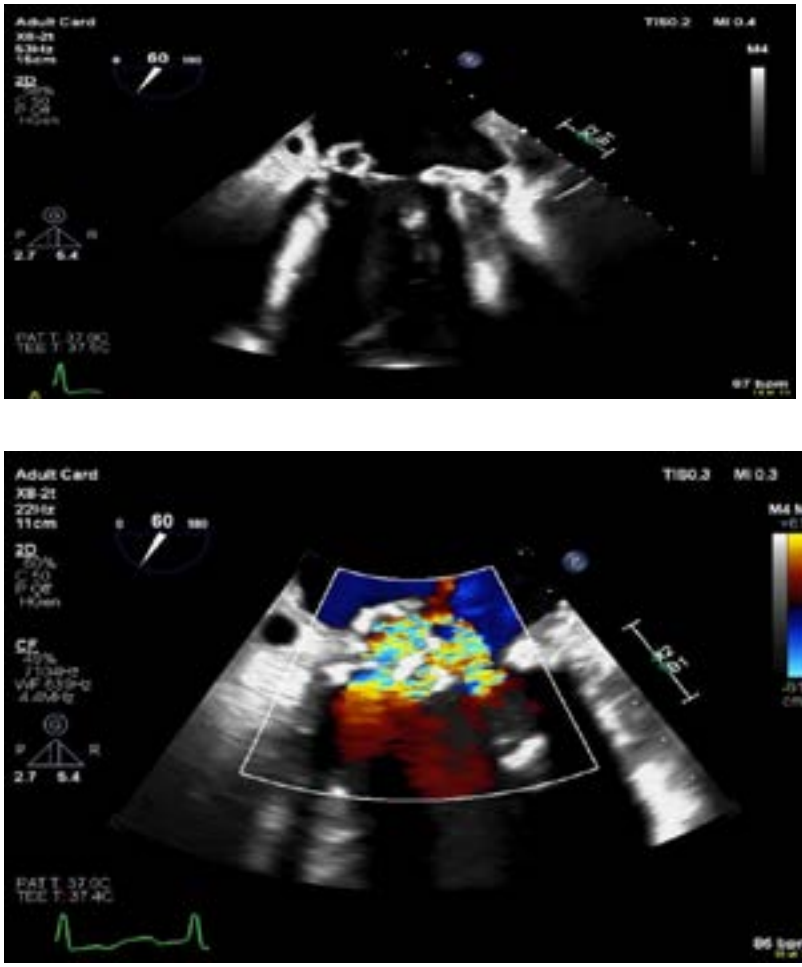

Figure 2 Transesophageal Echocardiogram A: Mid- -Oesophageal 2 chamber view showing formation of Posterior Mitral Valve leaflet aneurysm. B: Colour Doppler assessment of MV showing MR due to perforation of mitral valve aneurysm.

Biography

Dr. Muhammad Usman Khalid obtained his MBBS from Allama Iqbal Medical College, Lahore, Pakistan in 2018. He completed his internal medicine training and earned Membership of the Royal College of Physicians (MRCP) in the United Kingdom. He is currently working as a Senior Clinical Fellow in Cardiology at King's College Hospital, London. Dr. Khalid has extensive experience in both clinical and teaching roles within cardiology and has served in a variety of NHS hospitals across the UK. He is the first author of a publication in a PubMed-indexed journal, reflecting his ongoing interest in academic cardiology and research.

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Transient ST-elevation MI diagnosed by holter monitoring

Presentation: A 54-year-old woman was referred with an 8-week history of pressure sensations over the chest and epigastrium unrelated to exertion. She presented to the emergency department 4 weeks prior but self-discharged against medical advice due to the long wait time.

Diagnosis: ECG revealed T wave inversion in leads III & aVF, and transthoracic echocardiogram showed normal ventricular systolic function. A 24-hour Holter monitor was performed due to cardiac risk factors to investigate for arrhythmias. Results revealed episodes of ST elevation which correlated with the patient's recorded events. Coronary angiography demonstrated 99% stenosis in the right coronary artery.

Treatment: Percutaneous coronary intervention was performed and the patient was started on dual-antiplatelet therapy, statin, and betablocker. Anginal episodes resolved immediately.

Conclusion: ST changes on Holter readings may be of diagnostic benefit and warrant further assessment.

Biography

Nabihah Hussaini is a final-year medical student at the University of Manchester with a keen interest in cardiology. She has undertaken clinical placements across a variety of specialties, with a focus on cardiovascular medicine and research. She is particularly interested in the intersection of clinical practice and artificial intelligence in cardiovascular care.

Patrick Hurley*, Eleanor McDowell, Helen Roome, Mihye Lee

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Diagnosis and management of infective endocarditis in a district general hospital: A retrospective review (2020–2024)

Background: Infective Endocarditis (IE) remains a complex and life-threatening condition with evolving epidemiology and diagnostic challenges. This study aims to characterise the presentation, management, and outcomes of IE in a non-surgical District General Hospital (DGH) setting in the UK. To our knowledge this is the most comprehensive UK based study of its kind for many years.

Methods: We conducted a retrospective analysis of adult patients with first presentations of definite or possible IE referred to the IE Multidisciplinary Team (MDT) between December 2020 and March 2024. Data were extracted from electronic health records and included demographics, comorbidities, microbiology, imaging, treatment, and outcomes.

Results: A total of 145 patients met inclusion criteria (mean age 74.2 years; 79% male). The incidence of IE was 12.7 per 100,000 person-years. Staphylococcus, streptococcus, and enterococcus species accounted for 76% of cases. Device-associated and prosthetic valve IE represented 10% and 19% of cases, respectively, with organism distribution varying significantly in these subgroups. Transthoracic echocardiography had limited sensitivity (44% positive rate), prompting further imaging in many cases. Surgical intervention was undertaken in 29% of patients. Inpatient mortality was 32%, with higher Charlson comorbidity scores among non-survivors.

Conclusion: This study reinforces known diagnostic and therapeutic complexities of IE, while highlighting potential subgroup-specific microbial patterns. Findings support the need for early diagnostic vigilance and may inform future multicentre investigations and local quality improvement initiatives.

Biography

Dr Patrick Hurley graduated from the University of Birmingham graduate entry medical degree in 2021. Prior to this he graduated from the University of London with a first-class degree in biochemistry. Dr Patrick completed his foundation training in the East of England including a 4-month research rotation in the neurosurgery department of Addenbrooke's Hospital. Dr Patrick is currently undertaking internal medical training in University Hospitals Dorset. He is interested in a career in cardiology and the cardiological manifestations of infectious diseases.

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VA ECMO as a bridge to OHT in the sickest of the sick cardiogenic shock patients

To show the utility and benefit of VA-ECMO support in adults as a bridge to cardiac transplantation in the sickest of the sick cardiogenic shock patient population. VA-ECMO as bridge to LVAD or HT has significantly increased last 10-years. This approach has been controversial given poor outcomes (historically). Retrospective analysis of the ELSO registry reports in-hospital mortality at 29.1%. The graphic shows the growth of cardiac transplantation off of VA-ECMO is about 15%.

A more aggressive approach to VA-ECMO support in cardiogenic shock patients who were deemed acceptable for cardiac transplantation was begun in November 2022. As of November 2024, our center has performed 34 cardiac transplants off of VA-ECMO support. Survival to hospital discharge is 97%, (33/34). The median duration of hospital stay post-transplant was 23 days, (17-29). The one-year survival of this cardiac transplantation population is 94%, (32/34). The causes of death in these two patients were graft rejection and a CVA.

Biography

PW Barrett, MD, MS FACS is a board-certified General Surgeon, Adult Cardiothoracic Surgeon and Surgical Critical Care/ Trauma Physician. He is the Director of Cardiovascular Critical Care and ECMO at Piedmont Atlanta Hospital and Piedmont Heart Institute in Atlanta Georgia, USA. He has over thirty years' experience in the MCS field.

Pratibha Gupta Ph.D.
Central State University, United States

The importance of nutrigenomics in cardiovascular diseases

Background: Cardiovascular Diseases (CVDs) are the leading global cause of death, with genetic variation playing a significant role in individual susceptibility and response to dietary interventions. Nutrigenomics, the study of how nutrients influence gene expression, offers a precision nutrition approach to CVD prevention and management.

Objective: This review explores the role of gene–diet interactions in cardiovascular health, highlighting key genetic polymorphisms, nutrient responses, and clinical applications for personalized nutrition.

Methods: Evidence from observational studies, Genome-Wide Association Studies (GWAS), and clinical trials was synthesized to evaluate the impact of nutrigenomics on lipid metabolism, blood pressure regulation, inflammation, and oxidative stress pathways.

Results: Variants in APOE, MTHFR, PCSK9, CYP1A2, and VDR influence nutrient metabolism and modulate CVD risk factors including LDL-C, homocysteine, hypertension, and endothelial function. Nutrigenomics-guided interventions—such as genotype-specific fat intake adjustments, targeted folate and vitamin D supplementation, polyphenol-rich diets, and caffeine moderations show promise in reducing CVD risk. Personalized dietary strategies improve adherence, enable early risk stratification, and may reduce long-term healthcare costs.

Conclusion: Nutrigenomics provides a transformative framework for individualized CVD prevention by aligning dietary recommendations with genetic profiles. Integrating genomic testing into cardiovascular care can enhance clinical outcomes, but widespread adoption requires further clinical validation, improved accessibility, and professional training in genomic nutrition.

Keywords: Nutrigenomics, Cardiovascular Disease, Gene–Diet Interactions, Precision Nutrition, APOE, MTHFR, Personalized Nutrition, Lipid Metabolism.

Biography

Pratibha Gupta, Ph.D., is a research associate professor of food, nutrition, and health and Extension specialist for Family and Consumer Science at Central State University. She is an editorial member for the National Consortium for Building Healthy Academic Communities and the Journal of Current Trends in Nutrition. She is also on the five-member Board of Directors of the Food Distribution Research Society. Gupta recently responded to a list of questions by Cyril Ibe on her $600,000, USDA-funded research titled, Nutrition Education and Outreach Program to Address and Prevent Obesity in Minority Communities: Application of Nutrigenomics. The following has been lightly edited for clarity. Gupta is the Principal Investigator (PI) for the study, which involves Central State in partnership with Kentucky State University, Lincoln University, and the University of Toledo.

Dr. Riya Hamid Mansuri[1*], Dr. Shantanu Deshpande[2], Dr. Somnath Mallakmir[3], Dr. Samhita Purandare[3], Dr. Archana Bhate[4], Dr. Rajas Patel[5], Dr. Sagar N Satpute[6], Dr. Sarfaraz Shaikh[7], Dr. Aditya Kadam[1], Dr. Shivaling Nisty[1], Dr. C. Sai Sujana[1], Dr. Akshitha Reddy[1], Dr. Kavish Chopada[1], Dr. Shish Mansuri[8]

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Unusual faces of pericardial effusion: A case series of suppurative, neoplastic, and disseminated tuberculous etiologies

Background: Pericardial effusion, though commonly encountered in clinical cardiology, can stem from a multitude of causes—some of which are rare, aggressive, or easily missed. This series showcases three challenging cases from young patients presenting with tamponade physiology due to distinct etiologies: Suppurative infection, Malignancy, and Disseminated tuberculosis.

Case 1– Post-Cesarean Purulent Pericardial Effusion: A 34-year-old woman, 20 days' post-cesarean section, presented in shock with muffled heart sounds and raised JVP. History of dyspnoea since one month, progressive in nature. On arrival patient was tachypnoeic with RR of 50/minute, got electively Intubated in the ER. 2D echo showed massive pericardial effusion with tamponade. Pericardiocentesis revealed yellowish-white pus-like fluid. Analysis showed 22,000 WBCs (99% neutrophils) with MRSA growth on culture. ADA was 110; GeneXpert and ANA were negative. Given the high ADA and clinical picture, anti-tubercular therapy was initiated along with the antibiotics as per culture sensitivity, patient showed dramatic improvement. The patient was discharged on colchicine and steroids and remains stable with a healthy baby on follow-up.

Case 2 – Primary Cardiac Angiosarcoma Missed on Prior Imaging: A 20-year-old woman with a history of pericardiocentesis 23 days earlier presented with dysponea and hypotension. Chest X-ray and

2D echo revealed a mass near the right atrium and large pericardial effusion and impending temponade.

CECT, PET-CT and CT guided biopsy confirmed cardiac angiosarcoma-- a rare tumor with an incidence of 0.01–0.03%. Notably, her previous CT scan was reported as normal, and pericardial fluid was never sent for cytology. The misdiagnosis as autoimmune effusion led to treatment delays. She is currently stable, receiving chemotherapy and awaiting surgical intervention.

Case 3 – Miliary Tuberculosis Presenting as Tamponade in Young Male: A 35-year-old man on multiple medications for early-onset Parkinsonism presented with chest pain, hypotension, and anxiety. Suspected initially to have pulmonary embolism, 2D echo revealed a large pericardial effusion with tamponade.

Pericardial fluid was straw-coloured with biochemical features suggestive of tuberculosis (high ADA, LDH). HRCT showed miliary TB with incidentally noted mixed lytic and sclerotic lesions likely vertebral abscess at D10–D12 vertebral bodies, with associated peri-vertebral collection from D12-L2.

EF dropped post-pericardiocentesis to 25%; the patient was in shock with oliguria progressing to anuria, required triple inotropes. HIV was negative. First-line anti-TB drugs were stopped due to drug-induced hepatitis and second-line ATT was started. CT coronary angiography ruled out ACS. He improved clinically, supports were tapered and stopped, patient is doing well and is currently on regular follow-ups.

Discussion: These cases emphasize the diagnostic spectrum and clinical variability of pericardial effusions. From MRSA-infected purulent collections and aggressive malignancies like angiosarcoma to systemic tuberculosis presenting with vertebral abscess and cardiac tamponade, a high index of suspicion and thorough systemic work-up is essential. Each case demanded a unique diagnostic approach—highlighting the significance of pericardial fluid analysis, imaging, and clinical correlation. The cases illustrate the spectrum of pericardial effusion—ranging from malignant to infective and autoimmune causes. Cardiac angiosarcoma, though rare, should be considered in young patients with hemorrhagic effusion and atypical imaging findings. Tuberculous and autoimmune etiologies remain prevalent in the Indian population and demand high clinical suspicion. Early therapeutic intervention in infective causes significantly alters outcomes, unlike malignant etiologies which often carry poor prognosis.

Conclusion: Pericardial effusions in young adults warrant meticulous evaluation. Cytology, imaging, ADA, and microbiology can reveal hidden culprits. Early identification and individualized management—especially in high-risk or rare causes—can be life-saving. Rare etiologies of pericardial effusion must be actively sought in young patients with recurrent or atypical presentations. Timely recognition, targeted treatment, and avoidance of mislabeling can significantly alter outcomes, especially in malignant and infective cases.

Biography

Dr. Riya Mansuri completed her MD in Internal Medicine from Dr. DY Patil University School of Medicine, Mumbai in 2022. She is currently pursuing DM Cardiology under the guidance of Dr. Shantanu Deshpande. Actively engaged in interventional cardiology training, has participated in several research projects including studies during the COVID-19 pandemic has done studies on left ventricular thrombus and its etiologies. Dr. Riya is presently conducting research on coronary artery disease in young diabetic patients (<40 years) and its co-relation with their glycaemic control. She is deeply interested in rare cardiac pathologies and aims to contribute to academic cardiology through case-based learning and research.

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Comparison of traditional and intensive cardiac rehabilitation on dietary behavior and clinical risk factor outcomes

Purpose: The objective of this study was to assess differences in dietary behavior and clinical risk factor outcomes and explore predictors of change among patients participating in traditional and Pritikin intensive Cardiac Rehabilitation (CR).

Methods: This secondary analysis of cardiac registry data from 2015-2021 included patients participating in traditional CR (n=420) or Pritikin intensive CR (n=1005) at a single hospital site. Dietary behavior outcomes included the rate your plate measure while clinical risk factor outcomes included fasting lipids, blood pressure, anthropometrics, functional outcomes, and psychosocial assessment. Analysis of covariance examined a difference in rate your plate scores between CR groups. Multivariate analysis of covariance was used to determine differences in clinical risk factor variables between CR groups. Predictors of change in dietary behavior and clinical risk factors were determined through multiple bivariate linear regression models within each CR group.

Results: Both CR programs led to significant improvements though more change was observed among Pritikin intensive CR participants in dietary behavior, anthropometrics, and fasting lipids. Status as a current or recent smoker were not significant predictors of dietary behavior. Male sex, status as a current or recent smoker, beta blockers and angiotensin-converting enzyme inhibitors prescribed were not significant predictors of total cholesterol, low-density lipoprotein cholesterol, high-density lipoprotein cholesterol, or non-high-density lipoprotein cholesterol

for traditional and Pritikin intensive CR groups. There were not significant predictors of blood pressure, body mass, or waist circumference.

Conclusion: Although participation in either CR program yielded cardiometabolic benefits, Pritikin intensive CR patients exhibited significantly greater improvements in dietary behavior and clinical risk factors.

Biography

Dr. Ruth Rasmussen is an Assistant Professor for Liberty University's School of Health Sciences. Dr. Ruth attained her Master of Arts in Dietetics ('12), Master of Science in Nutritional Science ('13), and PhD in Nutritional Sciences ('22) at the University of Oklahoma Health Sciences Center. Dr. Ruth worked for 7 years as an outpatient cardiac rehabilitation dietitian and educator within Pritikin Intensive Cardiac Rehab at the Oklahoma Heart Hospital in Oklahoma City. Her research focuses on nutritional intake and healthy food access of children and cardiovascular health among intensive and traditional outpatient cardiac rehabilitation patients in Oklahoma.

Sahlan Abadi*, Heny Martini

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A serial case congenital heart repair: Successful device closure of a large ASD

Transcatheter Atrial Septal Defect (ASD) closure is now a widely recognised alternative to surgical closure for suitable secundum ASDs. We report a serial case closure of a large Ostium Secundum ASD (OS-ASD) which measured 35 mm and 40 on Transesophageal Echo (TEE) and was closed with a 42 and 46 mm device, respectively. A 24-year-old woman and a 38-year-old woman from Indonesia had complaints of shortness of breath on exertion and palpitations. On examination, they had a wide and fixed split of the second heart sound with a soft ejection systolic murmur over the left second and third intercostal spaces. Trans-thoracic echo revealed a big OS-ASD measuring 35 mm and 40 mm, respectively, with left-to-right flow and good biventricular function. The patient preferred a nonsurgical mode of treatment, and hence an ASD device closure was decided upon. TEE in the cath-lab measured 35 mm and 40 mm OS-ASD, respectively, with an adequate rim. Initial right heart catheterisation was done. In conclusion, ASD closure can be performed for these two patients. A 42 and 46 mm device was loaded using the standard technique in a 14 Fr delivery sheath. The device was placed in the Right Upper Pulmonary Vein (RUPV) with part of the left atrial disc in RUPV. First the right atrial disc was delivered, following which the left atrial disc fell into its place, completely occluding the shunt. Device placement was checked with TEE, which showed no residual shunt and unobstructed flow across both the atrioventricular valves and systemic and pulmonary veins. Left ventricular end-diastolic pressure remained the same both before and after the device placement. The device was deployed under cine guidance. The patient tolerated the procedure well and was extubated on the table. He was given aspirin, which he was advised to continue for 6 months. He remained asymptomatic after the procedure; his device position was confirmed before discharge with no residual shunt or unobstructed flow across both the atrioventricular valves and systemic and pulmonary veins. On follow-up he became asymptomatic without any complication, and they had planning for TTE evaluation for 1 month, 3 months, 6 months and 12 months after ASD closure by device and continued for every 12 months or if any complication was found.

With the improvement in technology, even very large ASDs can now be closed with the device. Balloon-assisted dilator-assisted device delivery are a few frequently used techniques for larger-size device deployment. In our patient the ASD device was delivered using the

standard technique from the right upper pulmonary vein without using any balloon or dilator assistance. Though closure of OS-ASD with a device is now a standard mode of treatment, there are few well-known immediate, intermediate, and long-term complications. The reported significant complications of device closure include cardiac perforations, device malposition or embolisation, residual shunts, vascular trauma, thrombus formation, atrioventricular valve regurgitation, aortic regurgitation, atrial arrhythmias, infective endocarditis, and sudden death. Patients have to be on lifelong follow-up after device closure of their defect.

Biography

Sahlan Abadi is a dedicated medical student currently pursuing his specialisation in cardiology at Universitas Brawijaya, Indonesia. He completed his undergraduate medical education with distinction and was later accepted into the prestigious cardiology specialisation programme at Universitas Brawijaya. Throughout her academic journey, he has demonstrated strong academic performance, a compassionate approach to patient care, and a keen interest in cardiovascular research. He aspires to become a skilled cardiologist who not only provides excellent medical care but also contributes to the advancement of heart health in Indonesia.

Dr. Sakshi Kumari
MBBS, Shimoga Institute of Medical Sciences, Shimoga, India

Long term effect of false lumen in patients with aortic dissection: A systematic review

Background: Aortic dissection remains one of the most life-threatening cardiovascular emergencies, with a patent false lumen emerging as a critical determinant of long-term outcomes. Persisting false lumen patency has been associated with increased mortality, accelerated aortic enlargement, and a higher incidence of reinterventions, yet its comprehensive impact on patient prognosis has not been fully elucidated.

Methods: A systematic review was conducted in accordance with PRISMA guidelines by searching PubMed, Scopus, and the Cochrane Library from inception to May 2024 for English-language studies. Eligible studies included randomized controlled trials and cohort studies that assessed the long-term effects of false lumen status in patients with Stanford type A and B aortic dissections. Data extraction focused on patient demographics, false lumen status (patent, partial, or complete thrombosis), and clinical outcomes including mortality, aortic dilatation, and reintervention rates. A total of 45 studies encompassing 6,625 patients were included, and data were synthesized using random-effects meta-analytical models alongside narrative analysis.

Results: Analysis revealed that a patent false lumen is a potent independent predictor of adverse outcomes. Patients with persistent false lumen patency exhibited significantly higher mortality—with hazard ratios ranging from 1.70 to 5.6—faster aortic enlargement, and increased rates of reintervention compared to those with partial or complete thrombosis. Subgroup analyses confirmed these associations across both type A and type B dissections. Furthermore, therapeutic strategies such as Thoracic Endovascular Aortic Repair (TEVAR) that promote false lumen thrombosis were linked to improved survival and reduced aorta-specific complications, though the role of anticoagulation therapy remains inconsistent.

Conclusions: False lumen patency significantly compromises long-term survival in aortic dissection patients by accelerating adverse aortic remodeling and necessitating further interventions. These findings underscore the imperative for early detection and tailored management strategies, and they highlight the need for future multicenter randomized trials and advanced imaging techniques to optimize therapeutic approaches and improve patient outcomes.

Keywords: False Lumen, Aortic Dissection, Mortality, TEVAR, Thrombosis, Reintervention, Aortic Remodeling.

Biography

Dr. Sakshi Kumari is a physician-researcher with peer-reviewed publications spanning women's health, infectious diseases, dermatology, and bibliometric analysis. Recognized for her academic contributions and research leadership, she has published in high-impact journals and presented at international conferences, demonstrating her commitment to advancing evidence-based, multidisciplinary medical research and public health outcomes.

Sara Ismail[1*], Mahmoud Magdi[1], Omer Elbashir[2]

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Multiple cerebral infarcts caused by left ventricular thrombus: A multidisciplinary challenge

Introduction: Left Ventricular (LV) thrombus accounts for up to 10% of cardioembolic strokes. It is frequently observed in patients with a history of myocardial infarction, particularly those with anterior STEMI, reduced Left Ventricular Ejection Fraction (LVEF), non-ischemic cardiomyopathy, or a low TIMI score. Prompt recognition and management of LV thrombus is crucial to preventing systemic embolization and improving patient outcomes.

Case report: A 50-year-old male presented to the emergency department with confusion, behavioral changes, and vomiting. Due to his disorientation and lack of accompanying family or co-patient, no reliable medical history could be obtained. On examination, he was agitated and disoriented but had no focal neurological signs such as lateralization, facial droop, aphasia, or abnormal reflexes. His plantar reflexes were down-going bilaterally. Other systemic examinations were unremarkable. Initial investigations revealed hyperglycemia, with normal troponin levels and inflammatory markers. His complete blood count and renal function tests were within normal limits. An ECG showed normal sinus rhythm. A non-contrast CT of the brain demonstrated multiple recent non-hemorrhagic infarcts in the right frontal lobe, bilateral thalamus, right occipital lobe, occipitotemporal region, and left cerebellum. The patient was admitted for further stroke evaluation. He was initiated on dual antiplatelet therapy and insulin for glycemic control. Transthoracic echocardiography revealed left ventricular hypertrophy with an ejection fraction of 40%, a mobile thrombus (1.0 x 0.5 cm) at the apex, and hypokinesia in the anterior septal and apical regions. Diastolic dysfunction with impaired relaxation was also noted. Following multidisciplinary discussions between cardiology and neurology, the patient was started on therapeutic anticoagulation and aspirin. Additional treatments included high-dose statin for dyslipidemia management, as well as a beta blocker to optimize cardiac function. The patient's condition stabilized, though he remained disoriented regarding time, place, and person.

Conclusion: Cardioembolic stroke secondary to left ventricular thrombus may present atypically, with confusion and disorientation, even in the absence of clear neurological deficits. This case underscores the importance of a multidisciplinary approach in diagnosing and managing LV thrombus to prevent systemic embolization. The balance between anticoagulation therapy and the risk of hemorrhagic transformation presents a significant clinical challenge, highlighting the need for careful, individualized management in these patients.

Biography

Dr Sara Ismail, working at Al-Sabah Hospital, department of medicine and Hematology in Kuwait. Sara Ismail graduated from University of Science and Technology-Sudan in 2012, had clinical MD in internal medicine at Sudan Specialization Board in 2021 and cleared full MRCP-Edinburgh in 2024.

Dr. Seena Darwin Nirmala
Southend University Hospital, United Kingdom

Beyond peptic ulcer: A rare complication of dual antiplatelet therapy

Dual Antiplatelet Therapy (DAPT) is widely used for secondary prevention following acute coronary syndrome and percutaneous coronary intervention. Gastrointestinal bleeding is a known complication of DAPT, typically due to peptic ulcer disease or gastritis. However, oesophageal haematoma is a rare and under-recognised cause of Upper Gastrointestinal Bleeding (UGIB) in this setting. We are presenting a case of 65-year-old woman who attended accident and emergency department with chest pain, vomiting, and haematemesis, six months after undergoing PCI and commencing DAPT. Initial investigations raised suspicion for acute coronary syndrome as she presented with chest pain, but coexistent persistent gastrointestinal symptoms prompted further evaluation. Esophagogastroduodenoscopy revealed a large oesophageal haematoma extending to the gastroesophageal junction. Contrast-enhanced CT confirmed a non-perforated lesion without mediastinal air. Clopidogrel was discontinued, and the patient was managed conservatively with intravenous proton pump inhibitors. Follow-up endoscopy demonstrated complete resolution of the haematoma. This case illustrates an uncommon but important complication of antiplatelet therapy and reinforces the need for diagnostic vigilance in patients presenting with atypical gastrointestinal symptoms while on DAPT. Individualised management and multidisciplinary input are key to achieving optimal outcomes.

Categories: Cardiology, Gastroenterology.

Keywords: Clopidogrel, Percutaneous Coronary Intervention, Chest Pain, Gastrointestinal Bleeding, Dual Antiplatelet Therapy, Oesophageal Haematoma.

Biography

Dr. Seena Darwin Nirmala is a medical doctor at Southend University Hospital with a clinical interest in cardiology and acute cardiovascular care. Dr. Darwin has been actively involved in case-based research, national audits, and service development projects, and is particularly interested in advancing diagnostic strategies for atypical ACS presentations and improving patient-centred outcomes through multidisciplinary approaches.

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Antibodies with functionality as a new generation of translational tools designed to monitor autoimmune myocarditis at clinical and subclinical stages

Catalytic Abs (catAbs) are multivalent Immunoglobulins (IGS) with a capacity to hydrolyze the Antigenic (AG) substrate. In this sense, proteolytic Abs (Ab-proteases) represent Abs to provide proteolytic effects. Abs against Cardiac Myosin (CM) with proteolytic activity exhibiting targeted cleavage of CM molecule are of great value to monitor stages of autoimmune inflammation in patients with Autoimmune Myocarditis (AIM) and persons-at-risk.

AIM is just one of the chronic organ-specific autoimmune diseases resulting in a destruction of cardiac tissue by different tools, including highly aggressive and destructive autoAbs. Some

of these autoAbs may also have a functional role in patients, as suggested by in vitro data as well as by preliminary clinical observations, though further work is in progress to clarify this important issue. And along with canonical Abs, some of the families proven to occur are Abs possessing with catalytic (proteolytic) activity (catAbs or abzymes) and thus to belong to Abs with a feature of functionality! Such Ab-proteases have been found in a series of autoimmune disorders, including multiple sclerosis, autoimmune thyroiditis, etc.

The unique clinical case is a family of Ab-proteases detectable in AIM to cleave CM. Of great interest is the evolution of Ab-associated proteolytic activity at different stages of the disease progression. The activity of Ab-proteases was registered at the subclinical stages 4-12 months prior to the clinical illness. The activity of the Ab-proteases revealed significant correlation with scales of autoaggression and the disability of the patients with AIM as well. So, the activity of Ab-proteases and its dynamics tested would confirm a high subclinical and predictive value of the tools as applicable for monitoring protocols.

So, further studies on Ab-mediated CM degradation and other targeted Ab-mediated proteolysis may provide biomarkers of newer generations to monitor and to treat AIM patients at clinical stages and to prevent the disorder at subclinical stages in persons-at-risks to secure the efficacy of regenerative manipulations and for assessing the disease progression and predicting disability of the AIM patients and persons-at-risks.

Biography

Sergey Suchkov was born in the City of Astrakhan, Russia, in a family of dynasty medical doctors. In 1980, graduated from Astrakhan State Medical University and awarded with MD. In 1985, maintained his PhD as a PhD student of Sechenov University and

Institute of Medical Enzymology. In 2001, maintained his Doctor Degree at the National Institute of Immunology, Russia. From 1989 through 1995, was a Head of the Lab of Clinical Immunology, Helmholtz Eye Research Institute in Moscow. From 1995 through 2004 - a Chair of the Dept for Clinical Immunology, Moscow Clinical Research Institute (MONIKI). Currently, Dr. Sergey Suchkov, MD, PhD, is a professor at the Russian University of Medicine in Moscow. He is also an active member of several prestigious organizations, including the Russian Academy of Natural Sciences, the New York Academy of Sciences, the American Chemical Society (ACS), the American Heart Association (AHA), the European Association for Medical Education (AMEE), and the European Association for Predictive, Preventive and Personalized Medicine (EPMA).

Dr Sneha George

University Hospital of Derby and Burton NHS Trust, Burton, United Kingdom

Clinical characteristics and one-year outcomes in patients with cardiac amyloidosis: A case series

Introduction: Systemic Light-Chain (AL) amyloidosis, a rare protein misfolding disorder, causes organ dysfunction through amyloid fibril deposition, notably in the heart. Early diagnosis is challenging due to nonspecific symptoms, requiring specialized tests like serum Free Light Chain (FLC) assays. This case series reports the clinical profiles, diagnostic findings, and one-year outcomes of 6 systemic amyloidosis patients who presented to a tertiary Cardiology centre, highlighting AL amyloidosis complexity.

Materials and Methods: Six patients diagnosed with AL amyloidosis (January 2021–December 2022) at a tertiary centre in Kerala, India, were studied. Data from medical records included demographics, comorbidities, symptoms, organ involvement, laboratory findings (FLC, NT-proBNP, troponin), and treatment outcomes. Descriptive statistics summarized characteristics. Ethical guidelines were followed, with informed consent obtained.

Results: Patients (median age: 58 years, four females, 2 males) presented with congestive cardiac failure (n=2), arthralgia, weight loss, ventricular tachycardia, or malena. Cardiac involvement was evident in all patients (NT-proBNP: 553–>25,000 pg/mL). FLC assays showed abnormal kappa/lambda ratios, confirming AL amyloidosis. Organ involvement included liver, kidneys, and gastrointestinal tract. Four patients tolerated CyBorD-based chemotherapy, one received autologous stem cell transplantation, all on maintenance therapy at one-year follow-up. Two with advanced cardiac disease died. Diagnostic delays (2 months–2 years) correlated with poorer outcomes.

Conclusion: This series underscores AL amyloidosis's heterogeneity and diagnostic challenges. Early FLC-based diagnosis is critical. Advanced cardiac involvement predicts poor prognosis. Novel therapies like daratumumab warrant further exploration to enhance survival.

Biography

Dr George graduated from JSS Medical College, India, in 2020 and currently works as a Resident doctor in General Medicine in the East Midlands, United Kingdom. She has years of experience in Cardiology and has a keen interest in research and quality improvement.

M. Sofra[1*], P. Tseke[3], E. Frangou[1,2], V. Athanasiadou[1], E. Grapsa[1]

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Correlation of troponin and homocysteine levels with coronary artery disease in patients on hemodialysis - A preliminary study

Background and Aims: The aim of this study is to investigate the association of troponin and homocysteine levels with coronary artery disease and the cardiovascular risk in patients with End Stage Kidney Disease (ESKD).

Methods: 50 patients on HD>6 months (mean duration 31 months), 30 males (60%) and 20 females (40%) with mean age 67.6 years±13,21 were included. The patients were divided into two groups based on the presence or absence of Coronary Artery Disease (CAD). Serum troponin and homocysteine levels were correlated with normal laboratory values and among themselves.

Results: Troponin levels were found elevated in 36% and homocysteine in 78% of patients. There was a positive correlation between troponin and age (spearmans rho 0.27, p=0.04) while elevated homocysteine levels did not appear to be related to the age of the patients (p=0.6). A positive correlation between homocysteine and troponin levels (p=0.006) was observed in both patients with and without CAD. In addition, the change in homocysteine was positively related to the change in troponin levels (p=0.02, r=0.32). The frequency of pathological troponin levels was significantly higher in women than in men (chi-square, p<0.001). Additionally, troponin levels were higher in patients with CAD (p=0.007) while homocysteine levels were higher in patients without CAD (p=0.04).

Conclusions: Troponin appears to correlate positively with homocysteine in both patients with and without CAD. Patients with CAD have elevated troponin levels while quaintly patients without CAD have elevated homocysteine levels. Men appear to have a lower risk of abnormal troponin levels than women. Further analyses with more patients will take place in order to confirm or not our preliminary findings.

Biography

Dr. Maria Sofra graduated from the Medical School of the University of Crete in 2018. Dr. Maria is currently in the third year of her residency in Nephrology and in the second year of her PhD studies at the Medical School of the National and Kapodistrian University of Athens. Her doctoral research focuses on The impact of troponin and homocysteine levels on the cardiovascular system of end-stage chronic kidney disease patients undergoing hemodialysis, and the association between them. In February 2025, she obtained her Master's degree from the Medical School of the Aristotle University of Thessaloniki. Her postgraduate thesis was titled The Interaction Between the Immune System and Kidney Disease: A Translational and Clinical Approach. Although she has not yet published scientific articles, Dr. Maria is actively involved in clinical research and aims to contribute to the scientific community through future publications.

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Correlation of homocysteine levels with lipid profile and coronary artery disease in patients with chronic kidney disease under hemodialysis - Preliminary findings

Background and Aims: Patients with End-Stage Chronic Kidney Disease (ESRD) exhibit disturbances in protein and amino acid metabolism and elevated homocysteine levels. The latter has been implicated as an independent risk factor for cardiovascular events in these patients. The aim of the present study is to correlate homocysteine levels with lipid profile and cardiovascular events in patients with ERSD.

Methods: 50 patients with ERSD on hemodialysis for>6 months, 30 men (60%) and 20 women (40%) with a mean age 67.6 years±13.21 were included. The main underlying diseases were hypertensive nephrosclerosis (30%) and diabetic nephropathy (22%). Patients were divided into two groups according to the presence or absence of coronary artery disease (CAD) and based on receiving or not hypolipidemic treatment and folic acid. Serum homocysteine levels were correlated with normal laboratory values, total cholesterol, triglycerides, HDL and LDL cholesterol levels.

Results: Homocysteine levels were found elevated in 78% of patients. Over the course of a year, an upward trend of homocysteine levels was observed regarding normal values (1st measurement: 21.8%, 2nd measurement: 26.6%, 3rd measurement: 29.6%). Men appeared to have higher homocysteine levels than women, but the difference was not statistically significant (p=0.17). Homocysteine levels were found to be elevated in patients without CAD compared to those with CAD (p=0.04). A positive correlation between homocysteine levels and total cholesterol (p=0.01) and LDL (p=0.007) was observed in both CAD and non-CAD patients. In addition, homocysteine levels in patients receiving hypolipidemic treatment were higher than in patients not receiving it (p=0.04). There was no statistically significant difference in homocysteine levels between patients receiving or not receiving folic acid (p=0.94).

Conclusions: Homocysteine levels were found to be elevated in a high percentage of patients but surprisingly there was no statistically significant equivalence with CAD while the correlation with cholesterol and LDL cholesterol levels was statistically significant in both groups. Our findings are contradictory based on classical knowledge, and due to the fact that are preliminary with a relatively small number of patients, further study is necessary in order to confirm our findings.

Biography

Dr. Maria Sofra graduated from the Medical School of the University of Crete in 2018. Dr. Maria is currently in the third year of her residency in Nephrology and in the second year of her PhD studies at the Medical School of the National and Kapodistrian University of Athens. Her doctoral research focuses on “The impact of troponin and homocysteine levels on the cardiovascular system of end-stage chronic kidney disease patients undergoing hemodialysis, and the association between them.” In February 2025, she obtained her Master’s degree from the Medical School of the Aristotle University of Thessaloniki. Her postgraduate thesis was titled “The Interaction Between the Immune System and Kidney Disease: A Translational and Clinical Approach.” Although she has not yet published scientific articles, Dr. Maria is actively involved in clinical research and aims to contribute to the scientific community through future publications.

Dr. Kevin Dsouza, Dr. Srijana Baral*, Dr. Usman Khatana, Dr. Asim Fida

Bedford Hospital, United Kingdom

From uncertainty to clarity: Improving the acute management of hypertensive urgency to reduce cardiovascular pathologies

Introduction: Hypertensive urgency, defined as BP≥180/120 mmHg without acute end-organ damage, is often mismanaged due to confusion with emergencies. This project assessed frontline staff knowledge to identify educational gaps and improve adherence to NICE and cardiovascular disease prevention guidelines in the acute management of hypertensive urgency.

Method: A retrospective audit was conducted in March 2025, reviewing patients presenting with severe asymptomatic hypertension in December 2024 and January 2025. An anonymised electronic survey was distributed to junior doctors, physician associates, and clinical fellows assessing their knowledge on BP thresholds, investigation, fundoscopy, and pharmacological management in the context of hypertensive urgency.

Results or details of the Case Report: Thirty-nine responses were analysed. While 87% of respondents correctly identified hypertensive emergencies, significant variation existed in medication selection for high-risk scenarios (e.g., suspected pheochromocytoma, pregnancy, cardiovascular risk, stroke risk). A retrospective audit was conducted in March 2025, reviewing patients presenting with severe asymptomatic hypertension in December 2024 and January 2025. An anonymised electronic survey was distributed to doctors assessing their knowledge on BP thresholds, investigation, fundoscopy, and pharmacological management in the context of hypertensive urgency.

Conclusion: Key educational gaps were identified in the recognition and safe management of hypertensive urgency. Planned interventions include a cardiovascular disease-focused educational poster and treatment algorithm, alongside fundoscopy workshops and targeted teaching sessions. These tools aim to support timely, safe decision-making and reduce preventable cardiovascular disease risk in frontline settings.

Biography

Srijana Baral has studied MBBS from Gandaki Medical College, Tribhuwan University, Nepal. Currently, She is working in the Department of Medicine in Bedford Hospital UK. She is interested in research and cardiology.

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A comprehensive literature review discussing diagnostic challenges of prinzmetal or vasospastic angina

Objectives: This review explores the diagnostic challenges of Vasospastic Angina (VSA) or Prinzmetal Angina by summarizing current methods, limitations, and advancements that support timely and accurate diagnosis.

Methods: A narrative review of peer-reviewed studies published in the last 10 years was conducted using PubMed and other reputable scientific sources. The discussion focuses on clinical features, diagnostic tools, and guideline-based approaches for VSA and Ischemia with Non-Obstructive Coronary Arteries (INOCA), emphasizing invasive, non-invasive, and emerging modalities, as well as patient-specific diagnostic complexities.

Results: VSA is frequently misdiagnosed due to its episodic nature and overlapping features with acute coronary syndromes. Acetylcholine or ergonovine provocation testing remains the gold standard, though underutilized due to procedural variability and accessibility issues. Non-invasive options like PET, cardiac MRI, OCT and ambulatory ECG show promise but yield inconsistent results. Diagnostic interpretation is complicated by age, sex, symptom variability, and comorbidities. New tools such as AI-based ECG analysis, microRNA profiles, and inflammatory biomarkers are showing potential to refine diagnosis and stratify risk.

Conclusion & Relevance: Improvement in VSA diagnosis requires harmonized testing protocols, increased use of coronary function testing, and integration of advanced imaging, AI, and novel biomarkers. Recognizing atypical symptoms, especially in women and younger patients, is essential to reduce misdiagnosis and improve outcomes.

Biography

Srijana Baral has studied MBBS from Gandaki Medical College, Tribhuwan University, Nepal. Currently, She is working in the Department of Medicine in Bedford Hospital UK. She is interested in research and cardiology.

Trevor Tucker
T Tucker Inc, Canada

Doppler ultrasound measurement of arterial stiffness

The stiffening of arteries has been widely recognized as a major contributor to cardiovascular diseases and all-cause mortality. Arterial stiffening has significant association with arteriosclerosis and atherosclerosis development. In spite of the world-wide recognition, arterial stiffness is rarely measured in clinical practice. Arterial stiffness is currently measured primarily in pharmaceutical trials and research laboratories.

The most common index of arterial stiffness is pulse wave velocity which requires the measurement of the time for a pressure pulse to transit between two pressure sensors normally located on widely separated arteries. Existing measurement techniques require specialized pressure sensors and are applicable only to shallow arteries located close to the skin surface. Existing techniques are time consuming and provide only non-localized measures of over-all stiffness of multiple cascaded arteries.

In contrast, Doppler ultrasonography technology is regularly used in clinical practice to quickly measure blood flow velocity at arterial locations located significant distances below the skin surface. A flow velocity waveform, measured by Doppler ultrasound, provides a measure of the artery's response to pulsatile flow, and quantifies the artery's stiffness by the artery's resonant frequency. Resonant frequency is applicable to a specific arterial location and is also directly related to the pulse wave velocity at the location. Resonant frequency is proposed here as a new index of arterial stiffness, one which has advantages over pulse wave velocity as currently measured. Resonant frequency can be measured quickly in clinical settings, and can measure stiffness in deep-set arteries at specific arterial locations.

Keywords: Arterial Compliance, Arterial Stiffness, Doppler Ultrasonography, Flow Velocity Waveform, Resonant Frequency

Biography

Dr Tucker's research focuses on the application of the physics of fluid dynamics to blood flow and cardiovascular diseases. Tucker has published on the role of blood flow in Cognitive Impairment, in Multiple Sclerosis, and in atherosclerotic development. His work includes generalizing the classic Murray Scaling Law to include arterial stiffness and to be applicable to microcirculation. The work reported in this presentation enables the quick and easy measurement of arterial stiffness in a clinical setting, a long sought goal in arterial stiffness research.

Umar Badshah
Saidu Teaching Hospital, Pakistan

A rare and fatal complication of dengue fever: Spontaneous coronary artery dissection

Dengue fever, a tropical disease characterized by fever, haemorrhagic manifestations, and organ impairment, can have rare and fatal complications. We report a case of Spontaneous Coronary Artery Dissection (SCAD), a rare but potentially fatal complication of dengue fever. We report a case of 45-year-old male presented with typical symptoms of dengue fever, was treated, and discharged. However, three days' post-discharge, he developed severe chest pain and was diagnosed with SCAD involving the mid-left anterior descending artery. He received dual antiplatelet, heparin, and guidelines-based treatment. Follow-up angiography after two weeks showed resolution of the dissection and stabilization of the patient. This case highlights the importance of recognizing rare but potentially fatal complications of dengue fever and the need for prompt diagnosis and intervention.

Keywords: Dengue Fever, Spontaneous Coronary Artery Dissection (SCAD), Rare Complication, Fatal Outcome.

Biography

Dr. Umar Badshah is a dedicated Resident Cardiologist at Saidu Teaching Hospital. A graduate of Gomal Medical College, has presented research papers at national conferences organized by the Pakistan Cardiac Society, earning recognition for his work. Dr. Badshah is an active member of the American College of Cardiology and the Heart Failure Association of the European Society of Cardiology. With six publications in national and international journals, then continues to contribute to the field of cardiology. Currently, Dr. Badshah is working on four research projects, further advancing his expertise. His passion for advancing cardiovascular care drives his academic and professional pursuits.

Usman Saleem*, Mostafa Abdulaziz*
University Hospital Birmingham, United Kingdom

Enhancing MINOCA care: A single-centre retrospective cohort study and quality improvement initiative at Frimley Health NHS Foundation Trust

Background: Myocardial Infarction with Non-Obstructive Coronary Arteries (MINOCA) is a diagnostic challenge, leading to inconsistent care and patient uncertainty. This Quality Improvement (QI) initiative aimed to establish a baseline of MINOCA management to justify and design a standardised diagnostic pathway within a UK NHS trust.

Methods: A retrospective cohort analysis was conducted at Frimley Park and Wexham Park Hospitals (July-December 2023). Patients with a working diagnosis of MINOCA or Angina with Non-Obstructive Coronary Arteries (ANOCA) were identified. Data on diagnostic investigations, including Cardiac Magnetic Resonance (CMR) completion rates, and final diagnoses were collected from electronic patient records.

Results: From 976 screened patients, 132 (13.5%) had MINOCA and 185 had ANOCA. The MINOCA cohort was 58% female. A definitive diagnosis was achieved in only 70% (93/132) of cases; 39 (30%) remained undiagnosed. Myocarditis (n=17) and Takotsubo cardiomyopathy (n=15) were the most common aetiologies. Of 59 planned CMRs, 50 (85%) were completed, and this investigation was pivotal in securing a diagnosis.

Conclusion: Baseline data revealed a high prevalence of MINOCA and a significant rate of diagnostic failure, underscoring an urgent need for a standardised pathway. These findings directly informed the development of a new, guideline-based diagnostic algorithm to improve diagnostic yield, guide appropriate therapy, and optimise resource utilisation within the NHS.

Keywords: MINOCA, ANOCA, Quality Improvement, Diagnostic Pathway, Cardiac MRI, NHS.

Biography

Usman Saleem, MD, is a dedicated Internal Medicine Trainee at Frimley Park NHS Foundation Trust. He earned his medical degree from the International Higher School of Medicine in Bishkek, Kyrgyzstan. With a keen interest in cardiology, Dr. Saleem's research and clinical focus lie in the subspecialties of interventional cardiology, TAVI (Transcatheter Aortic Valve Implantation), and arrhythmia in athletes. His work aims to contribute to the advancement of cardiovascular care and improve patient outcomes.

Xiaodi Ji*, Siyv Yan, Peipei Lu, Lihong Ma

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Atherogenic index of plasma as a risk stratification tool in patients with chronic coronary syndromes undergoing percutaneous coronary intervention

Background: The Atherogenic Index of Plasma (AIP) is a new indicator associated with abnormalities in lipid metabolism. This study aims to explore the relationship between AIP and the risk of Major Adverse Cardiovascular Events (MACE) in patients with Chronic Coronary Syndromes (CCS) who underwent Percutaneous Coronary Intervention (PCI).

Methods: This retrospective cohort study analysed 2274 patients grouped by AIP tertiles, utilizing clinical data collected at Fu Wai Hospital between September 2016 and August 2017. The primary endpoint was MACE, including repeat revascularization and in-stent restenosis. Kaplan-Meier curves, multivariate COX regression models and the restricted cubic spline were used to analyse the association between AIP and the risk of MACE. Receiver Operating Characteristic (ROC) was used to determine the optimal cutoff value for AIP to predict MACE.

Results: The mean age of the total population was 58.41±9.52 years, 1767 (77.70%) males. During a mean follow-up period of 60.45 months, a total of 1054 (46.35%) patients experienced MACE, 331 (31.4%) in AIP tertile 1 group, 335 (31.78%) in AIP tertile 2 group, and 388 (36.81%) in AIP tertile 3 group. The incidence of MACE escalated with higher AIP (P=0.001). After adjusting for age, sex, cigarette smoking, previous PCI, presence of peripheral arterial disease, presence of multivessel coronary artery disease, presence of re-stenotic lesions, calcification of target lesions, chronic total occlusions, and number of stents, AIP was independently associated with an increased risk of MACE (HR, 1.368; 95% CI 1.1029-1.713; P=0.006). Patients in the AIP tertile 3 group exhibited a 1.181-fold higher risk compared to the AIP tertile 1 group (HR, 1.181; 95% CI 1.018-1.371; P=0.028). A linear dose-response relationship was observed between AIP and the MACE (non-linear P=0.874, overall P=0.023). Moreover, ROC analysis suggested that the optimal cutoff value for AIP to predict the risk of MACE was 0.147.

Conclusions: These findings highlight a significant association between elevated AIP levels and increased risk of MACE, with an optimal prognostic cutoff value of 0.147. The results underscore the clinical utility of AIP as a practical and efficient tool for risk stratification in CCS patients undergoing PCI, emphasizing its potential integration into post-procedural management protocols to optimize prognostic evaluation and therapeutic decision-making.

Biography

Dr Xiaodi Ji majored in Integrated Chinese and Western Medicine Clinic at the Beijing University of Chinese Medicine in 2020, received her master's degree in 2023, and entered Fu Wai Hospital of the Chinese Academy of Medical Sciences and Peking Union Medical College for her PhD in the same year. Currently, under the supervision of Prof Lihong Ma, she focuses on the strategy of integrating Chinese and Western medicine in the prevention and treatment of cardiovascular diseases. Currently, Dr Xiaodi has published 4 SCI journals and 2 Chinese core journals as first author/co-author.

Xiaodi Ji*, Siyv Yan, Peipei Lu, Lihong Ma

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Chinese herbal medicine effectively improves the composite outcome of repeat revascularization and in-stent restenosis in chronic coronary syndromes patients undergoing percutaneous coronary intervention

Background: Chinese Herbal Medicines (CHM) are gaining attention as complementary and alternative therapies for cardiovascular diseases. This study aims to explore the efficacy and favourable population of CHM in reducing the risk of Major Adverse Cardiovascular Events (MACE) in patients with Chronic Coronary Syndrome (CCS) who underwent Percutaneous Coronary Intervention (PCI).

Methods: A prospective cohort study was conducted using cumulative CHM intake>6 months/year as the exposure factor, with the control group receiving Western medicine alone. Data were obtained from patients with CCS undergoing PCI between September 2016 and August 2017 at Fuwai Hospital. The primary endpoint was MACE, including repeat revascularization and In-Stent Restenosis (ISR). Kaplan-Meier and multivariate COX models were used to analyse the association between CHM and the risk of MACE.

Results: This study enrolled 2274 participants, comprising 1155 controls (median age 58 years [IQR 52.0, 64.0]; 78.3% male) and 1119 receiving integrative Chinese and Western medicine (ICWM; median age 59 years [IQR 52.0, 66.0]; 77.1% male). MACE occurred in 1054 patients, with significantly lower incidence in the ICWM group versus controls (42.8% [479/1119] vs 49.8% [575/1155]). ICWM intervention substantially reduced risks of MACE, repeat revascularization, and ISR (Log-rank test, P<0.001; P=0.0018; P=0.023). After adjusting for age, sex, body mass index, cigarette smoking, estimated glomerular filtration rate, hypersensitive c-reactive protein, prior PCI, presence of peripheral arterial disease, target lesion ≥20 mm, number of stents, compared with the control group, patients in the ICWM group had a 21.30% lower risk of MACE (95%CI: 0.696-0.891; P<0.001) and a 17.0% lower risk of repeat revascularization (95%CI: 0.730-0.942; P=0.004), with no significant difference in the risk of ISR (P=0.071). For the risk of MACE, there was an interaction of treatment strategy with prior PCI (P=0.003) and multivessel Coronary Artery Disease (CAD) (P<0.001). Patients with prior PCI receiving ICWM showed 40% lower MACE risk than the GDMT group (95% CI=0.49-0.74, P<0.001).

Conclusion: CHM is effective in reducing the risk of composite events of repeat revascularization and ISR in patients with CCS after PCI, and those with prior PCI and without multivessel CAD benefit more significantly.

Biography

Dr Xiaodi Ji majored in Integrated Chinese and Western Medicine Clinic at the Beijing University of Chinese Medicine in 2020, received her master's degree in 2023, and entered Fu Wai Hospital of the Chinese Academy of Medical Sciences and Peking Union Medical College for her PhD in the same year. Currently, under the supervision of Prof Lihong Ma, she focuses on the strategy of integrating Chinese and Western medicine in the prevention and treatment of cardiovascular diseases. Currently, Dr Xiaodi has published 4 SCI journals and 2 Chinese core journals as first author/co-author.

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The efficacy and safety of lower-dose aspirin for primary and secondary prevention of cardiovascular disease in the older adults: Interim analysis of a multicenter, prospective, observational study

Background: Although low-dose aspirin (75–100 mg/d) effectively reduces atherothrombosis occurrence in individuals diagnosed with Cardiovascular Disease (CVD) or in those with high-risk factors, it is significantly associated with increased bleeding. No evidence has been established for a lower dose of aspirin. This study aims to evaluate the efficacy and safety of a lower dose of aspirin for the prevention and management of CVD in Chinese older adults.

Methods: The Lower-dose Aspirin for Primary and Secondary Prevention of Cardiovascular Disease in the Elderly (LAPIS) is a multicenter, prospective, observational cohort study that compared the benefits and risks in adults aged 60 years and older taking aspirin 50 or 100 mg/day for primary and secondary CVD prevention in a propensity score-matched population. The efficacy outcome was a composite of the first occurrence of Major Adverse Cardiovascular Events (MACEs). The safety outcome was the first occurrence of hemorrhagic events.

Results: In this interim analysis of LAPIS, 7021 participants were followed up for a median of 363 days (primary prevention cohort, 2070; secondary prevention cohort, 4951). After adjusting for baseline characteristics using propensity score matching, the MACE incidence did not differ significantly between the two dosage groups in either cohort. However, in the primary prevention cohort, the incidence of any bleeding (8.89 vs. 3.45 events/100 patient-years, Hazard Ratio [HR] 2.917, 95% Confidence Interval [CI] 1.719-4.952, P<0.001) and gastrointestinal events (8.30 vs. 5.04 events/100 patient-years, HR 1.745, 95% CI 1.047-2.907, P=0.037) was higher in the 100-mg/day group. In the secondary prevention cohort, the 100-mg/day group showed higher rates of any bleeding (9.19 vs. 6.37 events/100 patient-years, HR 1.473, 95% CI 1.087-1.998, P=0.015), minor bleeding (9.10 vs. 6.06 events/100 patient-years, HR 1.541, 95% CI

1.116-2.127, P=0.009), and gastrointestinal adverse events (7.10 vs. 3.53 events/100 patient-years, HR 1.943, 95% CI 1.291-2.925, P=0.002).

Conclusions: Aspirin 50 mg/day was associated with lower hemorrhage and gastrointestinal adverse event risks, with similar cardiovascular benefits, compared with aspirin 100 mg/day, and may be preferred to balance efficacy and safety for older Chinese adults in primary and secondary CVD prevention.

Biography

Dr. Xiting Wang studied clinical medicine at the Peking University, China and graduated as MD in 2012. She then joined the research group of Prof. Meilin Liu at the Department of Geriatrics, Peking University First Hospital. She obtained the position of an associate chief physician at the Peking University First Hospital. She has published more than 10 original articles in SCI journals.

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Minimal invasive pediatric and adult congenital cardiac surgery

Full midline sternotomy remains the most common incision to correct congenital cardiac defects. Although many minimal invasive programs exist for the adult population worldwide, only a few centers have adopted such a program for the pediatric population. The rise of novel interventional cardiology techniques and the main advantages of earlier recovery and cosmesis, have prompted some groups to explore alternative approaches to median sternotomy. However, the steep learning curve and technical difficulties associated with minimally invasive procedures have discouraged many surgeons to opt for this approach as their new Gold Standard. Few reports have been published on starting such a program and in our opinion, the success is dependent on a step-by-step approach with attention to the full cycle of care. This includes preoperative awareness and screening to postoperative care where many reluctancies might be present based on inexperience and mostly fear of the unknown. We already have extensive minimal invasive surgical experience in the (congenital) adult population and used this knowledge when designing and developing the minimal invasive children's program.

The presentation addresses specific conditions to correct minimally invasive, central cannulation possibilities, mid-axillary approach and optimal post-operative pain management. Minimal invasive pediatric surgeries are performed in our center starting from 5kg and encompass ASDII closure, partial abnormal venous return, partial AVSD to VSD closure without residual defects, no conversions and no other comorbidities. All cases were discharged around day 4 with a maximum stay of 1 night at the ICU. Pain management was optimized where early full mobilization was key.

Biography

Dr. Y. Taverne currently work as a pediatric and adult congenital cardiothoracic surgeon and cardiac morphologist at the department of Cardiothoracic Surgery at the Erasmus MC, Rotterdam, The Netherlands. As a clinical epidemiologist and associate professor, he is leading the Translational Cardiothoracic Surgery Research Lab. His surgical focus encompasses minimally invasive (pediatric) procedures, cardiac transplantation including ex-situ heart perfusion, and Ross surgery. His research focusses on excitation-contraction coupling with strong interest in Congenital Heart Disease (CHD) and heart failure. Current projects include RV form and function in (CHD), ex-situ heart perfusion and living myocardial slices in a biomimetic culture system.

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Yasser's stressor test (fear and calm test) and triphasic Yasser's stressor syndrome (fear, calm, and fear syndrome) - A new cardiovascular discoveries and psychogenic stress test with possible coronary artery spasm-case series

Aim of the study: The study is aimed to clear the cycle effect of fear or anxiety and calm or reassurance on electrocardiographic ST-segment depression in patients present with angina with possible coronary artery spasms.

Background: Anxiety and fear have undoubted hazardous effects on cardiovascular disorders. The effect on the coronary artery may be the most significant. The coronary artery spasm is an established cardiovascular disorder that can affect the ST segment with either depression elevation or both. It can end with vascular occlusion or near-occlusion and possibly coronary heart disease and sudden death.

Method of study and patients: My case study was an observational-retrospective 50 case report series. The study was conducted in Kafr El-Bateekh Central Hospital and physician outpatient clinic. The author reported 50 cases of resting acute angina with reversal and cyclic electrocardiographic ST-segment depression over about 44 months, starting on December 09, 2019, and ending on July 18, 2023.

Results: The mean age in the current study is; 50.7 in the range; of 18-82 years, with a female sex predominance (52%). Housewives (34%) and farmers (26%) are the most affected occupations. The main complaint is angina (84%) followed by angina with palpitations (10%). The most common associated risk factors in the study are combined risk factors (56%) followed by single risk factors (44%). The Mean of elapsed time between stage I and II/sec (only group I) is 66.65 in a range; of 17-250 years. The response was complete (only group I; 40%), Partial (only group I; 12%), and Absent (only group II; 48%).

Conclusions: Yasser's Stressor test is a new cardiovascular discovery and psychogenic stress test targeting the ST-segment passing two stages in the form of fear and calm (fear-calm stressor test). Triphasic Yasser's syndrome is a sequel and constellation of the vicious cycle of Yasser's Stressor test passing three stages in the form of fear, calm, and fear (fear-calm-fear

Yasser's syndrome). Coronary artery spasm is a possible pathogenesis for interpretation. Both Yasser's Stressor test and its subsequent Triphasic Yasser's syndrome are easy, simple, cheap, and safe non-invasive exercise tests.

Keywords: Stress Test, Coronary Artery Spasm, Ischemic Heart Disease, Triphasic Yasser's Syndrome, Yasser's Stressor Test, Fear, Fear-Calm Stressor Test, Fear-Calm-Fear Yasser's Syndrome, Psychiatry.

Biography

Dr. Yasser Mohammed Hassanain Elsayed; A scientist, critical care physician, cardiologist, and independent researcher at Egyptian Ministry of Health. Publicized articles; (140). Innovations (14); (3) Signs, (4) Phenomena, (1) Modification, (1) Maneuver, (1) Method, (1) Test, (2) Syndrome, and (1) Yasser's Fibrillation. Speaker (International conferences); (27). Reviewer; (258) articles for (87) Journals. Honorable editor; (272) Journals. International Conferences OCM; (10). Instructor; (10) official and (100) non-official. COVID-19 publicized articles; (46). Prizes nomination; Breakthrough Prize, Einstein Prize, Abdul Hameed Showman Award for Arab Researchers, and ESICM Awards. Excellence certificate (more than 134).

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The difference between cystatin C-and creatinine-based estimated glomerular filtration rate may predict the long-term risk of aortic aneurysm/aortic dissection: A cohort study of the UK biobank

Importance: There is a lack of effective and easy-to-use tools for assessing the risk of Aortic Aneurysm/Aortic Dissection (AA/AD) and related adverse events in community populations. The impact of the difference between cystatin C-and creatinine-based Estimated Glomerular Filtration Rate (eGFRdiff) on AA/AD remains unclear.

Objective: To examine the association between eGFRdiff and the risk of AA/AD to improve early prediction of this fatal event.

Design, Setting, and Participants: This prospective cohort study included 376,512 participants from the UK Biobank enrolled at baseline between 2006 and 2010.

Exposures: eGFRdiff was calculated using both the absolute difference (eGFRabdiff) and the ratio (eGFRrediff) between cystatin C-and creatinine-based eGFR estimates.

Main Outcomes and Measures: The primary outcome was AA/AD. The secondary outcome was defined as AA/AD-related mortality. Incident was ascertained through linked electronic health records.

Results: During a median follow-up of 13 years, 3,423 participants experienced AA/AD, and 1334 developed VA. In the multivariable-adjusted model, long-term risk of AA/AD was significantly higher among individuals with eGFRabdiff <–15% compared with the moderate group (HR, 1.255[95% CI, 1.166-1.351]). Using eGFRrediff ≥0.6 as reference, subjects with eGFRrediff<0.6 demonstrated elevated AA/AD risk (HR, 1.621[95% CI, 1.078-1.135]). Similar results were observed for the secondary outcome of AA/AD-related mortality. Each 1-SD decrease in eGFRabdiff increased risks of AA/AD (HR,1.167[95% CI, 1.124-1.211]) and AA/AD-related mortality (HR, 1.256[95% CI, 1.184-1.332]). Similarly, every 10% decrease in eGFRrediff elevated risks of AA/AD (HR, 1.106[95% CI 1.078-1.135]) and AA/AD-related mortality (HR, 1.145[95% CI, 1.100-1.193]). These associations remained consistent across all sensitivity analyses.

Conclusions and Relevance: A greater negative eGFRdiff value was independently associated with higher risks of AA/AD and AA/AD-related mortality. Our study demonstrates that longitudinal eGFRdiff monitoring in community populations may represent a novel, clinically feasible approach for early identification of individuals at heightened risk of AA/AD and its associated mortality.

Biography

Dr. Zeyu Wang is currently pursuing her Doctor of Medicine (MD) degree in Cardiovascular Medicine at Fuwai Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College. Her research focuses on various aspects of cardiovascular medicine, including atherosclerosis and cardiac electrophysiology. To date, she has published over 10 research articles in peer-reviewed SCI-indexed journals.

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Miniaturized living myocardial slices derived from pediatric tetralogy of fallot specimens: A novel platform for investigating contractile performance and pharmacological interventions

Congenital Heart Disease (CHD) continues to pose significant challenges in paediatric cardiology, and Tetralogy of Fallot (ToF) stands out as a condition in need of improved translational models. Traditional in vitro and animal-based systems provide valuable insights but often fail to capture the native three-dimensional architecture, biomechanical complexity, and functional responsiveness of human myocardium—key factors critical for understanding contractile mechanics and evaluating therapeutic interventions.

Living Myocardial Slices (LMS) are thin (~300 µm) viable sections of human cardiac tissue and have emerged as a novel platform for studying biomechanical profiles of myocardium under conditions that closely approximate the native state. We previously demonstrated that miniaturized LMS (mini-LMS) can be generated from adult cardiac tissues, enabling reliable measurements of contractile function and pharmacological responses even when only small tissue specimens are available.

In this study, we applied the mini-LMS technique to paediatric myocardial specimens obtained during surgical repair and reoperations of ToF. These mini-LMS maintained stable contractile properties for several days in culture, enabling detailed measurements of force generation and relaxation dynamics, and other parameters central to understanding excitation-contraction coupling. Moreover, pharmacokinetic profiles could be examined on patient-specific tissue maintaining disease phenotype. Histological and mathematical modelling confirmed that the miniaturization process preserved key biomechanical characteristics and overall tissue integrity. Moreover, we performed direct comparisons between paediatric ToF-derived mini-LMS and adult LMS—both from failing hearts and from adult congenital heart disease specimens—and identified distinct contractile and pharmacological response profiles among these groups.

This is the first demonstration that paediatric mini-LMS can be derived from ToF specimens and directly compared with adult-derived LMS, providing a new, physiologically relevant in vitro model to investigate disease-specific myocardial function. By establishing these differences, more targeted therapeutic strategies can be distilled and ultimately improve outcomes for children with ToF.

Biography

Mr. Zhou received his MD from Saint Petersburg First State Medical University, Russia. Mr. Zhou is currently pursuing his PhD in the Translational Electrophysiology and Translational Cardiothoracic Surgery Laboratory at Erasmus MC, Rotterdam, under the supervision of Dr. Yannick J. H. J. Taverne and Prof. N.M.S. de Groot. His research focuses on pediatric congenital heart disease, employing a range of translational models—including Living Myocardial Slices (LMS) and electrophysiological approaches—to investigate disease-specific biomechanical and electrical properties. By integrating multiple cutting-edge in vitro models. Mr. Zhou aims to advance our understanding of congenital heart defects and contribute to the development of more effective, patient-tailored therapies.

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POSTER PRESENTATIONS

Dr. Arva Zahid*, Dr. Muhammad Abubakar, Dr. Amna Ahsan, Dr. Aqib Gultasib, Dr Saboor Zulfiqar, Dr Anum Amjad, Dr. Muhammad Daniyal, Dr Muhammad Mansour

University Hospitals Birmingham, United Kingdom

Use of SGLT2-i in treatment of established Coronary Artery Disease (CAD) in diabetic patients

Introduction: To optimise patinet outcomes the National Instituite of Health and Care Excellence (NICE) has issues guidelines in Aug, 2022 recommending use of Sodium Glucose Co Transporter Inhibitor (SGLT-2i) in diabetic patients with established atherosclerotic coronary artery disease. Similar suggestions are given in European Society of Cardiology (ESC) 2023 guidelines 1 and American College of Cardiology (ACC) 2025 guidelines 2 emphasizing the use of Glucagon Like Peptide Receptor Agonist (GLP-1RA) and/or SGLT2-i in diabetic population.

Aim: This audit was done to make sure that patients presenting with Acute Coronary Syndrome (ACS) are screened for diabetes mellitus and if their Coronary Angiogram (CA) shows significant coronary artery disease and they are diabetic, then they receive SGLT2-i irrespective of their target HbA1c.

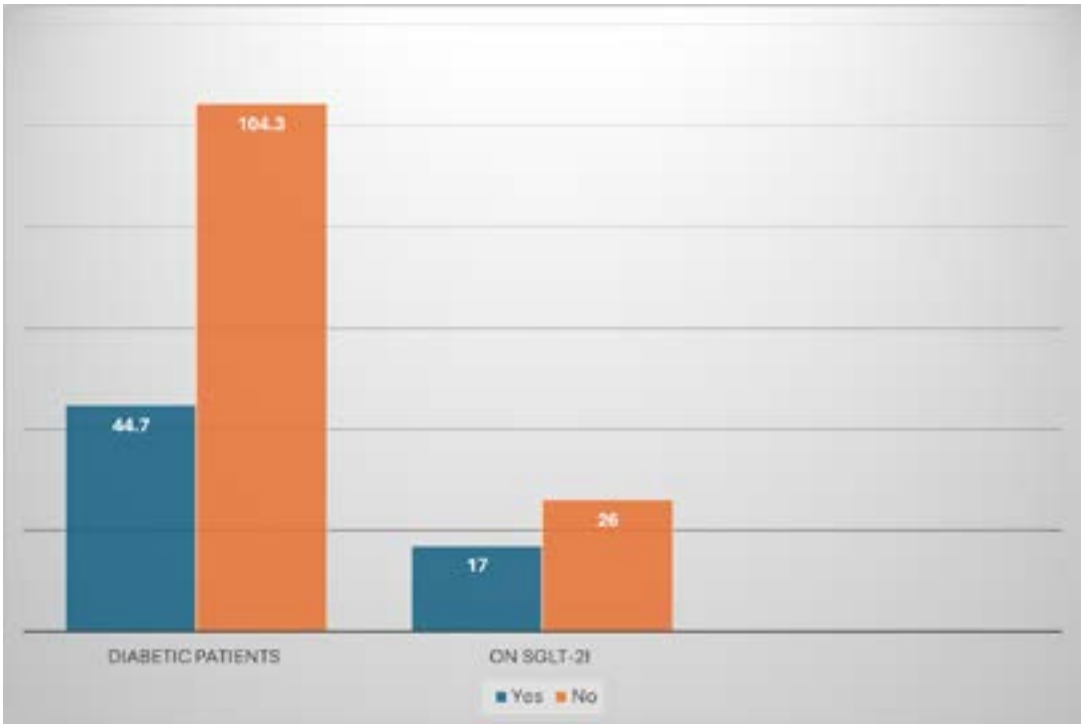
Methodology: The study is an observational retrospective analysis done on the patients who have undergone coronary angiogram or Percutaneous Coronary Intervention (PCI) between November 2024 – January 2025. Inclusion criteria were set to include patients having evidence of CAD on CA. Data was collected using electronic records including keeping system and clinic letters. Data was analysed using Microsoft Excel.

Key Findings: We found out that out of 149 patients, 66% (n=99) were screened for DM during the hospital stay. And out of those 66% screened patients, 30.3% (n=30) patients had their HbA1c in diabetic range, which was quite significant. Pooled analysis showed that total diabetic patients made 30% (n=44.7) of the study population and out of them SGLT2-i was prescribed to only 42% (n=17), which also included the patients who were already on SGLT2-i. Regardless, 58% (n=26) diabetic patients were not considered for SGLT2-i, neither as in-patient nor recommended as out-patient on discharge summary.

Conclusions: As such, in patients with diabetes and Atherosclerotic Cardiovascular Disease (ASCVD), treatment with Glucagon Like Peptide Receptor Agonist (GLP-1RA) and/or SGLT2-i is recommended to reduce cardiovascular risk, independent of glucose control and in addition to standard of care, e.g. Antiplatelet, anti-hypertensive, or lipid-lowering therapy. This Audit

shows that we are not fully screening the patients for a major risk factor of CAD and with regards to consideration of starting patients on SGLT-2i, there is a room for improvement.

Recommendations: We should make sure to screen patients with established CAD for diabetes and if their HbA1c is in diabetic range and there are no contraindications to start SGLT2i then they should be offered SGLT2-i as a guideline directed treatment.



Biography

Dr. Arva Zahid is an International Training Fellow in the Cardiology Department at Birmingham Heartlands Hospital. She has been passionate about cardiology since the age of seven, long before she understood the dedication and hard work the specialty demands. Today, she is committed to building a long-term career in cardiology, with a particular focus on developing specialist expertise and contributing to advancements in cardiovascular care. In her current role, she is gaining broad experience across a diverse clinical setting while working toward improving patient outcomes and through her strong interest in research she is always exploring opportunities that advance knowledge and practice in cardiology.

Ayushi Mohan* M.D, Krishna Theja Reddy M.D, Srivaibhav Reddy M.B.B.S, Mrudula Munagala M.D

New York Medical College, United States

Heart transplantation - A beacon of hope for patients with end stage cardiomyopathy due to fabry disease: A systematic review

Introduction: Fabry Disease (FD) is a rare X- linked disorder caused by the mutation in α-galactosidase a gene. End-stage cardiomyopathy is the leading cause of death among these patients. Heart Transplant (HT) emerges as a viable therapeutic option when Enzyme Replacement Therapy (ERT) proves to be insufficient or ineffective.

Method: Pubmed database was searched using keywords Fabry Disease and Cardiac Transplantation from 1970 to 2024. All relevant case reports were included.

Results: 5 relevant case reports (N=6) were included in this systematic review out of which all patients post-cardiac transplant for FD had good long term outcomes and quality of life. Verocai et. al. (N=1) described a FD female who was still alive at 14 years post-HT with no evidence of recurrence in any of the Endomyocardial Biopsies (EMB). Tran Ba et. al. (N=2) described two brothers who underwent combined heart and kidney transplant at respectively 49 and 42 years of age. Both showed no recurrence of disease at respectively 4 and 9 years after transplantation. Rajagopalan et. al. (N=1) described a 62 Y.O M who underwent heart and renal transplantation for advanced cardiomyopathy and nephropathy secondary to FD. At 6 months, he reported dyspnea on exertion and a diagnosis of constrictive pericarditis was made with biopsies showing no evidence of disease recurrence. Symptoms resolved completely after pericardiectomy and he did well for several years post-transplantation. Karras et. al (N=1) described a 40 Y.O M who had worsening LV mass despite 12 months of ERT. He underwent combined heart and kidney transplant and had marked improvement in clinical status. At his 2 year evaluation, he showed no signs of deterioration. Cantor et. al (N=1) described a 53 Y.O F who did well after HT for end stage restrictive cardiomyopathy secondary to FD. Her EMB upto one year post-transplant did not show any inclusions suggestive of FD recurrence.

Conclusion: FD is an uncommon indication for heart transplantation. The cases described provide substantial evidence that HT can provide a new chance to these patients with extremely high cardiovascular mortality. More research is required to study the long term success of HT in end-stage cardiomyopathy FD population.

Biography

Dr. Ayushi Mohan, MD is a dedicated and compassionate physician currently pursuing her M.D, at New York Medical College. She trained at Kasturba Medical College, India for her medical school. Throughout her medical journey, Dr. Mohan has demonstrated a strong commitment to clinical excellence, research, and community service. Dr. Mohan is also highly involved in academic research, with multiple publications in top-tier journals such as Circulation, Journal of Cardiac Failure, and Journal of American College of Cardiology. Her research spans various cardiovascular topics, including myocardial infarction, heart failure therapies, and cardiac transplantation. Dr. Mohan has been an active contributor to numerous peer-reviewed abstracts and has presented her findings at major medical conferences, a proactive volunteer. Dr. Mohan has contributed to several initiatives, including organizing educational campaigns on COVID-19, heart disease awareness, and basic life support training. Has also been recognized with awards for her volunteerism, including the Corona Warrior recognition from the Delhi Government for her work during the pandemic. Outside of medicine. Dr. Mohan is passionate about soccer, pickleball, poetry, playing the piano, and dancing. Also, an advocate for resident wellness, serving in various leadership roles to promote fitness, social engagement, and work-life balance within her residency program.

Ayushi Mohan* M.D, Laura Hernandez Perez M.D, Wassim Abouzeid M.D, Yazeed A. Ruman M.D, Arush Rajotia M.D, Aishwariya Chandra M.D, Palak Patel M.D, Krishna Theja Reddy M.D, Iyad Farouji M.D, Addi Suleiman M.D

New York Medical College, United States

Impact of Sodium Glucose Co-transporter-2 Inhibitors (SGLT-2i) use on hospitalization rate and length of stay in Heart Failure with Reduced Ejection Fraction (HFrEF) patients: A retrospective analysis

Introduction: Heart Failure (HF) affects more than 64 million people worldwide and has a significant effect on morbidity, mortality and healthcare costs. Sodium Glucose Co-Transporter-2 Inhibitors (SGLT-2i) are known to reduce cardiovascular deaths and hospitalizations due to HF, regardless of the presence of Diabetes Mellitus (DM). In this study, we aim to identify the effects of SGLT-2i on HF hospitalizations and Length of Stay (LOS) in Heart Failure with Reduced Ejection Fraction (HFrEF) patients.

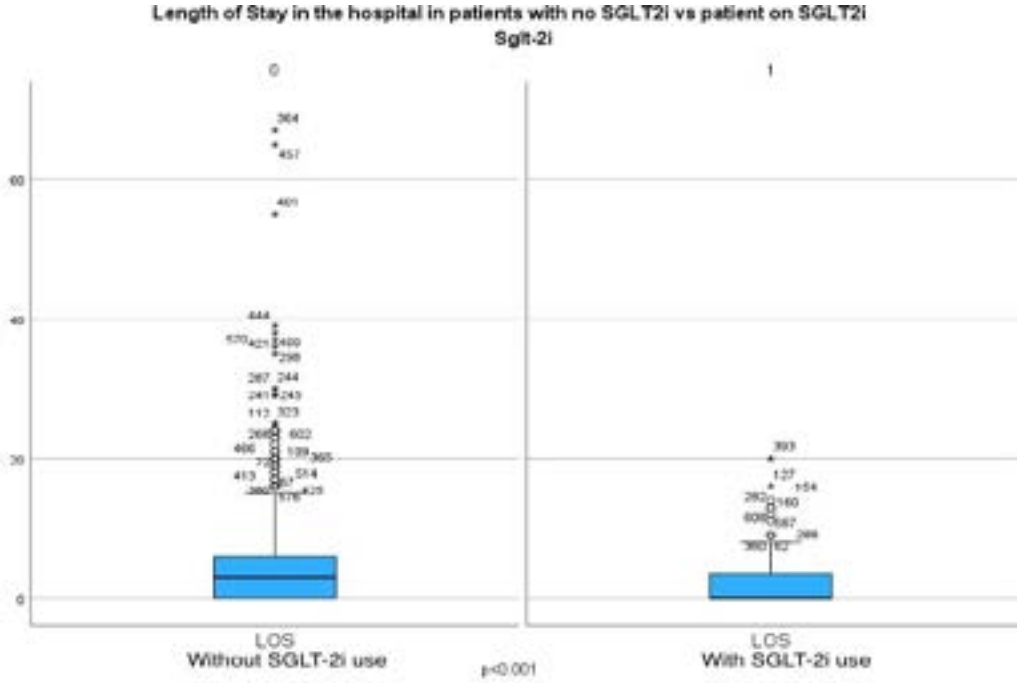
Purpose: Hospitalizations for HF not only increase the risk of mortality but also pose a significant economic burden highlighting the importance of addressing this major public health concern. This study aims to compare the hospitalization rate and LOS in HFrEF patients on SGLT-2i vs HFrEF patients not on SGLT-2i.

Method: This is a single-center retrospective cohort study using Saint Michael's Medical Center (SMMC) database. Adults (>18 years) with HFrEF (EF<50%) who were admitted to SMMC from January 2022 to December 2023 were included in this study. The patients were grouped into SGLT-2i taking and SGLT-2i not taking cohorts. The two groups were then compared for hospitalization rate and LOS. The limitation of our study is that only the SMMC database was used so outside hospitalizations are not accounted for.

Results: A total of 613 patients with acute decompensated heart failure with reduced ejection fraction (EF<50%) were included in the study, out of which 88 (14.4%) patients were receiving SGLT-2i at the time of admission. After adjusting for covariates, multivariable analysis showed that SGLT-2i use was associated with significantly lower hospitalizations (Odds Ratio [OR]=0.24; 95% CI 0.14-0.40; p<0.001). Furthermore, SGLT-2i use was also associated with a significantly lower overall hospital length of stay (SGLT2i use: 0.0[0.0-3.7] days vs no SGLT-2i use: 3.0 [0.0-6.0] days; p<0.001). Both the associations were statistically significant.

Conclusion: SGLT-2i have shown dramatic benefits in cardiovascular outcomes. Clinical evidence supports their use in the HF population particularly HFrEF. Our study strongly supports the narrative and reveals a significantly lower rate of hospitalization and LOS in patients with EF<50% that are taking SGLT-2i. Interestingly, only 14.4% of patients were on SGLT-2i which

prompts a further dive into socioeconomic factors affecting their use.



Picture 2: LOS in patients on SGLT-2i vs not on SGLT-2i

Variable	HR(95% CI)	P value
SGLT-2i	0.24(0.14-0.40)	<0.001
ARNI	1.96(1.09-3.51)	0.023
ACEi/ARB	1.64(1.03-2.62)	0.035
Beta Blocker	0.84(0.51-1.38)	0.499
MRA	1.85(1.22-2.81)	0.004
Vasodilator	1.70(1.13-2.57)	0.011
EF < 35%		0.104
EF 35-40%	0.89(0.55-1.45)	0.664
EF 40-50%	0.65(0.43-0.98)	0.042
Age	1.00(0.99-1.01)	0.420
Sex	1.33(0.92-1.91)	0.122

Picture 1: Multivariate regression analysis for overall hospitalization in patients with HFrEF

Biography

Dr. Ayushi Mohan, MD is a dedicated and compassionate physician currently pursuing her M.D. at New York Medical College. She trained at Kasturba Medical College, India for her medical school. Throughout her medical journey, Dr. Mohan has demonstrated a strong commitment to clinical excellence, research, and community service. Dr. Mohan is also highly involved in academic research, with multiple publications in top-tier journals such as Circulation, Journal of Cardiac Failure, and Journal of American College of Cardiology. Her research spans various cardiovascular topics, including myocardial infarction, heart failure therapies, and cardiac transplantation. She has been an active contributor to numerous peer-reviewed abstracts and has presented her findings at major medical conferences. A proactive volunteer, Dr. Mohan has contributed to several initiatives, including organizing educational campaigns on COVID-19, heart disease awareness, and basic life support training. She has also been recognized with awards for her volunteerism, including the Corona Warrior recognition from the Delhi Government for her work during the pandemic. Outside of medicine. Dr. Mohan is passionate about soccer, pickleball, poetry, playing the piano, and dancing. She is also an advocate for resident wellness, serving in various leadership roles to promote fitness, social engagement, and work-life balance within her residency program.

Elisa Calisgan

Department of Physiotherapy and Rehabilitation, Kahramanmaraş Sütçü İmam University, Kahramanmaras, Turkey

Effectiveness of home-based physiotherapy and educational brochure in CABG patients: Pilot study

Background: Coronary Artery Bypass Graft (CABG) surgery is often followed by functional limitations and emotional distress. Home-based physiotherapy and patient education are essential components of recovery. This case report aims to evaluate the effect of a structured home-based physiotherapy program, supported by a printed educational brochure, on physical and psychological parameters. The case also serves as a pilot study for the development of a comprehensive post-discharge rehabilitation protocol.

Case Description: The patient was a 78-year-old male who underwent CABG surgery for triple-vessel coronary artery disease. One week after surgery, Phase 2 rehabilitation began, consisting of a six-week structured home-based physiotherapy protocol. The program included breathing awareness, gait training, functional strengthening, and proprioceptive exercises. A printed brochure with individualized educational content was provided to improve adherence and self-management.

Methods: Assessment tools included the MacNew Heart Disease Health-Related Quality of Life Questionnaire, the Body Awareness Questionnaire (18 items, Likert scale 1–7), the Hospital Anxiety and Depression Scale (HADS), manual muscle strength testing, and pain pressure threshold measurements.

Results: After the six-week intervention, marked improvements were observed in all outcome measures. The MacNew score improved from 3.2 to 5.6. The body awareness score increased from 24 to 110 HADS-anxiety scores decreased from 11 to 6, and depression scores decreased from 12 to 5. Muscle strength increased from 3/5 to 4/5 in the lower extremities, and from 4/5 to 5/5 in the upper extremities. The pressure pain threshold improved from 2.3 kg/cm^2 to 3.9 kg/cm^2.

Conclusion: This case demonstrates that initiating Phase 2 physiotherapy just one week after CABG surgery, combined with printed educational materials, can lead to significant improvements in quality of life, emotional well-being, physical strength, and body awareness. Such programs may serve as practical and effective components of modern cardiac rehabilitation strategies.

Biography

Dr. Elisa Calisgan received her undergraduate degree in 2016 from Istanbul Bilgi University. She completed her MSc degree in 2018 and her PhD degree in 2024 at Inonu University Turkey. Currently, she is working as an Assistant Professor at the Department of Physiotherapy and Rehabilitation Kahramanmaras Sutcu Imam University. Dr. Calisgan has authored 17 research articles in peer-reviewed journals, contributed to numerous book chapters, and has delivered a lot of oral presentations and published full-text papers at national and international congresses.

Jin Oh Na[1*], Soohyung Park[1], Sung Bok Lee[1], Eui-Suk Lee[2]

[1]Cardiovascular Center, Korea University Guro Hospital, Seoul, Korea

[2]Department of Oral and Maxillofacial Surgery, Korea University Guro Hospital, Seoul, Korea

Changes on sleep quality after treatment of mandibular advance device for sleep apnea: 24-hour Holter-based cardiopulmonary coupling analysis

Background: The purpose of this study is to report the treatment effects of Mandibular Advance Device (MAD) on patients with sleep apnea based on Cardiopulmonary Coupling (CPC) analysis.

Method: Patients with mild to moderate obstructive sleep apnea were enrolled in a prospective, single-center study. All patients were diagnosed with Obstructive Sleep Apnea (OSA) after full-night polysomnography and underwent 24hour Holter monitoring before and after 6-month treatment of MAD. We evaluated sleep quality using cardiopulmonary coupling analysis based on Holter monitoring. Change from baseline was analyzed using Wilcoxon signed rank test.

Results: Of 23 patients, total 12 subjects were included (8 refused to Holter monitoring and 3 diagnosed with atrial fibrillation). Mean age and apnea-hypopnea index were 55.2±8.19 years and 18.9±4.6/hour, respectively. In CPC analysis, no significant changes were observed after MAD treatment in the high-frequency coupling ratio (marker of stable sleep; 33.7%-29.9%, p 0.37), the low-frequency coupling ratio (marker of unstable sleep; 38.3%-39.8%, p 0.75), narrow band ratio (marker of sleep-disordered breathing; 1.9%-2.5%, p 0.51) ratio and the very-low-frequency coupling ratio (marker of rapid eye movement/waker; 27.6%-29.6%, p 0.48).

Conclusion: In this study for short-term period, we could not determine beneficious effect of MAD in CPC parameters among patients with sleep apnea.

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Unilateral pulmonary artery agenesis with singular coronary artery: A case report and literature review

Unilateral Agenesis of the Pulmonary Artery (UAPA) is a rare congenital disorder occurring in 1 in 200,000 individuals. 1 the anomaly results from malformation of the sixth aortic arch of the affected side during embryogenesis. 2 We are presenting a case of a 44-year-old Caucasian male with absence of the left pulmonary artery, left lung congenital hypoplasia, right sided aortic arch, and singular coronary artery with initial presentation of acute hypoxic respiratory failure. Diagnosis of unilateral pulmonary artery agenesis with right sided aortic arch was established with CT angiogram with IV contrast. On subsequent presentation with congestive heart failure and concern for ischemia, heart catheterization reveal singular left coronary artery. The patient was treated with triple Coronary Artery Bypass Graft (CABG) by cardiothoracic surgery however the patient ultimately had complications including prolonged intubation with ventilator associated pneumonia and ischemic stroke. Although unilateral pulmonary artery agenesis can present asymptomatically in adulthood complications, additional anomalies as in this case can lead to adverse outcomes. We present an unusual case of unilateral pulmonary artery agenesis as the patient additionally had anomaly of a single coronary artery requiring CABG.

Biography

Dr. Kayla Estepp earned her medical degree from review of College of osteopathic medicine in 2017 followed by internal medicine residency at the University of North Dakota internal medicine residency program which she completed in 2020. She has worked both in outpatient and inpatient medicine and currently works as a hospitalist/nocturnist at Sanford Health in Fargo North Dakota, USA where she is core faculty for the internal medicine and transitional year residency programs. She has developed an interest for a general cardiology and mentoring residents and medical students.

Manik Dayal[1]*, MD, Meet Shah[2], DO, Riya Patel[3], Danyaal Jafrani[1], MD, TJ Lee[1], MD, Sagar Patel[1], MD, Pallavi Solanki[4], MD

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[2]Cardiology Fellow, Department of Medicine/Division of Cardiology, Rutgers University New Jersey Medical School, Newark, New Jersey, United States

[3]Medical Student, Department of Medicine, Rutgers University New Jersey Medical School, Newark, New Jersey, United States

[4]Cardiologist/ Heart Failure Specialist, Department of Medicine/ Division of Cardiology, Rutgers University New Jersey Medical School, Newark, New Jersey, United States

From ABCs to PhDs: Testing chatgpt's heartbeat for bridging educational gaps in patient care

Background: Heart failure education is crucial for improving patient outcomes, yet barriers persist due to varying levels of health literacy. Patients with lower literacy often struggle with understanding complex medical concepts, impairing medication adherence and disease management. Websites like the American Heart Association (AHA) provide high-quality information but may not address individual literacy needs. ChatGpt, an AI language model, offers the potential to tailor educational responses to diverse literacy levels while maintaining accuracy.

Objective: This study aims to evaluate chatgpt's effectiveness in delivering heart failure education tailored to low, average, and advanced health literacy levels. The research assesses the readability, accuracy, and adaptability of ChatGpt-generated responses compared to gold-standard FAQs from the AHA website.

Methods: Compared with FAQs on heart failure from the AHA website, ChatGPT responses were generated for three predefined health literacy levels: Low (e.g., high school non-graduate), average (e.g., high school graduate), and advanced (e.g., healthcare provider). Standardized prompts were developed to simulate interactions at each literacy level. The responses were analyzed for:

1. **Readability:** Measured by the Flesch-Kincaid grade level
2. **Accuracy:** Validated by board-certified heart failure specialists

Results: Preliminary findings indicate that ChatGPT effectively tailors' responses to align with the simulated literacy levels. For lower literacy prompts, responses featured simpler language and reduced jargon while retaining accuracy. Advanced literacy prompts elicited in-depth explanations with medical terminology. Readability scores and content analysis revealed significant adaptability, with consistent factual alignment with AHA content.

Conclusion: This research highlights ChatGPT's potential as a scalable, customizable tool for heart failure education, capable of assisting in bridging gaps in health literacy. By complementing traditional resources like the AHA, ChatGPT could enhance patient comprehension and empower informed decision-making in healthcare settings.

Biography

Dr. Manik Dayal earned his undergraduate degree in Biomedical Engineering from Virginia Commonwealth University in 2017 and his medical degree shortly thereafter. Currently a medical resident at Rutgers University New Jersey Medical School in Newark. Dr. Dayal is passionate about addressing socioeconomic disparities in cardiovascular health. He focuses on bridging knowledge gaps in underserved communities and advocating for the inclusion of underrepresented groups in clinical trials. Through his research and health education initiatives, Dr. Dayal aims to raise awareness about differences in the presentation, diagnosis, and treatment of cardiovascular diseases across diverse populations.

Marissa DeVogelaere[1]* OMS III, Rajendrakumar Patel[2] MD, Yousef Odeh[2] MD

[1]Rocky Vista University, Parker, CO, USA

[2]Carondelet Health Network, Tucson, AZ, USA

Getting to the root of aortic regurgitation

This case describes a thirty-five year old male with past medical history of untreated hypertension for ten years was referred to the emergency department by his naturopathic primary doctor after an outpatient high sensitivity troponin test was found to be elevated in 130s. The patient only reported symptoms of a viral illness one-week prior which since resolved and stated he had not been to a doctor in many years but had just established care with this doctor. Further history revealed a dental procedure about one month prior and had also had dental work about a year ago. While patient denied feeling short of breath, a family member who lived with him reported that this had been going on for one year. He reported still being able to play tennis several times per week and worked as a heavy cement mechanic. On exam, the patient was hypertensive with a significantly widened pulse pressure. Cardiac auscultation revealed a diastolic murmur that could be heard in all posts and radiated to the axilla. Further hospital workup showed enlarged cardiac silhouette on chest radiograph. Transthoracic echocardiogram showed left ventricular hypertrophy with preserved ejection fraction, and significant diastolic backflow. Blood cultures grew 2/2 positive for *Strep parasanguinis.* A transesophageal echocardiogram was performed to rule out vegetations and bicuspid aortic valves, which were not seen. A cardiac catheterization showed no vessel disease. Given the patient's history and positive blood cultures, the presumed diagnosis was acute on chronic infective endocarditis. Consultation with infectious disease suggested the patient be on outpatient antibiotics through a peripherally inserted central catheter for four weeks of antibiotics. At this time, the patient's definitive treatment and pathology is pending mechanical aortic valve replacement.

Biography

Ms. DeVogelaere attended University of Portland in Oregon where she received her BS in Biology in 2020. After several years of clinical experience, she matriculated to medical school at Rocky Vista University in Colorado where she is a candidate for a Doctorate in Osteopathic Medicine. Ms. DeVogelaere spent a clinical year in Tucson, Arizona where she was fortunate enough to come under mentorship of Interventional Cardiologist Dr. Patel and Cardiothoracic Surgeon Dr. Odeh. Ms. DeVogelaere hopes to pursue Emergency Medicine after completion of medical school.

Mashal Maheshwari[1]*, Abhishek Prasad[2]

[1]MBBS, SMS Medical College, Jaipur, Rajasthan India

[2]MBBS, MD Anderson Medical Center, Houston, Texas, USA

Exertional sudden cardiac death in the elderly athlete: A literature review

Sudden Cardiac Death (SCD) occurring within one hour of vigorous activity in elderly individuals is an underrecognized event during sports and training sessions. A subset of these athletes engages in such activities as leisure pursuits rather than as part of regular endurance training, placing excessive strain on their cardiovascular system. Additionally, heat stroke may be overlooked when the clinical focus is limited to cardiac causes of collapse. This review involved an extensive search of PubMed, Google Scholar, and general web sources using targeted keywords. We examined the relative risk of SCD associated with infrequent high-intensity exercise and explored underlying pathophysiological mechanisms. Our findings highlight the need for preventive strategies, including pre-participation screening and increased awareness of risk factors, to reduce mortality in this population.

Biography

Dr. Mashal completed her MBBS from SMS Medical College India in 2023 and was granted Gold Medal and distinction. She cleared USMLE and PLAB examinations and is now GMC UK registered doctor. She has worked on a meta-analysis, various literature reviews and a retrospective study. She is currently working on a QI project and has co-authored at least 5 publications.

Michelle O Dwyer
St James's Hospital, Ireland

Risk factors for early AKI in transcatheter aortic valve implantation

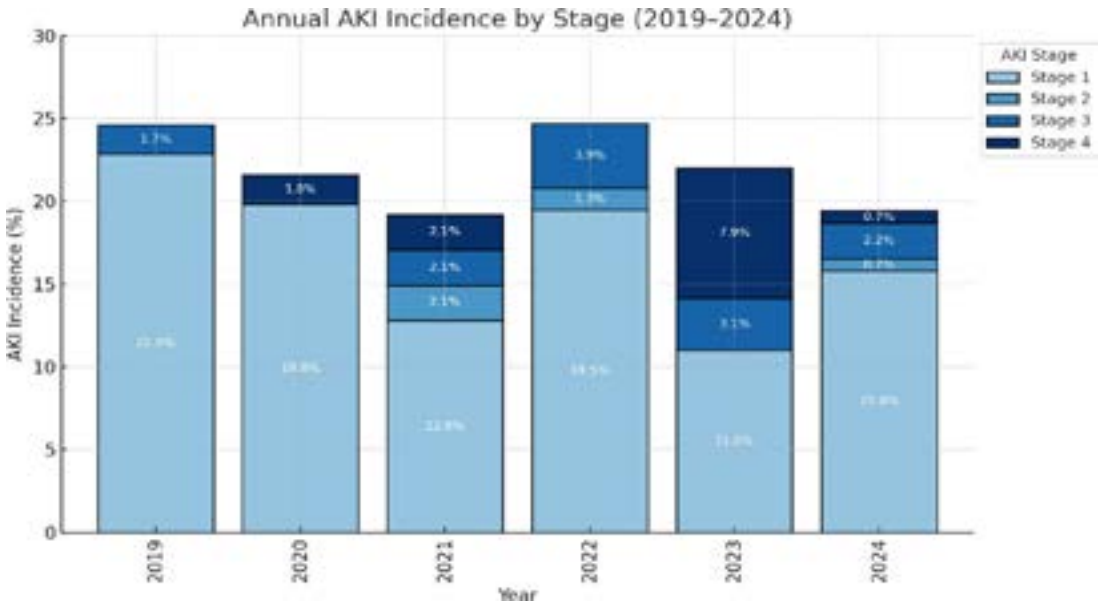
Introduction: Transcatheter Aortic Valve Implantation (TAVI) is an established therapy for severe aortic stenosis, but Acute Kidney Injury (AKI) remains a frequent and serious complication. Early identification of high-risk patients may enable targeted renal-protection strategies to improve outcomes.

Methods: A retrospective cohort study was conducted of all patients who underwent TAVI at a single tertiary referral centre between 1st January 2019 and 31st December 2024. Baseline demographics, comorbidities, laboratory values and procedural details were recorded. AKI was staged per VARC-III/KDIGO staging: Stage 1 (≥1.5–2×baseline or ≥26 µmol/L rise), Stage 2 (>2–3×), Stage 3 (>3× or ≥354 µmol/L+≥44 µmol/L rise) and Stage 4 (new dialysis). Univariate screening ($p<0.05$) by chi-square or t-test identified candidate predictors. Significant variables ($p<0.05$) were included in a multivariate logistic regression model.

Results: AKI occurred in 117/541 (21.6 %): Stage 1 in 80 (68.4 %), Stage 2 in 4 (3.4 %), Stage 3 in 14 (11.9 %) and Stage 4 in 19 (16.2 %). Self-expanding valves were associated with a higher AKI rate than balloon-expandable devices (26.4 % vs 16.5 %, $\chi^2=6.50$; $p=0.011$). Valve size showed no association ($p=0.778$). In multivariate analysis (Table 1), frailty, diabetes mellitus and unplanned admission were independent predictors of AKI. Self- expanding valves showed a non-significant trend toward higher AKI. (OR 1.46; 95 % CI 0.82–2.58; $p=0.198$).

Table 1: Independent Predictors of AKI

Predictor	Odds Ratio (OR)	95% CI	p-value
Frailty	3.12	1.74–5.58	<0.001
Diabetes Mellitus	2.28	1.23–4.23	0.009
Unplanned admission	2.17	1.16–4.06	0.015



Conclusions: Early AKI affected one in five TAVI patients at our centre and demonstrated device-specific patterns: Self- expanding valves carry higher overall AKI rates. Frailty, diabetes and unplanned admission independently predict AKI.

Dr. James Redfern (Consultant), Dr. Mohamed Mahmoud* (SAS), Dr Allam Harfoush

Countess of Chester NHS Foundation Trust, United Kingdom

Assessing referral and participation in cardiac rehabilitation following coronary artery disease

Background: Cardiac Rehabilitation (CR) is a well-established secondary prevention strategy that plays a pivotal role in improving cardiovascular outcomes for patients with Coronary Artery Disease (CAD). It has been shown to reduce mortality, recurrent cardiac events, and hospital readmissions while enhancing functional capacity and quality of life (Anderson et al., 2016; Dalal et al., 2019). The NICE (NG185) and the British Association for Cardiovascular Prevention and Rehabilitation (BACPR) strongly recommend CR participation as part of standard post-discharge care. Despite its proven benefits, referral and uptake of CR remain suboptimal

Aims: To assess compliance with national guidelines on referral to cardiac rehabilitation for patients admitted in CCU with coronary artery disease (NICE Guideline NG185).

Standards and Guidelines: NICE Guideline NG185: Recommends referral to cardiac rehabilitation for all eligible patients with coronary artery disease.

Target: 100% of eligible patients should be referred to cardiac rehabilitation.

Sample:

Inclusion Criteria:

- Patients admitted to the CCU with a diagnosis of coronary artery disease (acute coronary syndromes, chronic coronary syndromes, post-revascularisation, and microvascular and vasospastic coronary disease).

Exclusion Criteria:

- Patients admitted for other cardiac conditions (e.g., heart failure, arrhythmias).
- Patients with documented contraindications to cardiac rehabilitation.

Methodology:

Data Collection

1. Review the records of a random 100 patients discharged from CCU at the Countess of Chester with a coded diagnosis of one of the previous diagnoses between January 2024 and February 2025.

2. Review the admission notes and investigations to identify patients with a confirmed diagnosis of CAD.
3. Extract data from EPR and cardiac rehabilitation records to identify who was referred to CR.
4. Use a structured data collection form to record:
    - Discharge diagnosis
    - Referral to cardiac rehabilitation (Yes/No)
    - Documentation of patient contact by rehab team

Data Analysis

- Calculate the percentage of eligible patients referred to cardiac rehabilitation.

Recommendations & Action Plan

- Share findings with the cardiology and rehabilitation teams.
- Develop strategies to improve referral rates.

Findings:

- **Total records collected:** 100
- **Total eligible patients:** 77
- **Referred to Cardiac Rehab (CR) according to different sources:**
    - Hospital IT Coding: 49 (63.3%)
    - Formal Cerner System Referral: 23 (31.17%)
    - Cardiac Rehab Spreadsheets: 75 (97.4%)
- **Referral Acceptance in Chester:** 55 (71.4%)

Presentation: At Cardiology Department Meeting on 09/04/2025 in the Diabetes seminar room in front of doctors in training, cardiac nurses, and other staff from cardiac rehabilitation.

Outcomes:

1. Continue with our current practice, as it was effective (97% compliance)
2. Re-Audit in 3 months to assess referral to cardiac rehab for patients diagnosed with Coronary Artery Disease (CAD) discharged from AMU and other medical ward.
3. To audit an additional group of patients eligible for cardiac rehab (those admitted with heart failure, valvular pathology and arrhythmias) to ensure compliance.

Any improvement in patient care: Assessing patients referred to cardiac rehab from other medical wards (other than CCU) will allow us to demonstrate compliance with guidelines and showcase excellence, while ensuring that eligible patients are not missing significant opportunity in joining cardiac rehab just because they were not admitted to the CCU.

Biography

Dr. Mohamed Mahmoud studied medicine in Faculty of Medicine at Fayoum University , Egypt obtained his MBBch in 2014, and had training in university hospital from 2016 to 2020, then he received his master degree in internal medicine and cardiology, worked as a lecturer at faculty of medicine, until her received his PhD degree in 2024, he did research in cardiology and general medicine with 2 publications, then he moved to UK in 2024, and currently he works as Specialty Registrar at Countess of Chester NHS Trust in United kingdom.

Dr. Riya Hamid Mansuri[1*], Dr. Shantanu Deshpande[2], Dr. Somnath Mallakmir[3], Dr. Samhita Purandare[3]

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[2]Department of Cardiology, Professor and Head of the Department Dr. DY Patil University School of Medicine, Mumbai, Maharastra, India

[3]Department of Cardiology, Associate Professor, Dr. DY Patil University School of Medicine, Mumbai, Maharastra, India

Pericardial decompression syndrome post pericardiocentesis in a case of miliary and disseminated tuberculosis in a young male presenting with cardiac tamponade

Background: Pericardial effusion and cardiac tamponade encompass a clinical spectrum with diverse presentations. While significant pericardial effusions warrant clinical attention, emergent drainage is primarily indicated for patients exhibiting hemodynamic compromise. Cardiac tamponade with circulatory collapse necessitates immediate intervention via pericardiocentesis or surgical pericardiotomy.

Historically, the lethality of pericardial effusions has been acknowledged for centuries. In 1653, Riolanus proposed sternal trephination for fluid relief. The first successful pericardial aspiration was performed by Franz Schuh in 1840 using a blind left parasternal approach. Subsequently, in 1911, Marfan introduced the subxiphoid technique, which remained standard despite associated risks until the late 20th century. The advent of echocardiography-guided pericardiocentesis in the 1970s significantly enhanced procedural safety and efficacy.

Despite advancements, pericardiocentesis can occasionally lead to rare complications such as transient Acute Left Ventricular Dysfunction (ALVD), the pathophysiology of which remains under investigation.

Case Presentation: A 32-year-old male with a history of disseminated tuberculosis and early-onset Parkinsonism presented with progressive dyspnoea and hypotension. Clinical examination and echocardiography confirmed a large pericardial effusion with signs of tamponade, including right atrial and right ventricular diastolic collapse. LVEF on presentation was normal.

Emergency pericardiocentesis under fluoroscopic and echocardiographic guidance, we evacuated around 800 mL of straw coloured fluid. Post-procedure, the patient developed acute hypotension and respiratory distress. Repeat echocardiography revealed global hypokinesia of LV with a significantly reduced Left Ventricular Ejection Fraction (LVEF) of approximately 25%, contrasting with normal pre-procedure ventricular function.

There were no segmental wall motion abnormalities, Troponin levels were within normal limits, patient had no chest pain and there were no ECG changes suggestive of Acute coronary syndrome; no arrhythmic events were noted.

Supportive management, including inotropic support and careful fluid management, was initiated. Over 72 hours, the patient exhibited progressive hemodynamic improvement. A follow-up echocardiogram at one week demonstrated normalization of left ventricular function (LVEF: 60%).

Discussion: Acute left ventricular dysfunction following pericardiocentesis is an uncommon but recognized complication. The proposed mechanisms include:

1. **Interventricular Volume Imbalance:** In cardiac tamponade, elevated pericardial pressure restricts right ventricular filling. Rapid decompression via pericardiocentesis abruptly increases right ventricular preload, potentially overloading the left ventricle and leading to elevated end-diastolic pressure and wall stress, culminating in transient LV dysfunction.
2. **Myocardial Stunning:** The sudden removal of pericardial pressure may result in acute ventricular wall stretch and increased transmural pressures, impairing myocardial energetics and leading to reversible contractile dysfunction akin to stress cardiomyopathy
3. **Autonomic Imbalance:** Acute withdrawal of sympathetic stimulation post-pericardiocentesis may precipitate myocardial dysfunction through autonomic dysregulation

Recognition of this phenomenon is crucial, especially during large-volume pericardial fluid evacuation. Management is primarily supportive, with most patients experiencing full recovery, as illustrated in this case.

Conclusion: This case underscores the importance of awareness regarding transient left ventricular dysfunction as a potential complication following pericardiocentesis. Prompt recognition and supportive management are essential to ensure favourable outcomes.

Biography

Dr. Riya Mansuri Studied at, Dr. DY Patil University School of Medicine, Mumbai, India and graduated MD Internal Medicine in 2022. She joined DM Cardiology in 2023 under the Guidance of Dr. G.R Kane and Dr. Shantanu Deshpande Currently undergoing training in Interventional Cardiology under Dr Shantanu Deshpande. She has done research work during covid pandemic and has published a research paper in IJSR journal. Currently ongoing research work on severity of coronary artery diseases in young Diabetic patients (<40 years of age).

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AI-driven heart disease risk prediction using transformers: Insights from Framingham and Cleveland datasets

Background: Accurate prediction of cardiovascular risk is essential for timely prevention and intervention. While classical Machine Learning (ML) models such as XGBoost and random forest have shown promise, they often struggle with class imbalance and limited capacity to capture nonlinear interactions. In this study, we evaluate the utility of transformer-based deep learning models for predicting Cardiovascular Disease (CVD) risk using the Framingham Heart Study dataset (n=4,240) and the Cleveland Heart Disease dataset (n=303), Additive incorporating interaction terms and explainability via SHAP (SHapley exPlanations).

Methods: We compared FT-Transformer, SAINT, TabNet, XGBoost, LightGBM, Random Forest, and logistic regression-based stacking. SMOTETomek was used to address class imbalance (15% positive class in Framingham), and missing values were imputed using Multivariate Imputation By Chained Equations (MICE). Five-fold cross-validation was performed on both datasets.

The feature set included demographics (age, sex), vital signs (blood pressure, heart rate, mean arterial pressure, pulse pressure), laboratory markers (cholesterol, glucose, renal and electrolyte panels), clinical history (diabetes, hypertension, medications, smoking, alcohol, thalassemia), symptoms (chest pain, angina), and ECG findings and cardiac parameters (ST changes, max heart rate, vessel visualization). Mean arterial pressure and pulse pressure were introduced as engineered features along with existing variables in the Farmingham dataset.

Results: The FT-Transformer achieved the best performance on both datasets—Framingham: F1 score 0.82, accuracy 0.87, AUC 0.91; Cleveland: F1 score 0.89, accuracy 0.93, AUC 0.95. Transformer-based models consistently outperformed classical ML models and ensemble methods. Stacking underperformed relative to its base learners. SHAP analysis consistently identified mean arterial pressure, age, cholesterol levels, prior cardiovascular events, and smoking intensity as the most predictive features across high-performing models.

Conclusion: Transformer-based models offer substantial advantages in modelling imbalanced

clinical datasets by effectively capturing complex variable interactions. FT-Transformer outperformed established ML baselines while maintaining interpretability through SHAP. These findings support the use of transformer-based architectures in CVD risk prediction workflows, with the potential to enhance clinical trust and utility through transparent, data-driven insights.

Model	Framingham F1	Framingham Acc	Framingham AUC	Cleveland F1	Cleveland Acc	Cleveland AUC
FT-Transformer	**0.82**	**0.87**	**0.91**	**0.89**	**0.93**	**0.95**
SAINT	0.78	0.84	0.89	0.86	0.91	0.93
TabNet	0.76	0.83	0.88	0.84	0.89	0.91
XGBoost	0.77	0.84	0.87	0.86	0.91	0.92
LightGBM	0.75	0.83	0.86	0.85	0.90	0.91
Random Forest	074.	0.81	0.85	0.83	0.89	0.89
Logistic-Stacking Ensemble	0.72	0.82	0.86	0.84	0.90	0.90

Biography

Sai Koundinya Upadhyayula is a junior resident in the Department of General Medicine with a strong interest in internal medicine, cardiology, and translational research. His work spans clinical medicine and AI-based research, including publications in neurology, pulmonology, and diabetes. Sai previously worked at the Indian Institute of Science (IISc), where he developed deep learning tools for cardiac and neuro imaging. He is also passionate about medical education and has conducted seminars on AI in healthcare. With experience in both high-volume clinical settings and research environments, Sai is committed to advancing patient care through evidence-based practice, innovation, and continuous learning.

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Role of temporal and spatial electrophysiological heterogeneity and variability in the initiation of re-entrant ventricular arrhythmia

Re-entrant ventricular tachyarrhythmia can be life-threatening and require an initiating trigger and susceptible substrate. Their onset is unpredictable and has a higher probability when repolarization is delayed (long $QT_{c,}$ or myocyte action potential duration at 90% repolarization (APD_{90})), and when the heterogeneity of myocardial tissue electrophysiology (APD_{90} and propagation velocity) and architecture (fibrosis) is enhanced. Here we map the effects of variability in cell ionic channel conductance parameters in homogenous populations of myocytes on the probability of pro-arrhythmogenic triggers, and surrogate markers of arrhythmogenicity in heterogenous tissue (APD_{90} dispersion, Early After Depolarization (EAD), alternans and vulnerability). Human ventricular isolated cardiomyocyte electrophysiology was modelled by the O'Hara, Virag, Verro & Rudy 2011 model for subendocardial and midmyocardial cells, with conductance parameter values randomly perturbed, to produce cell populations, and a reduction of the maximal conductance g_{Kr} of the rapidly delayed K+ rectifier current, to simulate LQT2. Action potentials are quantified by APD restitution curves, APD histograms, and the probability of pro-arrhythmogenic cellular events (EADs, repolarization failure, and alternans).

Reducing g_{Kr} prolongs APD_{90} smoothly, with a 40% prolongation in APD_{90} simulating LQT2 produced by a 47.5% reduction in g_{Kr}. When all the maximal ionic conductances are Gaussian distributed with a 5% standard deviation about their standard values, and limited to 4 standard deviations from the mean, the action potentials could be shortened or prolonged, include an EAD, or fail to repolarize. APD_{90} and coefficient of variation with periodic pacing at 1/s for populations of sub endocardial and mid-myocardial cells are 266.3±8.8ms, 3.3% and 375.1±10.4ms, 2.7%; and for the LQT model 380.9±17.3ms, 4.5% and 501.8±27.3ms, 5.4%. The effect of the reduced g_{Kr} on the dispersion of APD_{90} (a surrogate for T-wave dispersion) between sub-endocardial and midmyocardial cells is increased by 9.3% from 66.6 to 72.8ms at a pacing rate of 1/s, and for cell populations the dispersion is increased by 72%, from 150.3 to 258.3ms. The probabilities of EADs and repolarization failure are<0.005 for the subendocardial model and for midmyocardial cell LQT model.

Computed circadian changes based on primate ionic channel mRNA transcriptomic data

produce a maximum-to-minimum 20ms, 7% modulation in APD_{90} at a rate of 1/s, and menstrual cycle changes based on plasma hormone levels and their effects on in vitro myocytes produce a 10% (sub-epi/endocardial) to 15% (mid-myocardial) modulation in models with channel expression modified by electrophysiological data from cells from women. These slow changes interact nonlinearly with the effects of population variability, giving EADs an exaggerating dispersion in female models, especially around the time of ovulation. Spatial electrophysiological heterogeneity exaggerated by variability in ionic conductances increases APD_{90} dispersion and pro-arrhythmic trigger probability, as illustrated for LQT2. Hormonal and circadian modulation of ion channel expression further amplifies this effect, especially in female models. In addition to genomics, dynamic transcriptomic regulation and physiological inputs critically shape arrhythmia susceptibility. The risk of initiating an arrhythmia in an individual is determined by the extreme values of distributions, and not a single number, but changes over time.

Keywords: Long QT Syndrome, Repolarization, Arrhythmias, Spatial Heterogeneity, Temporal Variability.

Biography

Dr. Akkaya began her research under Prof. Dr. Eylem Levelt, publishing on insulin resistance and myocardial perfusion in Type 2 Diabetes. She later joined Dr. Halliday at the Royal Brompton Hospital, focusing on hereditary dilated cardiomyopathies. Her interest in computational bioinformatics led her to study Long QT Syndrome electrophysiology with Prof.Dr. Holden. A prize-winner for academic excellence, she has presented at national and international conferences, collaborated with STARSurg UK, served on the National MedTech Foundation committee, and was a scholar at the Pritzker School of Molecular Engineering at the University of Chicago. She graduated with an MBChB from the University of Leeds in 2025.

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A novel role for microcephaly - Associated scaffold protein WDR62 in postnatal cardiac physiology

Cardiovascular diseases are the leading causes of death worldwide. The proliferative capability of the contractile cells of the heart (cardiomyocytes), decreases after birth and damage to mature cardiomyocytes result in fibrotic scar formation driven by cardiac fibroblasts and differentiated myofibroblasts. Primary cilia are non-motile organelles that sense mechanical stretch and translate these stimuli to regulate cell signalling. A microcephaly-associated scaffolding protein called WD-Repeat Protein 42 (WDR62), has been shown to be important to both cell-cycle progression and primary cilia formation, however little is known about the role of this protein in cardiac cell types in normal and pathological states. We therefore aimed to 1) Assess the role of WDR62 in cardiomyocyte proliferation and postnatal growth; 2) Characterise primary ciliation changes during maturation and 3) Evaluate changes in primary cilia in three models of cardiac stress. We administered an Adeno-Associated Virus (AAV) driving expression Cre-recombinase to P1 WDR62 floxed and wild-type neonates (P1). Reduced WDR62 expression was co-incident with decreased cardiomyocyte proliferation and reduced heart weight at P56, without modification of heart function. Immunohistochemistry was used to determine the number and location of primary cilia in neonatal (P1) and adult (P56) hearts with primary cilia present on both cardiomyocytes, fibroblasts and endothelial cells in neonatal mice, but apparently absent in adult cardiomyocytes. Heart sections from adult (wildtype) hearts undergoing remodelling induced by Angiotensin II, myocardial infarction and exercise were assessed for primary ciliation, with only myocardial infarction increasing primary ciliation number. Thus, WDR62 is essential to cardiac enlargement in neonatal mice, and primary cilia on cardiac fibroblasts may be important to remodelling following myocardial infarct.

Biography

Mr. Slade du Randt studied Biomedical Science at the University of Queensland, Australia and graduated with honours in 2022. He continued his research conducted in his honour's year within the same research groups of Dr. Melissa Reichelt, Prof. Wally Thomas and Dr. Dominic Ng within the school of Biomedical Science at the University of Queensland. He is now in the final year of his PhD candidature.

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