

CARDIOLOGY WORLD CONFERENCE

OCTOBER 24-25, 2019 | TOKYO, JAPAN

Theme:
Advances in Cardiology: Research and Innovations

Radisson Hotel Narita
286-0221 Chiba Tomisato-shi Nakaei 650-35, Japan



CARDIOLOGY WORLD CONFERENCE

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Advances in Cardiology: Research and Innovations

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University of Auckland
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John Horowitz
University of Adelaide
Australia



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Indian Society of Cardiology
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Republic of Macedonia



Marouane Boukhris
University of Tunis El Manar
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University of West Bohemia in
Plzen, Czech Republic



Walid Jomaa

Fattouma Bourguiba University
Hospital, Tunisia



Zhang fen

Affiliated Hospital of Jiangsu
University, China



Zumrut Tuba Demirozu

Koc University Hospital
Turkey

Thank You
All...

Welcome Message



Dear conference participants and colleagues,

I am glad to welcome you to the international conference on cardiology. Cardiovascular diseases are still the main cause of complications and mortality in adults. Moreover, this global trend is observed in both developed and developing countries of the world. Conducted international clinical studies to identify risk factors, primary and secondary prevention of cardiovascular diseases. Annually, the results of major projects on the effectiveness of drugs and new technologies are published. In the 21st century, digital technologies are increasingly used in cardiology. The international conference will highlight various areas in cardiology, which will help in the practical work of specialists. I wish you fruitful work.



Mamedov Mehman

Professor Mamedov Mehman

National Research Center for Preventive Medicine
Russia

Welcome Message



One of the themes of this conference is that of myocardial ischaemia and infarction. At first glance, this would seem to represent purely a repetition of our previous focus on the traditional theme of a common spectrum of cardiovascular disorders driven by the traditional risk factors of hypertension, smoking, diabetes and poor diet, and emerging mainly in middle-aged men. Our therapeutic discussion 30 years ago would have emphasised coronary revascularization above all.

However, much has changed. In Western societies, emergence of coronary atheroma-related disease has generally been delayed, if not prevented, while an emerging epidemic threatens the Third World. We have finally learned the importance of inflammation as a key component of the pathogenesis of atherogenesis and myocardial



ischaemia, and are beginning to refine our pharmacotherapy to accommodate the recognition of its potential effectiveness and the emergence of “new” forms of acute heart disease which occur mainly in women.

I welcome you to the ischaemia/infarction section of the Conference, and trust that you will find our discussions exciting and providing of a better guide to future treatment.

John Horowitz
University of Adelaide
Australia

Welcome Message



Dear congress visitors,

It gives me great pleasure to write a few welcome notes. The field of cardiovascular biomarker research is entering a new, exciting era with the introduction of the concept of 'personalized medicine' in therapeutic treatment guidance. With a variety of new cardiovascular biomarkers, and assertions of their respective independent associations with outcome, it becomes increasingly difficult to select the biomarker with the strongest diagnostic as well as prognostic value. 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. However, the search for an ideal biomarker, or set of biomarkers, requires a systematic and rigorous approach to biomarker studies, more emphasis on




prospective studies, and use of external validation cohorts. Accomplishment of the previous will lead to improved quality of diagnostic and, even more important, prognostic biomarker research in the future, and will be required if we want to bring this clinically important research field forward.




PROF. DR. MARIJA VAVLUKIS

Saints Cyril and Methodius University of Skopje
Republic of Macedonia

Welcome Message



Dear congress participants, it is an honor and pleasure to write a few welcome notes. During the last decade, research in cardiovascular field has dramatically increased leading to a substantial improvement in the treatment and the outcome of patients affected with cardiovascular diseases. The main theme of the “Cardiology World Conference” (CWC 2019) will be the “Advances in Cardiology: Research and Innovations”. Latest breaking trials, innovations and hot topics will be discussed in depth during the event involving different fields and specialties contributing to cardiovascular research. Hence, we strongly believe that CWC 2019 will represent a major platform for promoting and advancing cardiology in its dynamic field.



We look forward to welcoming you in Tokyo (Japan), for what promises to be an unforgettable Conference. See you there!



MAROUANE BOUKHRIS (MD, FESC)
University of Tunis El Manar
Tunisia

keynote speakers



James L. Ratcliff
Rowpar Pharmaceuticals
North America



John Horowitz
University of Adelaide
Australia



Marija Vavlukis
Saints Cyril and Methodius
University of Skopje
Republic of Macedonia



Shiyou Chen
University of Georgia
USA



Marouane Boukhris
University of Tunis El Manar
Tunisia



Richard Lim
University of Queensland
Australia



Stephen Kee
UCLA Health
USA



Kenji Inoue
Juntendo University Nerima
Hospital, Japan



Mekhman N Mamedov
National Research Center for
Preventive Medicine, Russia



MAGNUS GROUP

Magnus Group (MG) is initiated to meet a need and to pursue collective goals of the scientific community specifically focusing in the field of Sciences, Engineering and technology to endorse exchanging of the ideas & knowledge which facilitate the collaboration between the scientists, academicians and researchers of same field or interdisciplinary research. Magnus group is proficient in organizing conferences, meetings, seminars and workshops with the ingenious and peerless speakers throughout the world providing you and your organization with broad range of networking opportunities to globalize your research and create your own identity. Our conference and workshops can be well titled as 'ocean of knowledge' where you can sail your boat and pick the pearls, leading the way for innovative research and strategies empowering the strength by overwhelming the complications associated with in the respective fields.

Participation from 90 different countries and 1090 different Universities have contributed to the success of our conferences. Our first International Conference was organized on Oncology and Radiology (ICOR) in Dubai, UAE. Our conferences usually run for 2-3 days completely covering Keynote & Oral sessions along with workshops and poster presentations. Our organization runs promptly with dedicated and proficient employees' managing different conferences throughout the world, without compromising service and quality.

About CWC 2019

In a rapidly advancing technology for cardiac surgeries and treatments, the time has come to move forward with cutting edge strategies to maximize their performance. Cardiology World Conference 2019 driven by the theme "Advances in Cardiology: Research and Innovations" has been designed to minimize the Mortality rate occurred by cardiac diseases, while maximizing the depth of true peer-to-peer discussions.

CWC 2019 is one of the leading cardiology conferences, which discusses the current innovations & technology trends in Cardiac Surgery, Cardiac Care, Cardio-Oncology, Cardiovascular Nursing and Interventional Cardiology. The event takes place on October 24-25, 2019 at Radisson Hotel Narita, Tokyo, Japan featuring the world class speakers presenting case studies in their work through enlightening keynotes, oral and poster presentations, interactive networking activities and workshops.

The main goal of CWC 2019 is to advance the cardiology research and innovations and to promote its objectives. It contributes significantly to the scientific development of cardiology and evolves subspecialty that incorporates on-going research in the clinical application. This is a unique platform for promoting & improving results, and advancing cardiology in its dynamic field.

DAY 1

KEYNOTE FORUM

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CWC-2019





Biography

James L. Ratcliff is Chairman of the Board and CEO of Rowpar Pharmaceuticals, Inc., Scottsdale, AZ, maker of the ClōSYS brands of oral care products. In 2017 and 2018, Rowpar was cited by Corporate Livewire as innovative leader in oral care for North America. In 2014, Rowpar received the U.S. Small Business Administration's Exporter of the Year Award. From 1989 to 2000, Dr. Ratcliff served as senior research scientist, professor and director, Center for the Study of Higher Education at the Pennsylvania State University. From 1979 to 1989, Dr. Ratcliff was professor and program head for higher education at Iowa State University. Dr. Ratcliff is author of 120 articles, books, book chapters, is co-inventor on over 40 patents and patents pending. He is active member of the Arizona Biotechnology Assn., American Academy of Oral and Systemic Health, American Education Research Assn., and the International Association for Dental Research. He holds a Ph.D. in Higher Education from Washington State University, a M.A. in History from Washington State University, and a B.A. from Utah State University.

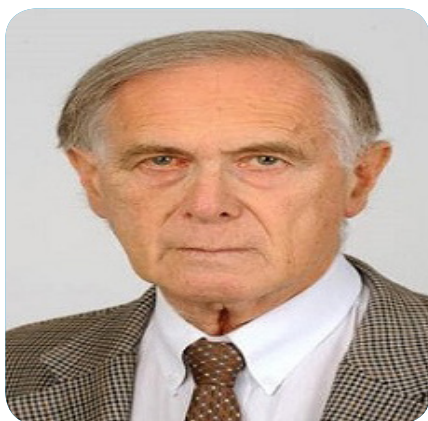
Oral pathogens, CVD and home oral care: Critical links in the prevention of heart disease

James L. Ratcliff, Ph.D.

Rowpar Pharmaceuticals Inc., North America

Oral microbes are directly involved in the pathogenesis of cardiovascular diseases. Periodontal pathogens, such as *Porphyromonas gingivalis*, are found diseased cardiovascular lesions. Also, pathogens associated with dental caries, such as *Streptococcus mutans*, have been detected in plaque found on heart valve and arterial wall. With the exception of periodontal and cariogenic bacteria, the polymicrobial makeup of arterial plaque is distinct, suggesting both may be contributors to CVD. This session examines the relationship between oral bacteria and cardiovascular disease and what steps can be taken to minimize their impact with particular emphasis on its implications for the design of home oral care.

Periodontal and cariogenic bacteria are endogenic, carried by individuals from birth. The oral biofilms in which they thrive protect them from many home oral care products and regimes, and the biofilms regenerate within 2-3 days of a professional dental exam and cleaning. Within the oxygen-scarce environment of biofilms, periodontal and cariogenic pathogens tend to overgrow, causing inflammatory insult to host, penetration through oral lesions to the blood stream, and dissipation throughout the body. Therefore, the nature and capacity of home oral care to mitigate the overgrowth of oral pathogens associated with CVD becomes critical to ongoing oral and heart health. The relationship between oral health and CVD is reviewed from the perspective of preventative care given the challenges posed by the oral microbiome and the oral pathogens resident within.



Biography

Professor John Horowitz trained in Medicine in Adelaide, with subsequent clinical and research training in Cardiology and Clinical Pharmacology at the University of Melbourne. From 1980 to 1982 he was a postdoctoral research fellow at the Brigham and Women's Hospital, Harvard University, Boston. In 1988 he was appointed as Director of Cardiology at the Queen Elizabeth Hospital, Adelaide, and Professor of Cardiology, Adelaide University. His major research interests centre on the pathogenesis and potential treatment of various forms of cardiovascular disease, including myocardial ischaemia, heart failure, atrial fibrillation, aortic valve stenosis and takotsubo syndrome. Among his specific pharmacological/therapeutic interests are the potential utilities of the cardiac metabolic manipulator perhexiline and the antioxidant N-acetylcysteine.

Coronary artery spasm: Pathogenesis, diagnosis and treatment

J.D. Horowitz, MBBS, PhD, FRACP

Cardiology Unit, Basil Hetzel Institute, Queen Elizabeth Hospital, University of Adelaide, Adelaide, Australia

Coronary artery spasm (CAS) may involve predominantly large or small coronary arteries, and usually presents as episodes of prolonged ischaemic-type chest pain occurring randomly, but with a tendency toward cyclic periodicity. Diagnosis is currently difficult clinically, and many patients are discharged from Emergency Departments because of lack of clinical evidence of cardiac injury. However, precipitation of CAS following intracoronary injection of acetylcholine is diagnostic, and implies a relative impairment in the indirect, nitric oxide (NO)-mediated, coronary vasodilator component of acetylcholine effect. Recently it has become apparent that many patients with acute episodes of CAS have evidence of erosion of intracoronary atherosclerotic plaques, sometimes with associated intracoronary thrombus formation. These findings raise the possibility that some form of vascular-platelet interaction occurs during symptomatic crises in such patients, rather than just an aggravation of coronary constrictor tone.

We have therefore compared platelet anti-aggregatory responses to the autacoids NO and prostacyclin (PGI₂) in normal subjects and patients with CAS, both in chronic and acute symptomatic phases. Responsiveness to NO and PGI₂ were markedly and significantly ($p < 0.01$ for both) impaired during the chronic phase in comparison with normal data, and tended to worsen during symptomatic crises. These results therefore suggest that CAS may reflect, perhaps primarily, a propensity towards platelet/endothelial interactions within the coronary vasculature, and that it may represent a microcosm of a generalized disorder in this respect.

Results of further experiments further evaluating pathogenic mechanisms, and probing appropriate diagnostic and therapeutic options for CAS during both acute and chronic phases, will be presented.



Biography

Prof. d-r Marija Vavlukis has completed her PhD at the age of 44 years from Ss' Cyril and Methodius University, Medical Faculty, Skopje, Republic of Macedonia. She is Head of ICCU at the University Clinic of Cardiology, National coordinator of The American-Austrian Foundation-Open Medical institute, national champion in ACCA of The European Society of Cardiology, FESC since 2016. She is also a Professor at faculty of Medical Sciences at Goce Delcev University, mentoring PhD students and residents in cardiology. She has published more than 60 papers in reputed journals, books, book chapters, participated at national/international congresses, symposiums, workshops, other meetings with plenary or oral presentations in more than 40 occasions, and authored or co-authored more than 150 publications. She has been serving as an editorial board member and reviewer in several Journals of repute.

Biomarkers guided therapy for risk stratification and prognostication of patients treated for Acute Coronary Syndrome

Marija Vavlukis

Saints Cyril and Methodius University of Skopje, Republic of Macedonia

There are cumulating evidences of prognostic implications of cardiac biomarkers in patients with acute coronary syndrome (ACS). The prognostic roles of troponin (hsTn), natriuretic peptides (NPs), stress glycaemia, HbA1c, are described in different extent in the current trials. There are also data that demonstrates NPs to be predictors not only of heart failure development, but also of recurrent ischemic events.

The aim of our study is to evaluate the role of cardiac biomarkers in ACS patients in differential prognostication of heart failure (HF) versus ischemic events in correlation with left ventricular systolic function: reduced mid-range and preserved at the index event point.

Material and methods: 200 patients treated for ACS with PCI revascularization are included in the study. Beside clinical data, biomarkers such as: stress glycaemia, fasting blood glucose (FBG), HbA1c, hsTn, NT-proBNP, creatinin, estimated glomerular filtration rate (eGFR), blood urea (BUN), are measured at index event and at three months. Also, echocardiography at index event and after 3 months is/will be performed to classify patients with ACS, as having reduced, mid-range and/or preserved LVEF, and to identify transition of patients (especially those from mid-range EF group). Planned follow-up period is one year from the index event.

Results: preliminary data of ongoing study identifies cardiac troponins, stress glycaemia, HbA1c as predictors of short and mid-term prognosis in patients with ACS. With respect to NPs, our preliminary data suggests prognostic role of NPs in prediction of heart failure (after correction for eGFR), but also possible role in prediction of recurrent ischemic events more significantly in patients with mid-range LVEF.

Conclusion: this data suggests that prognostic models that incorporates simple biomarkers and estimated LVEF at index event and after three months can be developed to identify patients with differential risk of HF versus recurrent ischaemic events.



Biography

Dr. Shiyou Chen earned his PhD in 1993 and is now a tenured full Professor in the Department of Physiology and Pharmacology at the University of Georgia. Research in Dr. Chen's laboratory focuses on molecular mechanisms controlling smooth muscle phenotypic modulation, vascular remodeling, atherosclerosis, hypertension, aortic aneurysm formation. He has been published more than 100 peer-reviewed papers. He serves as an Editorial Board member for several journals in the cardiovascular field and an ad hoc manuscript reviewer for more than 50 international journals. He has also served as a grant reviewer for various study sections at National Institutes of Health (NIH) and American Heart Association (AHA), etc. He is a member of AHA, The American Physiology Society (APS), Sigma Xi, North American Vascular Biology Organization (NAVBO), American Society of Biochemistry & Molecular Biology (ASBMB), and The American Association of Immunologists.

TGF- β signaling in smooth muscle differentiation and vascular remodeling

Shiyou Chen, Ph.D.

Department of Physiology & Pharmacology, University of Georgia, Athens, GA 30602, USA

Vascular smooth muscle (SM) plays a fundamental role in embryonic development and in adult life, whereas abnormal SM differentiation or phenotypic modulation is associated with congenital heart diseases, atherosclerosis, restenosis following angioplasty, post-transplant vasculopathy, and hypertension. SM differentiation is the differentiation of mature SM from progenitors, while SM phenotype modulation is a process that the mature SM loses their contractile phenotype and acquires a synthetic/proliferative phenotype due to the down-regulation of SM contractile proteins. During the vasculogenesis or angiogenesis, SM progenitors are recruited to the endothelial cell (EC) tube, where they differentiate to SM under the stimulation of various growth factors/cytokines. The newly differentiated SMC participates in the regulation of vasculogenesis or angiogenesis by limiting the excessive EC tube formation. SM could also produce different factors regulating the function of newly formed blood vessel. TGF- β plays a critical role in SM differentiation because knockout of TGF- β ligand, receptors, co-receptors, or downstream signaling molecules causes vascular defects during embryonic development due to the impaired SM differentiation. TGF- β activates both Smad2 and Smad3. Knockout of Smad3 has no major impact on vascular development. However, knockout of Smad2 causes early embryonic lethality. By using neural crest and SM tissue-specific knockout strategy, we found that Smad2 plays an essential role in SM differentiation from neural crest cells. I will discuss the mechanism underlying TGF- β signaling in regulating SMC differentiation from neural crest cells and mesenchymal progenitors and the use of tissue-specific knockout approach to delineate the development of SM during embryonic development and SM function in adult vessels.

Audience Take Away:

- The roles of smooth muscle in vasculogenesis and angiogenesis
- Diversity of smooth muscle progenitors.
- Signaling pathways that mediate TGF- β function.
- The role of Smad2 in smooth muscle differentiation.
- Smad2 regulation of smooth muscle function in adult blood vessel.



Biography

Dr. Kee qualified in Medicine in Ireland in 1986, performed all his basic medical and radiological training in Dublin before moving to the United States in 1993. He performed a Thoracic Radiology fellowship in UCSF, followed by an IR fellowship in Stanford University. Dr. Kee was an Assistant and subsequently an Associate Professor of Radiology in Stanford University until 2006 when he took a post as Professor of Radiology and section chief of Interventional Radiology at UCLA, Los Angeles.

Recanalization of the Superior Vena Cava and it's tributaries in patients requiring Chronic Venous Access or Pacemaker insertion, techniques, tips, and safety

Stephen T. Kee M.D., FSIR, FCIRSE

Professor of Radiology, UCLA Health, 757 Westwood Plaza, Los Angeles, CA 90095

This presentation will deal with patients whose supra-diaphragmatic veins have been compromised, usually because of prior prolonged venous access, or other interventions (pacemaker wires). Many of these patients have need for continued catheterization, or placement of new pacer wires. These patients frequently present having undergone multiple procedures and placement of venous access in other sites, such as the femoral veins or even directly into the Inferior Vena Cava. These alternative access sites are problematic, cause infectious complications and are not optimal for long term use. In these patients we perform cross-sectional imaging of the Chest, either contrast CT or MR Venograms. Following this patients are accessed below the diaphragm, either through the Femoral to IVC route, or through the Hepatic Veins. The veins in the upper chest are recannalized and access obtained from either side of the neck, usually right side for venous access and left side for pacer placement.

Audience Take Away:

- This presentation is designed to allow physicians, nurse practitioners and nurses to incorporate these techniques into their daily practice, almost immediately. The techniques described are easily applicable by any interventionalists, and even some of the more advanced cases can be performed subsequent to learning these basic steps.
- These techniques have been developed from multiple procedures in over 200 patients, and these can be adapted to develop the operators own teaching techniques. There is great scope for novel devices to be developed to make these techniques even simpler.

SPEAKERS

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Ulnar access coronary artery intervention: Current scenerio

Dr (Prof) R.K.Gokhroo,MD,DM,FACC

Senior Prof and Head, Post Graduate Deptt of cardiology, Ex Principal and Controller, JLN Medical college, AJMER 305 001 India

Ulnar access is a simple feasible and easy alternate access to radial access for coronary angiography and interventional procedure. The technique is difficult for the learners so discussion about technique and feasibility of all interventional procedure through route is feasible.

Audience Take Away:

- Audience will learn the tips and tricks of ulnar access puncture technique(I have an experience of more than 3200 procedures)
- Interventional cardiologist will get four upper arm access for the interventional procedure hence shifting from radial to femoral access will be reduced to less than 1%, hence femoral access related complications will be less and the patients hospital stay will be reduced and also, post-operative care will be better.
- This research that other faculty could use to expand their research or teaching? Yes
- Does this provide a practical solution to a problem that could simplify or make a designer's job more efficient? Yes
- Will it improve the accuracy of a design, or provide new information to assist in a design problem?
- Interventional cardiologist will have four upper arm accesses for coronary angiography and interventional procedure.
- Less vascular complications to the patients
- Less hospital stay of patients so more economic benefit.
- Procedure technique is Good for female, obese and pelvic access problems
- Spare radial access for CABG graft and Hemodialysis access a v canulations.

Biography:

Dr R.K. Gokhroo is presently Senior Prof and Head, Post Graduate Department of cardiology, Ex Principal and Controller, JLN Medical college, AJMER 305 001 India He is President „Indian society of cardiology, Editor, Indian Journal of Cardiology. He is MD, DM(CARDIOLOGY) from Post graduate institute of medical education and research, Chandigarh India 1993.He is member of more than 12 cardiovascular societies of India and abroad. He is a fellow of American College of cardiology (FACC) and more than 10 societies. He is recipient of many prestigious awards at national and international plate forms. He was recognised best distinguished teacher and service award by Former President of India Dr APJ Kalam 2008. He has more than 250 research papers in the national and international journals. He has pioneer work on the ulnar access and highest experience in the world. He was awarded by ACC for its AJULAR STUDY in the late breaking clinical trials in 2015. He was awarded three consecutive years by ACC for best Highest ranked abstract from India in 2015, 2016, 2017

Assessment of right ventricular systolic function by two dimensional echocardiography and longitudinal strain: Is right ventricular systolic function influenced by right atrial function

Veena Raizada

University of New Mexico Health Science Center, USA

Right ventricular (RV) systolic function is impaired in several cardiopulmonary diseases, including heart failure of varied etiologies, valvular diseases, cardiomyopathies, pulmonary hypertension, acute pulmonary embolism, collagen vascular diseases and pericardial diseases. Examination of RV function is inherently difficult, but a combination of conventional two-dimensional echocardiography (2D echo) and global longitudinal strain (LS) using speckle tracking has proven useful in assessing RV systolic function. Commonly used 2D echo indices recommended by the American Society of Echocardiography (ASE) for assessing RV systolic function include RV fractional area change (FAC), tricuspid annular plane systolic excursion (TAPSE), peak systolic velocity of tricuspid annulus (S') and right ventricular index of myocardial performance (RIMP). Using these indices, RV systolic function has been shown to be impaired in patients with heart failure with preserved as well as with reduced LV ejection fraction, dilated cardiomyopathies, myocardial infarction, mitral valve disease, and aortic stenosis, both before and after aortic valve replacement. RV systolic function is also impaired in constrictive pericarditis due to myocardial infiltration of the RV by pericardial diseases.

Although the above 2D echo parameters provide an estimate of RV systolic function, strain is a superior measure of velocity of shortening or cardiac contractility (i.e., the “strength” of contraction). RV LS is defined as normal if the percentage of systolic shortening of the RV is $\geq 20\%$, that is, $< 20\%$ abnormal. LS can also be used to provide information on right atrial (RA) function beyond the data on RA size and function that can be obtained using 2D echo. The RA plays three major roles that influence RV filling and systolic function: it acts as (1) a contractile pump, (2) a reservoir for caval venous return, and (3) a conduit for the passage of blood from the RA to RV. In recent studies using a combination of 2D echo and LS, all three components of RA function and RV systolic function were found to be reduced in constrictive pericarditis. These findings indicate that LS has promise as a measure for quantifying RA function in other diseases affecting the RV, allowing improved tracking of the clinical course and treatment outcome.

Oral anticoagulation during pregnancy: Current scenerio

Dr (Prof) Kamla Gokhroo,MS,FICG.FISC

Ex Prof and Head, Post Graduate Deptt of Gynaecology and obstetrics Geetanjali Institute of Medical sciences, Udaipur, India

Audience Oral anticoagulation drug usage is a challenging field during pregnancy. Many newer oral anticoagulation agents have come in the basket of therapeutic armamentarium like NOACs.their knowledge is of utmost importance for the treating physicians and obstetricians.

Audience Take Away:

- Audience will learn the correct and optimal usages of Oral anticoagulation drugs during pregnancy with heart disease and upcoming roll of NOACs.
- Does this research that other faculty could use to expand their research or teaching? Yes
- This updation will help the cardiac obstetricians to be more confident for use of Oral anticoagulation drugs.
- Does this provide a practical solution to a problem that could simplify or make a designer's job more efficient? Yes
- Will it improve the accuracy of a design, or provide new information to assist in a design problem?
- This updation will help the cardiac obstetricians to be more confident for use of Oral anticoagulation drugs

Biography:

Dr (Prof) Kamla Gokhroo,MS,FICG.FISC,Ex Prof and Head,Post Graduate Dept. of Gynecology and obstetrics, Geetanjali Institute of medical sciences, Udaipur, India. She is MS (Gynecology and Obstetrician) from Dr S.N.Medical College Jodhpur,India.She is member of FOGSI ,IMA,Raj Fogs and Indian society of Cardiology .and fellow of above society. She is reciepiant of many prestigious awards at state and national and plate forms. He was recognised best distinguished teacher. She has more than 40 research papers in the national journals.Her field of interest is cardiac obstetrics.

New aspects of regulation of cardiac action potential duration

Péter P. Nánási

Department of Physiology, University of Debrecen, Debrecen, Hungary

In this talk three basic features of regulation of action potential duration (APD) are discussed, each based on changes in the net membrane current (I_{net}) during the plateau of the AP.

1. The *reverse rate-dependent nature* of drug effects on APD means that any drug-induced change in APD is more pronounced at longer than at shorter cycle lengths. Similar results are obtained when repolarization is modified by injection of inward or outward current pulses. On the other hand, all drug-induced or current-induced changes in APD well correlate with the baseline value of APD in all mammalian preparations studied, including the human heart. Since I_{net} is inversely proportional to APD, and consequently to cycle length, it is concluded that that reverse rate-dependency may simply reflect the inverse relationship linking I_{net} to APD. In summary, reverse rate-dependency is an intrinsic property of cardioactive drug actions.

2. *Beat-to-beat variability* (short-term variability, SV) of APD is a good predictor of cardiac arrhythmias, however, the factors influencing its magnitude are not fully clarified. Since SV is an exponential function of APD itself, the term of relative SV (RSV) had to be introduced to eliminate the direct effect of APD changes. RSV is determined by normalizing the observed SV changes to concomitant changes in APD, and this ratio is compared to the exponential SV-APD relationship, obtained using inward and outward current injections. RSV is decreased by ion currents playing critical role in the negative feedback regulation of APD, such as I_{Ca} , I_{Ks} and I_{Kr} , therefore blocking of these currents may carry some proarrhythmic risk. Conversely, RSV was increased by I_{Na} , in line with the known antiarrhythmic effect of late I_{Na} blockade. RSV is modulated by several further parameters, like intracellular Ca^{2+} concentration, tissue redox potential, stimulation rate and temperature.

3. *Adrenergic activation* of L-type Ca^{2+} and various K^{+} currents is a crucial mechanism of cardiac adaptation, however, it carries substantial proarrhythmic risk. It was found that the isoproterenol (ISO)-induced activation of I_{Ca} precedes the enhancement of I_{Ks} and I_{Kr} . Since this temporal shift is differently affected by selective blockade of β_1 and β_2 adrenoceptors, and is reduced after inhibition of phosphodiesterases, different adrenergic signal transduction pathways and compartmentalization is likely involved.

Audience Take Away:

- Reverse rate-dependency is an intrinsic property of cardioactive drug actions and drug-induced changes in action potential duration increase with the baseline value of action potential duration.
- Beat-to-beat variability of action potential duration, which is a good predictor of cardiac arrhythmias, changes together with baseline action potential duration, therefore, the term of relative variability had to be introduced to characterize drug actions on beat-to-beat variability.
- The isoproterenol-induced activation of L-type Ca^{2+} current precedes the enhancement of K^{+} currents in canine ventricular myocytes, which is likely related to differences in compartmentalization of the two systems.
- These results of basic research may lead to better understanding the mechanisms of cardiac arrhythmias and the development of better antiarrhythmic strategies.

Biography:

Degrees: Medical Doctor (M.D.): 1980, Candidate of Medical Sciences (Ph.D.): 1992, Doctor of Hungarian Academy of Sciences (D.Sc.): 1999, Med. Habil.: 2000

Academic position: Full professor: Department of Physiology 2002-; Chairman: Department of Dental Physiology and Pharmacology 2001-

Publications: In extenso scientific papers in peer reviewed journals: 165; Cumulative impact factor: 455; Independent citations: 2332; Total citations: 3026; Hirsch index: 34; Book chapters: 9

Research interest: Cellular cardiac electrophysiology, including

Ion currents in mammalian and human cardiac myocytes, beat-to-beat variability of action potential duration, Ca-dependent ion currents, proarrhythmic mechanisms, antiarrhythmic drugs, action potential voltage clamp, fluorescent Ca^{2+} measurements.

ECMO past, present and future

Dr Cyril Jacob Chacko MD,FRCA,FFICM, International Diploma in ECMO & Short -Term Respiratory/Circulatory Support

Department of Critical Care Medicine and Anaesthesia, Royal wolverhampton NHS trust, Teaching Hospital Trust of the University of Birmingham,UK

The use of mechanical circulatory support has been increasing over the last 2 decades. The indications of extracorporeal life support (ECLS) are respiratory failure refractory to conventional management, post MI cardiogenic shock, post cardiectomy cardiogenic shock, ECMO CPR, PE, high risk PCI and sepsis. The improvement in oxygenators, pumps, cannulation techniques and anticoagulation strategy has decreased the incidence of complications. This talk we will mainly concentrate on veno-arterial(VA) ECMO.

Indications for VA ECMO:

Post MI cardiogenic shock with publication of the SHOCK 3 trial the recommendations and use of intraaortic balloon pump has been downgraded. ECLS has increasingly being used as a support therapy in this cohort of patient, with two trials presently recruiting.

- ECPR The use of ECMO has been recommended by the UK resuscitation council for refractory cardiac arrest.
- There are increasing cases reports of PE, high risk PCI and severe sepsis being supported with ECLS.
- We would look at different techniques of cannulation for VA ECLS. Maintenance of patient on ECLS and weaning of ECLS. The common complications of ECLS bleeding, harlequin syndrome, vascular damage and management of the complications.
- We look to present systematic literature review on the evidence of ECLS and the recommendations. Critical appraisals on the new trials on ECLS, the new devices available and the new anticoagulation techniques that have led to improvement in outcomes of ECLS.
- A crystal ball looks into the future development of ECLS and where newer modalities ECLS support are developing. The possible newer indications of ECLS and challenges faced.

Audience Take Away:

- Understanding when to refer to an ECMO centre
- The indications and contraindications of ECLS
- The new frontiers in the world of ECLS.

Biography:

Dr Cyril Jacob Chacko studied medicine in Tver state medical academy in Russia and graduated in 2002. He joined the anaesthetic and critical care training in west midlands region UK. He did his advanced critical care training in University Hospital of Wales in Cardiff and is a fellow of the royal college of anaesthetists and Fellow of the Faculty of intensive care Medicine, England. After his completion of his CCT he did post CCT fellowship in Extracorporeal life support and critical care echocardiography. He has worked as a consultant in the university hospital of Birmingham and University hospital of Leicester. He has published many research articles in peer reviewed journals.

The role of mechanical circulatory support in advanced heart failure

Zumrut Tuba Demirozu, M.D

Assoc.Prof. of Cardiovascular Surgery, Department of Cardiovascular Surgery, Koc University Hospital, Istanbul, Turkey

Heat Failure (HF), is a well- recognized costly public health problem with high patient mortality. According to Interagency Registry for Mechanically Assisted Circulatory Support (Intermacs) Reports increasing number of Ventricul Assist Device (VAD) implantations and classified severe heart failure into seven subcategories to describe the patient status before VAD implantation.

Devices are divided for short-term and long-term support where the indications are depended on patient status and quality and survival time after the implantation of the pump.

Heart Transplantation (HT) is the definitive therapy for advanced heart failure, but it is limited by the availability of donor hearts and recipient criteria. Alternative treatment for advanced heart failure, mechanical circulatory support has gained important role in management of advanced HF.

For long term success of this treatment, indications, pre-operative, intra-operative and post-operative management, fine-tuning of the pumps and follow-up of the patients should be considered by the heart team.

Audience Take Away:

The audience will be able to understand and compare cutting-edge technologies about the assist devices, total artificial hearts. Fine-tuning of these devices with the help of echocardiography.

Biography:

Assoc. Prof. Zümürüt Tuba Demirözü was born in 1973 in Ankara. After finishing her high school Kadıköy Anatolian High School in 1991, she graduated from Marmara School of Medicine in 1998. She finished her residency programme in Hacettepe University School of Medicine, Cardiovascular Surgery Department in 2005 and worked as a cardiovascular surgeon at Ankara Güven Hospital from 2005 to 2008. She had worked at Houston Texas Heart Institute at Heart Transplantation and Mechanical Circulatory Support Department with Dr.O.H Frazier from 2008 to 2011. She had worked at Bilim School Of Medicine, Cardiovascular Surgery Department and Florence Nightingale Hospital at Heart Transplantation and Mechanical Circulatory Support Department between 2011 and 2014. She is currently working at Koç University Hospital Cardiovascular Surgery Department since September 2014.

Electrocardiogram of the neonate and infant

Konrad Brockmeier, MD

Pediatric Cardiology, University of Cologne, Cologne, NRW, Germany

The ECG in children has a number of characteristic differences compared to the ECG of the adult. The transition of the ECG in neonates after birth represents dynamic changes of the circulatory system due to the postnatal adaptation, different physiologic properties of the fetal and neonatal myocardium, the location and orientation of the heart in the chest and influence of body mass during that period and later on in childhood. The ECG is an obligatory diagnostic tool in childhood arrhythmias. The complexity of changes implies a broad variation of ECG changes during the first days and weeks of life, whose interpretation requires expert knowledge.

Audience Take Away:

- The neonatal changes of the ECG are extreme. The knowledge of these changes explains the presentation of ECG during childhood.
- Preventing misinterpretation of the ECG in Childhood. Explains why routine ECG/screening in the very young is not very useful.

Biography:

Professor Konrad Brockmeier MD is a professor of pediatrics and the director of the department of pediatric cardiology at the University of Cologne, Germany, since 2002.

He graduated in medicine at the Free University of Berlin, Germany. He was an associate professor at the University of Heidelberg, Germany. He is a Fellow of the European Society of Cardiology. He has served in Council of the Association of the European Paediatric Cardiologist (AEPC) until 2018 as a Scientific Secretary. He was also member of the Board of the International Society of Computerized Electrocardiology (ISCE) from 2003-2013 and 2016 until now.

Next-Generation Sequencing in clinical diagnostics: Genetic testing, variant classification, and functional analysis

Rick Kamps, PhD

¹Department of Clinical Genomics & Cell Biology, Maastricht University, Maastricht, Limburg, The Netherlands

Next-generation sequencing (NGS) technology expanded in the last decades with significant improvements in the reliability, sequencing chemistry, pipeline analyses, data interpretation and costs. Such advances make the use of NGS feasible in clinical practice nowadays. This presentation describes the recent technological developments in NGS applied to the field of heterogeneous mitochondrial diseases showing lethal hypertrophic cardiomyopathy (HCM) and Leigh Syndrome (LS). A number of clinical applications are highlighted i.e., variant detection of autosomal recessive diseases based on DNA-sequencing, detection of splice variants based on RNA-sequencing, application for pre-implantation genetic diagnosis, downstream variant analysis by using functional model assays. In a recent study, we provided data of 3 families with pediatric HCM and LS, and multiple oxidative phosphorylation deficiencies (OXPHOS), but we identified the causative variant by exome-sequencing. Given the dual genetic heterogeneity of OXPHOS disorders with more than 1500 nuclear genes potentially involved, Whole Exome Sequencing (WES) is the best suitable unbiased approach for finding the underlying genetic cause. First, we started with an autosomal recessive disease model and in case of reported consanguinity i.e. one patient, we focused on homozygosity regions. Conclusive remarks, clinical and technical limitations, implications and ethical considerations that relate to NGS are provided in this presentation.

Audience Take Away:

- The audience will learn more about NGS in diagnostics as a first strategy to determine the genetic defect in pediatric mitochondrial diseases, variant classification, and functional assays.
- Improved understanding in dual genetic defects and clinical heterogeneous pediatric diseases.
- Implementing NGS in a clinical diagnostics area.
- Better understanding in variant classification and functional analysis. This NGS strategy improves the clinical diagnostic yield up to ~70% in most pediatric mitochondrial disease cases.

Biography:

Rick Kamps has his expertise in Next Generation Sequencing (NGS) platforms. He is a research manager and finalizing his PhD. The basic inventions for these platforms are combinations of new and old technologies, which results in great possibilities in clinical genomics. These developments are contributing in a sustainable healthcare for everybody and a better understanding in complex genetic diseases. He is an interested and a motivated skilled young researcher in a dynamic field (in-out of the box thinking) of NGS in clinical diagnostics.

A novel biomarker for cardiovascular conditions

Professor Jian Guan

Pharmacology and clinical pharmacology department, Faculty of Medicine and Health Sciences, The Liggins Institute, University of Auckland, New Zealand

Consistent evidence links insulin-like growth factor (IGF)-1 deficiency to a range of cardiovascular and metabolic disorders including hypertension and stroke. A biomarker for IGF-1 function would be clinically useful for the prognosis of cardiovascular conditions. While plasma IGF-1 is largely inactive due to its high affinity binding of IGF binding protein (IGFBP), cyclic glycine-proline (cGP), an IGF-1 metabolite, can regulate the bioavailability of plasma IGF-1 and improve IGF-1 function by competing with IGF-1 to IGFBP-3 binding¹. The relative value of cGP to IGF-1 (cGP/IGF-1 molar ratio) can represent the bioavailable IGF-1¹⁻⁴.

Our recent clinical observations showed that plasma cGP is low in women with hypertension⁴ and treatment of cGP normalised the systolic blood pressure in a rat model of high fat diet (HFD)-induced metabolic disorders.

Plasma cGP was also low in stroke patients at hospital admission (<3 days of stroke). The concentration of cGP was increased and neurological deficits and the disability were gradually improved in next 90 days. The changes of cGP at hospital admission (<3 days) was correlated with the scores of NIHSS, mRS and FM-UL 90 days after stroke. Administration of cGP prevents ischemic brain injury through preventing IGF-1 associated vascular injury in rats¹. The cGP/IGF-1 ratio at admission may be a potential biomarker for predicting functional recovery in stroke patients.

In conclusion, low cGP concentrations and low cGP/IGF-1 ratio suggest an impairment of IGF-1 function in hypertension and stroke. The change of plasma cGP concentration and/or cGP/IGF-1 ratio may be a prognostic biomarker for stroke and hypertension and may also provide the guidance for individualizing cGP intervention.

Audience Take Away:

- The role for cGP in normalizing IGF-1 function is novel and provides additional insights to IGF-1 research, which aims the normalisation.
- cGP is also a natural nutrient and presents in some foods.
- cGP research provides and develops the opportunities to the interventions with plant based supplementation, which has far more advantages in pharmaceutical developed drugs.

Biography:

Dr Jian Guan completed the medical degree in China 1982, and gained PhD in Paediatrics from University Auckland, New Zealand in 1996. Jian is a neuroscientist with research interests in brain development, aging and functions by evaluating neuroplasticity, vascular remodelling and the interactions of neurons, glial phenotypes and capillaries. Her research specialty includes neurobiology and neuro-pharmacology of IGF-1 and its related peptides, animal modelling, behavioural evaluations, biological and pathological assessments. The discovery of the mechanism of IGF-1 metabolites leads to the investigation of novel biomarkers for IGF-1 function. She holds a permanent research position in the Department of Pharmacology and Clinical Pharmacology, the School of Medical Science, FMHS, the University of Auckland.

Unusual intracardiac mass beyond common sense

Lianyi Wang*, Chunbo Wang, Xiujie Tang

Heart Centre, First Hospital of Tsinghua University, Beijing, China

Intercardiac mass is relatively rare compared to in other organs. The nature of the mass directly determines the treatment plan and prognosis of patients. Generally speaking, it is not difficult for doctors to differentiate between tumour mass and intracardiac thrombus. Atrial thrombosis is more common in severe mitral stenosis. Ventricular thrombosis is often seen in ventricular aneurysm after myocardial infarction, and in patients with severe systolic dysfunction. We report two cases of unusual intracardiac thrombosis. One case was an 8-year-old boy with cough and fever for 13 days. A diagnosis of mycoplasma pneumonia was made based on laboratory test. A solid mass attached to chordae of tricuspid valve in RV was found from an otherwise normal echo study. The mass didn't resolve after experimental thrombolytic treatment. Cardiac tumor was suspected and operation was successfully performed to remove it. Pathology diagnosis turned out to be a thrombus. The other case was a 34-year-old female with a history of dizziness, drowsiness and confusion for 3 days. MRI showed subacute multiple cerebral infarction. Echo study showed: cardiomegaly, LVEF18% and apical thrombus. She was originally diagnosed as dilated cardiomyopathy with left ventricular apical thrombosis, but laboratory test showed positive lupus anticoagulant test and dramatic changes within 3 months after treatment offered clue for other diagnosis. A possible antiphospholipid syndrome made the unusual clinical scenario more reasonable.

Audience Take Away:

- Some special infection, especially mycoplasma pneumonia, may trigger the auto immune system, which can make intracardiac thrombosis happen even in a heart with normal size and normal systolic function. Doctors should be aware of cardiac thrombosis possibility and associate laboratory tests should be included in such situation. Transient autoimmune antibodies, especially antiphospholipid antibodies, are associated with increased risk of a/v thrombosis.
- Antiphospholipid syndrome (APS) is a systemic autoimmune disease defined by thrombotic or obstetrical events that occur in patients with persistent antiphospholipid antibodies. Vascular thrombosis can be documented as one or more episodes of arterial, venous or small vessel thrombosis in any tissue. Dilated cardiomyopathy like condition is a rare cardiac manifestation of APS.
- Dramatic response to anticoagulants, steroids can be observed in severe APS cases. This helps to differentiate APS to common dilated cardiomyopathy.
- In patients with obstetrical and thrombotic events APS is often easily of concern. However it is often ignored and underdiagnosed in dilated cardiomyopathy like condition with intracardiac thrombosis.
- Lessons learned from these cases would help cardiologists to achieve early correct diagnosis and better outcome of the patients.

Biography:

Dr. Lianyi Wang graduated from the Third Military Medical University in 1989. She then joined 301 Hospital (also Military postgraduate medical school) in Beijing and trained in cardiology. She earned her PhD in 1999 at the same institution. She did her 3 year postdoctoral research fellowship in cardiology supervised by Dr. Nelson Schiller at University of California in San Francisco in US. She joined the First Hospital of Tsinghua University in 2003, and now is the director of Medical Imaging Center also vice director of the Heart Center.

Pharmaco invasive strategy for STEMI reperfusion in North African countries

Walid Jomaa

Cardiology B Department, Fattouma Bourguiba University Hospital, Monastir, Tunisia

Primarily percutaneous coronary intervention (pPCI) is the current gold standard in ST-elevation myocardial infarction (STEMI) management. Pharmacoinvasive strategy (PS) in STEMI consists in the use in a timely manner of pharmacological fibrinolysis for STEMI when pPCI is not immediately available. In countries where access to pPCI for STEMI is not the standard of care in all regions either because of long distances or because of the lack of facilities, PS is a very interesting alternative. In clinical trials, such as the STREAM trial, PS implementation led to early and long term outcomes that were comparable to those with pPCI. North African countries are among those with limited interventional cardiology facilities. Besides, patients presenting for STEMI in these countries have a particular coronary risk profile with an alarmingly high prevalence of diabetes mellitus and tobacco smoking. Furthermore, mass awareness campaigns about healthy lifestyle and attitudes to adopt facing acute chest pain are lacking. First attempts to put in place STEMI reperfusion programs started with the wide use of fibrinolytic agents in the prehospital setting with in-hospital mortality rates that were around 10 to 12%. Invasive coronary angiography was performed several hours or days after the acute phase. Outcomes started to improve when fibrinolysis, especially using fibrinolytic agent with a back-up transfer to centers with pPCI platform was used. In-hospital mortality rate dropped to 8% between 2000 and 2006. In our single center experience in Monastir, in-hospital mortality rate dropped from 12% in the late 90's to 7% then to nearly 5% in 2016. The FAST-MI Tunisia registry was sponsored by the Tunisian Society of Cardiology and included 459 consecutive patients from 17 centers with or without pPCI facilities. Data published recently confirmed the high coronary risk profile in Tunisian patients and the positive trend toward lower early mortality rates (<5%) in the last years by the implementation of PS. Ultimately, as in other emerging countries with limited resources, implementation of PS in North African countries led to better STEMI outcomes.

Audience Take Away:

- Data about the epidemiology of coronary artery disease in North African countries, which are very scarce in the literature, are exposed
- Audience from emerging countries will be introduced to strategies for STEMI reperfusion in countries like Tunisia and Algeria. It is indeed very interesting to see to what extent the implementation of pharmacoinvasive strategy in Tunisia improved STEMI prognosis
- Logistics of care and practical aspects of the implementation of the PS in these countries will be exposed

Biography:

Dr. Walid Jomaa studied medicine at the Faculty of Medicine of Soussa, Tunisia. He did his residency in Monastir, Soussa and Paris hospitals. He got his MD degree from the Faculty of Medicine of Soussa as well as his Cardiologist degree. He did his fellowship in Interventional Cardiology at the Institut Mutualiste Montsouris (Paris, France) and got his certification for Université Paris V. He is interventional cardiologist in Monastir and Associate Professor at University of Monastir. He is first author of several Cardiology papers in indexed journals. He is faculty in several meetings in Tunisia, France, Korea and the USA.

Effect of endurance training conducted under hypoxia conditions, on change of exercise tolerance of patients after myocardial heart infarction (STEMI) - a pilot study

Tomasz Gabrys^{1*}, Anna Nowak², Zbigniew Nowak², Urszula Szmatlan-Gabrys³

¹Centrum of Physical Education and Sport, University of West Bohemia in Plzen, Czech Republic

²Department of Physiotherapy in Internal Organ Diseases, Jerzy Kukuczka Academy of Physical Education, Katowice, Poland,

³Department of Anatomy, University of Physical Education, Krakow, Poland

It is very important to monitor closely and take appropriate precautions for patients after myocardial infarction because every year many of them go High Mountain trekking or practice winter sports.

Material and methods: In 22 training units under artificial, normobaric hypoxia conditions (2000 m asl) participated 12 men after myocardial heart infarction treated with angioplasty or coronary artery bypass grafting (60 ± 10 , 60 years). Before training program all patients in normoxia conditions underwent: echocardiography examination, spirometric test using a treadmill, lactic acid concentration (before and after test), morphology, lipids (cholesterol, triglyceride), TNF α (tumor necrosis factor), IL 1β (Interleukin 1β), IL1 (Interleukin1), body mass and composition. The blood saturation was measured each time during every training. After 22 of training all examinations were repeated in normoxia conditions.

Results showed there is no danger of training in hypoxia conditions for patients. There are significant changes in parameter of treadmill test (time, MET, distance), morphology and blood saturation.

Conclusion: It is important to search some more interesting and efficient rehabilitation methods and presented results can be used during inventing some new rehabilitation programs. It can be helpful to explain whether high mountain conditions are safe for cardiac patients as well. And become introduction to analyze influence of specific other high mountain conditions as pressure, temperature, phenomenon, etc.

Audience Take Away:

- Research opens new possibilities in the rehabilitation of patients after cardiac surgery. They create an area for discussion on the use of hypoxia in accelerating rehabilitation. Research creates a new chapter on the use of hypoxia in improving patients after cardiac procedures. They are the starting point for wider multicenter research on this issue.
- The research presented at work is supposed to have a practical character. It creates a theoretical basis for the construction of hypoxia programs in the rehabilitation of people after cardiac surgery. The search for additional markers related to the impact of hypoxia on the body of cardiac patients is intended to provide new information needed in the further design of training programs.

Biography:

PhD Tomasz GABRYS prof. (H.C. prof.) . The professor of sciences about the physical culture, professor in University Jan Dlugosz in Czestochowa Poland and ass prof. in West Bohemia University in Plzen Czech Republic. Co-operated with Institute of Sport University of Central Lancashire in Preston (Gr.Britain). Member of Polish National Team in ice hockey as team doctor in the WC in 2007 and 2008, the consultant of Polish National Team in alpine skiers (OG Torino), Slovakia National Team in biathlon (OG Vancouver), Polish National Team in Cycling (OG Athens, Beijing, London), Polish National Team in judo (OG Beijing) swimmers of Paralympic Games Sydney and Athens, sport doctor in Russian Federation of the cyclist's. Author above 200 publication of the theory of sport training, physiology and physiotherapy.

Relationship of glycemic status, arterial hypertension and macrovascular complications: Results of a multicenter cohort study

M.N. Mamedov*, CX. Mehdiyev, B.U. Mardanov

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²FGBU National Medical Research Center for Preventive Medicine, Ministry of Health of Russia, Petroverigsky Pereulok, 10, Moscow, Russian Federation, 101000;

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Aim: To study the relationship between glycemic controls, arterial hypertension (AH) and macrovascular complications in patients with type 2 diabetes mellitus (T2DM).

Methods: 528 patients with T2DM, aged 30–69 years (30.5% men, 69.5% women) were included in the clinical and epidemiological study. Values of glycohemoglobin $\geq 7\%$ were regarded as diabetic decompensation.

All patients were conducted a survey, clinical examination, measurement of antropometric and hemodynamic parameters, ECG at rest and ECHO CG. In addition, we determined the carotid intima-media thickness (IMT), the ankle-brachial index, as well as the form and extent of blood flow disorders in the vessels segments of the lower extremities. Cardiovascular diseases are verified by survey, clinical examination and medical records.

Results: With inadequate control of diabetes, AH was more common (83.5%), and the severity of AH was significantly more significant ($p = 0.023$), ECG and EchoCG showed signs of left ventricular hypertrophy. A prolonged antihypertensive therapy was taken by a small proportion of patients, in most cases in the form of a course of treatment and during a rise in BP. In this group of patients, more angina was detected (according to a survey - 7%), ECG signs of CAD (26.7%), EchoCG signs of aortic atherosclerosis (46.7%), myocardial infarction (6.1%) and its ECG signs (37, 1%), as well as hypokinesia (33.3%) and akinesia (21.0%). Poor glycemic control was associated with frequent occurrence of rhythm disturbances (22.2%), CHF (40.0%), diastolic (54.9%) and systolic dysfunction (20.6%). Stroke (5.2%), severe degrees of stenosis of the carotid arteries increased with decompensation of diabetes, an increase in the IMT was also noted. In the lower limbs, the main type of blood circulation was determined, severe stenosis increased at the periphery, impaired blood flow was noted mainly in the subcompensation stage, and in the popliteal ankle segment also in the decompensation stage.

Conclusion: In cases of the inadequate glycemic control in patients with T2DM, macrovascular complications and hypertension were recorded more frequently. This circumstance indicates increased glycemic control and prevention of CVD.

A low-cost, automatic, external defibrillator and pacemaker for home/office to prevent sudden cardiac death

A.Teddy Weiss

Hadassah University hospital, Israel

Sudden cardiac death(SCD)-caused by ventricular fibrillation(VF) or standstill- occurs in about 1000 persons/day in US alone. Since survival drops by 10% for every minute delay- no ambulance in the world will be quick enough to save them. The existing AEDs, that are now distributed in public places are not a good solution for home-use, due to their high cost for battery and capacitor not needed in TED. AICDs inserted surgically-are very expensive and risky and help only in few patients.

Our TED device modifies by computer the sinusoidal alternating electrical current from the mains to a biphasic defibrillatory wave and its cost-affordable to every household. In addition -it can pace the heart in case bradycardia or standstill caused SCD or it occurred after the electric shock.. In order to prove the safety and feasibility of TED -we performed 2 animal experiments: in the first-we used 5 pigs:repeated defibrillation of stable VF after 15 seconds was applied by TED or by a standard AED. Defibrillation was successful by both devices and thresholds were found to be similar. The second experiment used a rat model: six rats, underwent a mid LAD coronary closure and 3 months later VF was induced and TED defibrillation and external pacing was successfully achieved using TED in all ,at a heart rate above their rate, for an unlimited time before and after defibrillation. We conclude that modified alternating shock delivered by our device-TED- is feasible and as effective as that of the standard AED. This low-cost new technology should be used to prevent sudden cardiac arrest occurring at home/office.

Audience Take Away:

- The audience will become aware of the biggest unmet need in medicine:the huge toll of sudden cardiac death and the lack of predictive and efficient strategies to prevent them.
- The proposed immediate low-cost home-defibrillation ,if implemented in AEDs and combined with new wearable pulse sensor devices-is the only strategy that will be successful

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. He was the director of the intensive coronary care unit in Hadassah for 30 years and now-director of cardiac rehabilitation unit. He has published more than 150 papers in reputed journals with a great impact in nuclear cardiology and pre-hospital thrombolysis for acute myocardial infarction.

KEYNOTE FORUM

**CARDIOLOGY
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OCTOBER

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TOKYO, JAPAN

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Biography

Richard Lim, MBBS(Hons), MD, MPhil, FRCP(Lond), FACC, FESC, Interventional Cardiologist at The Princess Alexandra Hospital Brisbane since July 1997 and Associate Professor of Medicine at The University of Queensland, graduated 1984 from The University of Newcastle upon Tyne UK, undertaking cardiology training at St Bartholomew's Hospital London (1989-94) where he also completed his research MD on prognostic assessment of CAD by nuclear cardiology and research MPhil on outcomes of patients awaiting revascularisation. Further sub-specialty experience at the Royal Hull & East Yorkshire Hospitals led to the CCST(UK 1996), then a sabbatical year as Post-Doctoral Interventional Fellow at the University of Maryland Hospital Baltimore USA. Richard performed the first-ever PCI at the PA Hospital in 1998 and maintains a research focus on prognosis in CAD and quality improvement in PCI.

Time to revisit TIMing in Primary PCI for STEMI

Richard Lim, MBBS (Hons), MD, MPhil, FRCP (Lond), FACC, FESC

The University of Queensland, Princess Alexandra Hospital, Brisbane, Australia

Introduced 30 years ago, reperfusion therapies have become standard of care in the acute management of ST elevation MI. The criteria for assessing success of these strategies have not kept pace with the refinement of primary PCI systems of care. It is about time these legacy measures shaped by early reperfusion trial criteria are updated to reflect the predominant focus of contemporary clinical practice.

Audience Take Away:

- Revisiting historical criteria for gauging reperfusion success
- Shifting focus to what really matters in the acute treatment of STEMI
- Redefining key performance indicators
- Shaping future trial design and endpoints



Biography

After obtaining his MD and specialist degrees at the Faculty of Medicine of Tunis (Tunisia), Dr Boukhris pursued a fellowship in Interventional Cardiology at Cannizzaro Hospital, University of Catania (Italy).

Dr. Boukhris is an interventional cardiologist specialized in chronic total occlusions and high-risk PCI and also Assistant Professor in Cardiology at the Faculty of Medicine of Tunis.

Dr. Boukhris has published over 60 peer-reviewed articles and has contributed in 6 cardiology books. He has also won several awards and is actually reviewer of many cardiology Journals.

The major research fields of Dr Boukhris are: interventional cardiology, endothelial dysfunction, and hypertension.

Impact of allopurinol on endothelial function in diabetic patients affected with coronary artery disease: Results from the randomized ALLIENCE trial

Marouane Boukhris MD, FESC

Department of Cardiology, Faculty of Medicine of Tunis, University of Tunis El Manar, Tunis, Tunisia

Background: It is well known that diabetic patients have increased oxidative stress with different degrees of endothelial dysfunction. Although studies have demonstrated the benefit of the use of high dose of Allopurinol in improving the endothelium function, its impact on diabetic patients suffering from coronary artery disease (CAD) still unclear.

Methods: We performed a simple-blind randomized trial enrolling patients with type 2 diabetes and CAD who underwent percutaneous coronary intervention (PCI). Patients were randomly assigned to either conventional optimal medical therapy (OMT) alone (control group) or OMT associated with high dose of Allopurinol (300mg/day the first month then 600 mg/day the second month) (Allopurinol group). The primary endpoint was the changes in endothelium-dependent « flow mediated dilation » (FMD) at 2 months. The secondary endpoints were the changes in endothelium-independent brachial dilation, quality of life (QoL) as assessed by Seattle Angina Questionnaire (SAQ), and major adverse cardiac events (MACE) occurrence at 2 months. The study was registered on clinicaltrials.gov: NCT03385135.

Results: From September 2017 to April 2018, a total of 63 patients (mean age 58.5 ± 8.3 years, 84.1% males) were included into the study, and randomly assigned to either Allopurinol group (N=32) and control group (N=31). No differences in clinical characteristics were observed between the two groups (all p=NS).

At baseline, FMD was comparable between the two groups (Allopurinol: 3.22 [inter-quartile interval (IQI) 0.27-8.19] %, controls: 3.52 [IQI 1.22-5.41] %, $p=0.961$). At 2 months, no significant difference was observed in FMD between Allopurinol group (3.87 [IIQ 2.76-8.69]) and control group (3.51 [IIQ 2.75-7.69]) ($p=0.598$). Similarly, no significant improvement in endothelium-independent brachial dilation was found in Allopurinol group in comparison with controls ($p=0.478$).

Regarding QoL, at 2 months, patients in Allopurinol group showed better improvement in angina frequency ($p=0.020$) and disease perception ($p<0.001$) than controls.

No MACE was observed in both groups. No side effect of Allopurinol was noted.

Subgroups analysis revealed that Allopurinol was associated with significant improvement in FMD in comparison with controls, only in the two following subgroups: poorly controlled diabetes ($HbA1c > 8\%$) (Δ FMD +2.37 [IIQ -0.39-6.02] % vs. +0.13 [IIQ -2.76-2.55] %, $p=0.010$), and those with acid uric serum level $\leq 287 \mu\text{mol/l}$ (Δ FMD +4.7 [IIQ 2.21-8.12] % vs. -0.16 [IIQ -2.58-3.56], $p=0.010$).

Conclusion: Although Allopurinol improved QoL (particularly angina frequency) in CAD diabetic patients, it did not improve significantly the endothelial function, except in those with poorly controlled diabetes and those with relatively low acid uric serum level.

Audience Take Away:

- The physiopathology of endothelial dysfunction particularly in patients affected with diabetes and CAD.
- The mechanism of allopurinol impact on endothelial function and its classification as anti-anginal drug.
- The impact of allopurinol on the endothelial dysfunction in diabetic CAD patients
- The impact of allopurinol on the QoL in diabetic CAD patients
- Which diabetic patient would take more benefit from allopurinol prescription in terms of improvement of endothelial dysfunction



Biography

Dr. Inoue studied Medicine at the Juntendo University, graduated as MS in 1992. He then joined the research group of Prof. Kodama at the University of Tokyo, molecular biology. He received her PhD degree in 1999. After two year post-doctoral fellowship supervised by Dr. Ta Yuan Chang at the Dartmouth medical school, Chemistry Laboratory, United States. he obtained the position of an assistant professor at the University of Tokyo. In 2006, he moved to Juntendo Nerima Hospital, and promoted Associate Professor in 2009. He has published more than 30 research articles in SCI(E) journals.

Establishment of a new prediction score in corporation with 0-hour/ 1-hour algorithm using high sensitivity troponin T suggest an optimal timing for coronary angiography in patients with chest pain

Kenji Inoue

Department of Cardiology, Juntendo University Nerima Hospital, Tokyo, Japan

Background: Discharging patients with acute myocardial infarction or unstable angina from the emergency department (ED) because of missed diagnoses can have dire consequences. In 2015, ESC guideline recommends the 0-hour/ 1-hour troponin measurement algorithm (the 0-1 algorithm) for acute chest pain. The sensitivity is extremely high, more than 98%. There were, however, some patients with acute myocardial infarction or unstable angina were stratified into observation or even rule-out group, and no prediction factor for an optimal timing for coronary angiography (CAG).

Object: The aim is this study to establish a risk score incorporating the 0-1 algorithm to predict an optimal timing for CAG in patients with acute chest pain.

Methods; This was a secondary analysis of data collected in a prospective international observational study enrolled consecutive 1,022 patients with suspected non-ST elevation ACS presenting to the ED. GRACE score variables and 0- and 1-hour hs-cTnT were collected. Thirty-day MACE was defined as acute myocardial infarction (AMI), unstable angina (UA) because of none of death nor cardiogenic shock in this cohort. Multivariate logistic analysis was used to calculate adjusted odds ratios (ORs) and 95% confidence intervals (CIs) for each end point. Receiving operating characteristic (ROC) curves and areas under curve (AUCs) were generated for a new score to assess their performance as an early indicator of events. P values of less than 0.05 were assessed as significant. Statistical analysis was performed using SPSS version 16.0 (SPSS Inc.) and JMP version 9.0.0. (SAS Institute Inc.).

Results; Four variables independently predicted a 30-days MACE and were included in the model; gender, risk factors for coronary artery disease (more than 2), and observation group or ruled-in group according to the 0-1 algorithm. The AUC for the new risk model was superior to that of the GRACE risk score (AUC; 0.84 vs 0.40, $p < 0.01$).

Conclusion: The new risk model incorporating the 0-1hr algorithm may accurately predict the optimal timing for CAG in patients with chest pain.

Audience Take Away:

- We recommend the use of the new risk model score to predict patients with unstable angina/ NSTEMI.
- It may reduce the overcrowded ED and medical costs.
- Even non cardiologist, patients with chest pain can be stratified more precise and safe.



Biography

Professor Mehman Mamedov graduated from the I.M. Sechenov Moscow Medical Academy in 1993. He continued his medical education as a cardiology intern at the Medical Centre for the President of the Russian Federation, at the Central Clinical Hospital.

Dr Mamedov holds a PhD degree (1997) from the National Research Centre for Preventive Medicine. His thesis was entitled, "The components of the metabolic syndrome in arterial hypertension patients". In 2001, he wrote a higher doctorate thesis on, "The clinical and biochemical peculiarities and approaches to the pharmaceutical management of the metabolic syndrome".

Under Dr Mamedov's supervision, 9 PhD and 1 higher doctorate theses were achieved.

Today Dr. Mamedov is Head of the Laboratory for Interdisciplinary Approaches on the Prevention of Chronic Non-communicable Diseases at the National Research Centre for Preventive Medicine; Vice-President of the Cardioprogress Foundation, and Deputy Chief Editor of the International Heart and Vascular Disease Journal. He is also member of the Board of the Russian Society of Cardiology and Head of the Diabetes and CVD Section, member of the editorial board of the journals Cardiology and Cardiovascular Prevention and Therapy and the organizer of the annual International Forum of Cardiology and Internal medicine in Moscow and 4 regional conferences.

Dr Mamedov M. is an author of more than 300 scientific works, including 14 monographs and books, some of which were published in English. His Hirsch index is 28, Scopus and Web of science index -5.

The scientific interests of Dr Mamedov encompass cardiometabolic disorders, disorders of lipid metabolism, men's health problems, prognosis and correction of cardiovascular risk, early markers of atherosclerosis, prediabetes and diabetes, epidemiology of cardiovascular disease and chronic non-infectious diseases.

Features of clinical and biochemical parameters, quality of life and prognosis of patients with CAD in combination with type 2 diabetes and COPD

Mamedov M.N

National Research Center for Preventive Medicine, Russia

Aim: Assessment of the clinical condition, quality and prognosis of life in a cohort of CAD patients in comorbidity with other chronic-non-communicable diseases (COPD and type 2 diabetes).

Materials and methods: A cohort study included 220 patients of both sexes aged 39 to 69 years old. In order to study the association of CAD with other NCD, the patients were divided into 3 groups: patients with CAD without comorbidity (group I, n = 80), with CAD and type 2 diabetes (group II, n = 70) and CAD with COPD (group III, n = 70). All patients underwent: history taking, ECG registration at rest, echoCG, and biochemical blood tests. Quality of life was assessed using the international questionnaire EQ-5D and the analog scale EQVas. To determine the prognosis of 10-year survival, the Charlson comorbidity index was used.

Results: The average SBP was the highest among patients with CHD and type 2 diabetes. According to EchoCG in the groups of patients with CAD with comorbidity, the average values of the interventricular septum thickness and left ventricular myocardial mass index were statistically significantly higher compared with the group of patients without comorbidity (117.03 ± 19.59 g (group II) vs 108.73 ± 27.44 g (Group III) vs 99.15 ± 13.48 g (group I) - $p < 0.01$). The level of triglycerides was highest in the group of CHD and type 2 diabetes, while other lipid metabolism indicators were comparable in all three groups. Evaluation of psychometric and physical parameters of quality of life showed that the severity of discomfort and decrease in mobility were significantly higher in groups with COPD and type 2 diabetes. According to the EQVas visual analogue scale, in the groups of patients with CAD and comorbidity, self-assessment of health was lower ($p < 0.01$). An analysis of the 10-year survival prognosis for the Charlson comorbidity index showed that in both groups with comorbidity, this indicator was high compared with the control group, but in patients with CAD in combination with type 2 diabetes, its severity was 20% higher than in the group with COPD.

Conclusion: Thus, comorbidity of CAD with type 2 diabetes and COPD is associated with deterioration in the quality of life and a predicted survival rate for the comorbidity index. Patients with CAD and type 2 diabetes showed the worst indicators of prognosis, quality of life and clinical and biochemical parameters.

SPEAKERS

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Treatment of mild cognitive impairment due to Alzheimer's disease or mild dementia of Alzheimer's type: Design and rationale of the randomized Pivotal study of RenewTM NCP-5

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Background: Vascular dementia and Alzheimer's disease (AD) share an association with hemodynamic risk factors. Exercise can improve cerebral blood flow (CBF), which is associated with a decrease in cognitive decline. However, patients with AD or mild cognitive impairment (MCI) may have limited exercise capacity due to age-related physical restrictions. RenewTM NCP-5 is an FDA-cleared, external counterpulsation (ECP) device which consistently improves coronary and peripheral vascular hemodynamics by sequential compression and decompression of vascular beds in synchrony with the cardiac cycle (Figure 1), and is currently used to treat patients with chronic angina and congestive heart failure. ECP may provide the same hemodynamic benefit for cerebral perfusion and cognitive function.

Methods: This randomized, Phase 3, pivotal, single-blind, parallel-design, multi-center study (NCT03721705) will assess the efficacy of RenewTM NCP-5 in patients with MCI due to AD or mild dementia (MD) of Alzheimer's type at 16 sites in the USA, Europe, and Asia. Study participants (see Table 1 for key entry criteria) will be randomized 1:1 to receive a bolus of 35 60-minute RenewTM NCP-5 treatment sessions or sham therapy with 3–5 sessions per week. Following the initial 35 treatments, a maintenance period will begin with two treatment sessions per week for up to 24 weeks total. (Figure 2). The primary efficacy endpoint is the average of the change from baseline in Vascular Dementia Assessment Scale cognitive subscale (vADAS-Cog) at Weeks 12, 18, and 24. Safety is assessed throughout the study; other key assessments, including the measurement of CBF as a potential mechanistic index of therapeutic engagement through arterial spin labelling perfusion MRI, are presented in Figure 2. At month 12, all subjects will undergo a full assessment, and the sham group will have the option to enter an open-label extension.

Results: We hypothesise that RenewTM NCP-5 therapy will lead to effective treatment or delay of cognitive impairment in study participants.

Conclusion: This pivotal study aims to evaluate the efficacy and safety of RenewTM NCP-5 as a therapeutic option for patients with MCI due to AD or MD of Alzheimer's type.

Figure 1. RenewTM NCP-5 device



Figure 1:

Table:

[illegible]

- Atherosclerosis is a chronic, inflammatory, fibroproliferative disease found in the intima of arterial vessels. Although the entire vasculature is exposed to the atherogenic effects of risk factors (cholesterol, hypertension, diabetes, etc.) lesions generally occur in specific arteries (carotids, coronaries, infrarenal-abdominal and iliofemoral).
- This study intends to examine the efficacy and safety of ECP, as therapy in the treatment of mild cognitive impairment (MCI) due to Alzheimer's disease (AD) or mild dementia of the Alzheimer's type.
- Cognitive function appears to be correlated with perfusion rate in hippocampus and precuneus. Treatment efficacy will be evaluated with various cognitive assessments as well as perfusion MRI for cerebral blood flow changes.

Dr. Moriarty is a professor of medicine at the University of Kansas Medical Center and the director of the medical center's division of Clinical Pharmacology, Atherosclerosis Prevention Clinic and Lipid-apheresis Center in the department of Internal Medicine. Dr. Moriarty has completed over 75 clinical research studies as principal or co-investigator and authored over 100 scientific papers, serves as a key opinion leader in the field of lipidology, and as the past President of the International Society For Apheresis (ISFA) is one of the world's foremost authorities on lipoprotein apheresis. Dr. Moriarty's research program includes a variety of clinical trials focused on improving therapeutic options to treat and prevent atherosclerosis, blood rheology, and vascular disease.

Music-paced physical activity improving physical activity level and cardiac risk factors among Chinese CHD patients with overweight or obesity

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⁵ Tung Wah Eastern Hospital, Hong Kong, China.

Background: Cardiac rehabilitation (CR) has been shown benefits in improving patients' outcomes. However, the non-adherence to the prescribed physical activity and elected level of risk factors remain the concerns for patients after CR.

Objective: To evaluate the effect of a music-paced physical activity on physical activity level and cardiac risk factors among overweight or obese CHD patients.

Methods: This was a randomized controlled trial with 104 overweight or obese Chinese CHD patients (BMI>22.9kg/m²). Participants were randomized into the intervention (n=52) or control group (n=52). The intervention group received four sessions of music-paced physical activity instruction and practice. The music was personalized, and the tempo of the music was synchronized with the prescribed walking-pace to allow participants practice physical activity at the required intensity. The control group received two sessions of instruction on moderate physical activity and brisk walking practice. Data on physical activity and cardiac risk factors (waist circumference, body fat, lipids profile, and fasting glucose) were collected at baseline and 3-month (end of the intervention). Generalized estimating equation model was used for data analysis.

Results: The mean age of the sample was 63.66 (9.61), with 80.8% for males. A lower dropout rate was found in the intervention group (15.4%) than the control group (23.1%), indicating the beneficial effects of music-paced approach on improving patients' adherence to physical activity. Results showed that the intervention group demonstrated improvements in physical activity level and HDL level, and decrease in body fat and fasting glucose; while only the increase in HDL reached statistical significance comparing with the control group ($\beta=0.202$, 95%CI: 0.018, 0.385, $p=0.031$).

Conclusion: The music-paced physical activity is helpful in improving physical activity level and reducing cardiac risk factors among overweight or obese CHD patients, providing insights into intervention development to promote physical activity in this population.

Audience Take Away:

- Music can be used as a strategy to improve CHD patients' compliance with physical activity
- This music-paced approach can improve physical activity level and accordingly reduce cardiac risk factors among overweight or obese CHD patients
- Healthcare professionals can recommend all patients who are prescribed with physical activity using music to practice the required physical activity especially with the absence of healthcare professionals.

Biography:

Prof. Chair is the Director and Professor at the Nethersole School of Nursing, Faculty of Medicine, the Chinese University of Hong Kong. She is a Fellow of the American Academy of Nursing (since 2017) and the Hong Kong Academy of Nursing (since 2012). She has published over 120 peer-refereed journal papers and obtained more than 20 competitive grants. She has rich research experience in using different strategies to promote cardiovascular health among various populations.

Improve upper extremity function following transradial PCI; Slender PCI and its potential benefits – improve study

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Background: Transradial percutaneous coronary intervention (TRPCI) is rapidly becoming the gold standard especially in primary percutaneous coronary intervention (PCI). Results of the ARCUS trial (Effects of Trans Radial percutaneous Coronary Intervention on Upper Extremity Function) showed upper extremity dysfunction (UED) after TRPCI.

In the IMPROVE study UED following slender TRPCI using small bore catheters (5F) will be compared to standard TRPCI using regular size guiding catheters (6F) and conventional stent techniques on two-weeks, one month and 6-months clinical outcomes.

Methods: A total of 100 patients undergoing radial PCI using small bore guiding catheters ($\leq 5F$) and slender PCI will be included in the slender TRPCI group. Patent hemostasis of the radial artery will be obtained by means of an inflatable wrist band and a pulse oximeter and will be maintained for a maximum of 4 hours.

The historical control group consists of 500 patients that underwent standard TRPCI using regular size 6F radial sheath and 6F guiding catheters and conventional stent techniques, following non-oxygen saturation guided hemostasis.

The main study parameter is a binary score of UED after two weeks as compared to baseline. This score for UED consists of questionnaires regarding functional status of the upper extremity as well as physical examination of the upper extremity. For the primary endpoint, the slender TRPCI group will be compared to the historical control group (ARCUS trial) at two weeks of follow-up.

The current binary primary endpoint will be compared to the similar primary endpoint variable of the historical control group using the Pearson's chi-square test.

Results: To this day, 50% of all inclusions and follow-up have been completed and results of the data will be presented.

We expect that with the suggested procedural changes and adjusted features that are known to have very high risk of radial artery occlusion (disparity in sheath-to-artery ratio along with non-patent hemostasis and elongated duration of compression), approximately 5% of patients will develop new significant symptoms of UED after slender TRPCI vs. 20% of patients who underwent standard TRPCI (previous interim results of the ARCUS trial).

Conclusion: Interim analysis of UED after slender TRPCI will be presented at the CWC 2019.

Audience Take Away:

- To clarify if minimizing catheter size could prevent Upper Extremity Dysfunction
- To increase awareness for Upper Extremity Dysfunction among cardiologists
- To improve overall patient outcome: both cardiac and the upper extremity function
- This study also proves efficiency of slender TR-PCI by preventing costs made by treating complications following conventional 6F TR-PCI

Biography:

Dr. Schölzel studied Medicine at the Erasmus University of Rotterdam in the Netherlands and graduated as an MD in 2003. He followed his cardiology training in the St. Antonius Hospital in Nieuwegein, The Netherlands. After one year fellowship in Interventional Cardiology he obtained a position as interventional cardiologist and staff member in the Amphia Hospital in Breda, the Netherlands. In 2015 he received his PhD degree at the University of Utrecht, the Netherlands.

Electromagnetic blood flow in human body and initial factors of atherosclerosis

Merab Beraia

MRI Department. F.Todua Medical Center. Tbilisi. Rep.Georgia.

Blood flow acceleration increases from the left ventricular outflow tract, to the sinotubular junction and the ascending aorta, while it must be decreasing due to the flow turbulences in the Valsalvae sinuses. Energy of the pulse wave in the arterioles is up to 7.2 times higher, than in the ascending aorta, while it must be low due to the energy dissipation with the distance from the heart. Herewith, flow separation in large arteries is the main factor in atherosclerosis and associated with the energy loss.

Purpose of the study is identifying the additional possible energy source, for the blood flow and initial factors in atherosclerosis.

Methods and materials: 12 healthy volunteer students (male) underwent echocardiography, ECG gated MRI of the heart for the visualization intracavitary flow in the ventricles, MR Angiography of the aorta. Blood flow velocities and acceleration were studied in the different sites of the heart and the aorta.

Availability of the heart, as the possible single tool for the blood flow, looks imperfect. Due to the “contradiction” between the theory and practical data, the solution must be non-ordinary.

Oscillating motion of the blood cells with the surface charge, plasma macro-molecules, and salts with the dipoles and superposing the oscillating electric field in the form of the ECG impulse providing special – electromagnetic properties of the blood flow.

Blood vessels are looks like the active electric circuits. Oscillating electric field from the cardiac dipole forms the modulated natural ultrasound vibration of the body cells/ erythrocytes, while it generates colloid vibration current and expresses as the ECG.

Blood motion in the heart chambers and arteries has the additional basis: rotating blood particles in the heart chambers and in the arterial branching sites, with the concomitant oscillating electric field triggered from the heart, forms additional electromagnetic repulsing force for the charged particles, providing to the flow. Herewith magnetic field facilitates to the repulsion of the arterial blood and attraction of the venous.

Pulse peak pressure at the arterial branching sites, is coincident with the end systolic pressure drop and the ECG-T wave. Surface waves with different frequencies and direction are formed, upgraded by the oscillating electric field. Opposite rotating particles creates repulsing magnetic force and the flow separates. Wave packets at the frequency dispersion, destroys the cell aggregates increasing the entropy of blood, whereas at the boundary layer of the vessel, it denudates endothelial sheet.

Electromagnetism affects gas exchange in the systemic and pulmonary capillaries. Modulated eclectic signal transmitting by the oscillate blood particles, besides the flow, creates additional energy source, enabling the spontaneous chemical reactions to proceed across the cell membranes.

Biography:

Merab Beraia graduated from Tbilisi State Medical University in 1986, as a Medical Doctor, with the specialty of Internal Medicine and took a Diploma in Neurology from the Institute of Clinical and Experimental Neurology Tbilisi, Georgia. Later he obtained his post-graduation diploma in Radiology from University of Graz, Austria and then started working at The Institute of Clinical Medicine Tbilisi, Rep. Georgia, where he has continued his research. He received his PhD degree in 1998. Presently he is working at the Acad. F.Todua Medical Center in Tbilisi. He has published more than 50 research articles.

Anaesthesia in patients equipped with cardiac devices

Rolf Nordmeier, MD^{1*}, Michael Booke, MD, PhD²

¹Ass. Professor of Department of Anesthesiology and Intensive Care Medicine

²Professor and Head of Department of Anesthesiology and Intensive Care Medicine

Cardiac pacemakers and arrhythmia devices are standard therapies in patients. International guidelines recommend how to handle patients equipped with cardiac devices during anesthesia. However, these guidelines are not really helpful in emergency cases, since there is not enough time to adhere to all recommendations, and most often, it remains unknown what type of cardiac devices the patient is equipped with. Nonetheless, our patients need to be treated according to the highest safety standards. We therefore present the essential steps required to guarantee patient safety in emergency cases equipped with cardiac devices. These “emergency guidelines” were recently published in a German Anesthesia journal.

Perioperative management of patients equipped with cardiac implanted electronic devices. *Anesthesiol Intensivmed Notfallmed Schmerzther* 2016, 51: 220-225

Audience Take Away:

- How to simply identify, whether the patient is equipped with a pace maker, a cardioverter (AICD) or a device for resynchronisation therapy (CRT).
- How to safely handle these device perioperatively
- What to do postoperatively to ensure adequate function of the device

Biography:

Dr. Rolf Nordmeier startet his career in internal medicine, before he became a fully licensed anesthesiologist. He now is Assistant Professor of Anesthesiology, mainly responsible for patient safety and education.

Prof. Dr Michael Booke studied Medicine at the University of Muenster, Germany. He then worked at the University of Galveston, Texas and at the University of Muenster, Germany. In 1995, he completed his residency to become a fully licensed anesthesiologist. He took a position as a Visiting Professor in Melbourne, Australia, before he became Vice-Chair of the Dept. of Anesthesiology and Intensive Care at the University of Muenster. Since 2003, he is Head of the Department of Anesthesiology and Intensive Care in Bad Soden, Teaching Hospital of the University of Frankfurt.

Review of factors that affect survival during resuscitation, a retrospective study at National Heart Institute, Malaysia

R. Wee*, Y.S. Tey, F.M. Salleh, N. Abdul Raji, N. Bachok, A. Rosman

National Heart Institute, Malaysia

Background: National Heart Institute is located in the heart of Kuala Lumpur, Malaysia. It provides a 24-hour multidisciplinary Code Blue resuscitation team that responds to cardiac arrest within the hospital.

Objectives: To study factors that affect return of spontaneous circulation (ROSC) outcomes by a multidisciplinary Code Blue resuscitation response team in a cardiac hospital.

Methods: Data is collected via a Resuscitation Feedback form that is filled and returned to the hospital Resuscitation Committee for analysis. Details that are collected include time of collapse, time and location of incident, time of first Basic Life Support (BLS), time of resuscitation team arrival, patient pre-existing illnesses and vital signs recorded before the cardiac arrest.

Results: There were a total of 181 Resuscitation Feedback Forms returned and analyzed, out of which only 157 had CPR attempt. There was male predominance (70.1%) compared to females (29.9%). Inpatient cases account for 80.89%, compared to outpatient 19.11%. The most common initial cardiac rhythm recorded was Pulseless Electrical Activity (32.5%) and Ventricular Fibrillation (26.5%). The expected standard of 2 minutes to first BLS was achieved in 95.54% of cases and 5 minutes to arrival of first Code Blue team member was achieved in 98.09% of cases. Survival rate to ROSC was 59.87%. Survival to ROSC for inpatient is 63.8%, outpatient 43.3% (p-value=0.04). Survival to ROSC for adult patient 57.7%, paediatric 100% (p-value=0.042).

Conclusions: This study shows that location of code blue and age group has significant relationship with Return of Spontaneous Circulation.

Relationship of mean arterial pressure with other cardiac and biological factors

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Objectives: The report focuses the associations of mean arterial pressure (MAP) for shock patients based on probabilistic modeling with a real data set of 113 shock patients.

Background: The relationship of MAP with the other cardiac and biological factors is very complicated which has been very little studied based on probabilistic modeling.

Material & Methods: A real data set of 113 shock patients with 20 study variables is considered in the report, which is available in the site <http://www.umass.edu/statdata/statdata/data/shock.txt>. A probabilistic model of MAP has been derived herein with statistical joint generalized linear models.

Results: The MAP is positively associated with age ($P < 0.0001$), cardiac index (CI) ($P < 0.0001$), hemoglobin ($P = 0.0504$), urinary output (UO) ($P = 0.0566$), diastolic blood pressure (DBP) ($P < 0.0001$), systolic blood pressure (SBP) ($P < 0.0001$), joint interaction effects of red cell index (RCI) & body surface index (BSI) (RCI*BSI) ($P = 0.0434$), plasma volume index (PVI)*DBP ($P < 0.0001$), mean central venous pressure (MCVP) & heart rate (HR) (MCVP*HR) ($P = 0.0104$), MCVP*DBP ($P < 0.0001$), while it is negatively associated with BSI ($P = 0.0081$), MCVP ($P < 0.0001$), mean circulation time (MCT) ($P = 0.0004$), hematocrit (HCT)*PVI ($P = 0.0356$), UO*AGE ($P = 0.0012$), SBP*HR ($P < 0.0001$), DBP*SBP ($P < 0.0001$). Variance of MAP is negatively associated with RCI ($P < 0.0001$), BSI ($P < 0.0001$), CI ($P = 0.0009$), sex ($P = 0.0352$), shock type at level 3 ($P = 0.0194$), DBP ($P = 0.0001$), HCT*HR ($P = 0.0009$), DBP*MCVP ($P = 0.0225$), while it is positively associated with RCI*HCT ($P < 0.0001$), BSI*HR ($P = 0.0029$), CI*HR ($P = 0.0033$), SBP*DBP ($P = 0.0373$) and BSI*DBP ($P = 0.0027$).

Conclusion: MAP is higher at older ages. It increases if SBP, or DBP, or CI, or UO, or HG, or MCVP*HR, or MCVP*DBP, or RCI*BSI, or PVI*DBP increases. It decreases if MCVP, or BSI, or MCT, or PVI*HCT, UO*Age, or SBP*HR, or DBP*SBP increases.

Trans-catheter PFO closure; Clinical indications, technique and midterm follow up, case series

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Implantation of a PFO-occluding device may reduce the risk of recurrent stroke or transient ischemic attack compared with medical therapy in patients with cryptogenic stroke. However, there is a debate about the indication for closure and the power of secondary prevention by the implanted device. Our aim is to clarify the indications for PFO closure, explaining our protocol to document the degree of the pathogenicity of PFO as a source of right to left shunt, depending of both transoesophageal echocardiographic study and transcranial Doppler. Classification of PFO according to its shape and the implication of the morphology on the chosen device. Demonstrating by multiple movies that PFO could be a simple pathology or a complex one. Explaining the techniques of measurement of the defect and the device implantation during the presentation. Follow up regarding recurrent cerebral events or complication related to the device implantation.

Audience take away:

- The audience will learn how it is important to detect the exact source of cryptogenic stroke
- It is important to rely on at least two methodology to assure the diagnosis
- Before any intervention risk benefit ratio should be always in our mind

Biography:

Dr. Sahar El Shedoudy, professor cardiology, instructor of congenital heart disease unit and head of the catheterization laboratory of structural heart disease unit in cardiology department Tanta University. Graduated as M.B.B.Ch.in 1987 .Master degree of cardiology in 1995, then I joined German Heart center in Munich for 3 years as fellowship in the pediatric cardiology Section, then PHD in cardiology/ interventional pediatric cardiology in 2001.I has published more than 50 research articles in different journals (national and international).

Premature and accelerated atherosclerosis in an undiagnosed takayasu arteritis: A case report

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Introduction: Takayasu arteritis (TA) is a rare chronic vasculitis affecting the aorta and its main branches causing segmental and granulomatous inflammation. The underlying inflammatory process associated with the disease is believed to be an important risk factor in atherogenesis causing accelerated atherosclerosis in these patients. As a result, patients with Takayasu arteritis experience long-term morbidity and mortality caused by cardiovascular disease. Described here is a patient who presented with premature cardiovascular events, and was recently found to have fulfilled the diagnostic criteria for Takayasu arteritis.

Case Presentation: The patient is a 56 year-old Asian female who had a history of stroke in the young, abdominal aortic stenosis status post stenting, and premature coronary artery disease status post coronary artery bypass graft and repeated coronary angioplasty. During her surveillance check-up, left arm claudication was reported and discrepant blood pressures on both arms were detected. Acute phase reactants (ESR and CRP) were elevated. Carotid ultrasound revealed homogenous, mid-echoic circumferential wall thickening superimposed with diffuse atherosclerotic plaques on both carotid arteries. Arterial Doppler of the upper extremities demonstrated a totally occluded left subclavian artery with formation of collaterals. After satisfying the criteria for the diagnosis of Takayasu arteritis, she was referred to a rheumatologist who started her on glucocorticoids and azathioprine. The premature ischemic events experienced by our patient are believed to be complications of an undiagnosed Takayasu arteritis.

Conclusion: Patients with Takayasu arteritis are at increased risk for cardiovascular events due to premature and accelerated atherosclerosis. A high index of suspicion is imperative to make an early diagnosis and initiate appropriate treatment to prevent serious long-term complications.

Audience take away:

- The evolution of symptoms in Takayasu arteritis is due to progressing vascular lesions secondary to inflammatory processes.
- Inflammation has a fundamental role in the development of premature and accelerated atherosclerosis in Takayasu arteritis. This eventually causes ischemic complications.
- Stroke in the young and premature coronary artery disease can be manifestations of Takayasu arteritis.
- A high index of suspicion is essential to avoid serious long-term complications.
- This case report attested that the diagnosis of Takayasu arteritis is extremely challenging, which may be attributed to the rarity of the disease, the non-specific nature of the presenting symptoms and/or the remitting or relapsing fashion of the disease. Delayed diagnosis is a potential contributor to the varying rates of its ischemic complications. In this paper, inflammation, as the link between Takayasu arteritis and atherosclerosis will be discussed. This case report will awaken physicians to think outside the box when encountering patients presenting with premature and accelerated atherosclerotic events. This high index of suspicion will provide early diagnosis of TA and prompt introduction of treatment.

Biography:

Dr. Galvez studied BS Biology at the University of Santo Tomas and graduated in 2012. After finishing her medical internship, she entered a residency program in Cardinal Santos Medical Center and finished it in 2016. Eventually, she got accepted for Cardiology fellowship in the same institution and is currently on her 3rd year. Dr. Galvez has published a few papers and one of it was presented abroad. She also wrote a case report and won 1st prize in an oral presentation.

Association of irregular intake of antihypertensive drugs and socio demographic trend with risk of stroke

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Associate Professor, Medicine, Dhaka Medical College, Bangladesh

Background: This case control study attempted to determine the relationship between irregular intake of antihypertensive drugs and stroke among hypertensive patients. Demographic profile of the patients was analyzed thoroughly, and risk factors among those characteristics were also sought.

Materials and Methods: 90 cases matched with 90 controls were included in the study. The relationship was determined employing statistical methods including Chi Square (χ^2) test, binary logistic regression.

Findings: The odds of development of stroke was 4.78 times higher (95% confidence interval 2.465 - 9.272) in the group taking antihypertensive drugs irregularly than in the group adhering to antihypertensive medication on a regular basis. Age, sex, social-status, monthly income, educational status, irregularity in taking drugs, all were calculated as independent covariates, and development of stroke as dependent variable, one year increase in age raises the odds of developing stroke by 1.113, p value < 0.001, male sex has the odd's ratio = 30.029 of having stroke which is statistically significant, p value = 0.004. Similarly, a person from small business has the odd's ratio = 32.423, p value = 0.006, illiterate educational group has odd's ratio = 20.250, p value = 0.016, irregularity of taking drugs has odd's ratio = 12.174, and p value < 0.001

Conclusion: Irregular intake of antihypertensive drugs is associated with stroke. Significant associations were also found with male sex, age, and small business occupation and illiteracy with development of stroke.

Audience Take Away:

- Adhering to antihypertensive drugs has been said to be of great importance for reduction of long term consequences of hypertension. A good number of patient suffer from stroke within five years of detection of hypertension & about 15% die from stroke. Risk of stroke is clearly related to quality control of blood pressure with treatment. For the intention to prevent stroke among the patients & to get rid of stroke for themselves & also to create awareness the audience will be able to use what they learn.
- In their job, they will be able to suggest their patients about the complications of hypertension & consequences of irregular antihypertensive drug taking & thus to prevent stroke.
- Definitely from this data other faculties could use to expand their research & teaching.
- There are also other benefits. This study discusses the risk factors among the demography of the pts, eg.-irregular antihypertensive drug taking, sex, age occupation, educational level, social status & monthly income etc covariates.

Biography:

Dr. Mohammad Zaid Hossain studied MBBS at the Dhaka Medical College (which is under Dhaka University) & graduated in 1995. He took post graduate training in same institution, took foreign training in Ireland. He received his MRCP from the Royal College of Physicians in 2006. Thence, chronologically, he obtained the position of an Associate Professor of Medicine at the Dhaka Medical College. He has published more than 95 research articles in various journals.

New paradigm in pharmacological management of serum potassium levels in acute coronary syndrome: which cut-off is optimal and safe?

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Background: Acute coronary syndrome (ACS) is one of the leading causes of increased morbidity and mortality worldwide. Although ACS-related mortality has been profoundly linked with the serum potassium level on admission, recent results seem to contradict the established guidelines.

Aims: To determine the association between serum potassium levels on admission in ACS patients and in-hospital mortality. This study also aims to redefine the optimal serum potassium target in ACS patients.

Methods and Results: All-cause in-hospital mortality was monitored as the outcome among 673 ACS patients hospitalised in Indonesian National Cipto Mangunkusumo Hospital. Logistic regression models adjusted for risk factors, hospital treatment and comorbidities were constructed. Total of 163 patients (24.22%) found with abnormal serum potassium levels. ($K < 3.50$ mEq/L or > 5.0 mEq/L). Logistic regression shows significant association between serum potassium levels on admission and in-hospital mortality with p value of 0.04 (adjusted RR 2.184; 95% CI: 1.037-4.601). The risk of mortality of subjects with serum potassium levels of 4.0-4.49 mEq/L was increased compared to reference level of 3.50-3.99 mEq/L (RR 1.4; 95% CI: 0.497-3.93).

Conclusion: ACS patients with abnormal serum potassium levels on admission have significant association with increased in-hospital mortality. Admission serum potassium levels of > 4.0 mEq/L may be associated with increased mortality risk in patients with ACS. Optimal target of serum potassium level in acute coronary syndrome may be considered to be redefined to a range of 3.50-3.99 mEq/L.

Audience Take Away:

Abnormal serum potassium level on admission increases the in-hospital mortality risk. Our study challenges the established guidelines that recommends maintaining serum potassium levels above 4 mEq/L. Data from our study suggests that the optimal range of serum potassium levels in ACS patients, especially in Indonesia, may be in the range of 3.50-3.99 mEq/L, with levels greater than or equal to 4.00 mEq/L are associated with increased risk of in-hospital mortality. Audience may gain substantial evidence and new perspective in redefining the optimal serum potassium target in acute coronary syndrome patients.

Biography:

Dr. Jeffri Aloys Gunawan, SpPD accomplished his general medicine education at the age of 24 years-old from Universitas Padjadjaran and specialty program in internal medicine (internist) in 2018 in Universitas Indonesia. Previously he had completed 2 years period as intern staff in Cipto Mangunkusumo Hospital, specifically for research in Division of Endocrinology, Department of Internal Medicine and concurrently involved in research held by Indonesian Society of Gastroenterology. He has published several research articles and clinical cases in reputed international journals including in European Society of Cardiology. Currently he conducted studies in internal medicine and routinely practicing internal medicine in several hospitals in Indonesia.

Post conditioning with lactate-enriched blood for preventing myocardial reperfusion injury

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Department of Cardiology, Saitama Municipal Hospital, Saitama, Japan

Background: Reperfusion injury attenuates the beneficial effects of reperfusion therapy for ST-segment elevation myocardial infarction (STEMI). No approach has proven successful in preventing this injury in the clinical setting, thus far. We recently reported a new approach, postconditioning with lactate-enriched blood (PCLeB), for cardioprotection in patients with STEMI. PCLeB comprises intermittent reperfusion and timely coronary injections of lactated Ringer's solution, aimed at achieving controlled reperfusion with tissue oxygenation and minimal lactate washout. This approach specifically targets reperfusion-induced hypercontracture, which compresses the microvasculature and mechanically disrupts myocardial cell skeletons. Here we report the 1-year outcomes of patients with STEMI treated with PCLeB.

Methods and Results: In our modified postconditioning protocol, the duration of each brief reperfusion was prolonged from 10 to 60 s in a stepwise manner. Lactated Ringer's solution (20-30 mL), containing 28 mM of lactate, was injected directly into the culprit coronary artery at the end of each brief reperfusion, and the balloon was quickly inflated at the site of the lesion to trap the lactate within the ischemic myocardium. Each brief ischemic period lasted 60 s. After 7 cycles of balloon inflation and deflation, full reperfusion was performed; subsequently, stenting was performed and the percutaneous coronary intervention (PCI) was completed. Between March 2014 and June 2017, we have treated 62 consecutive patients with STEMI (age, 64.9 ± 13.7 years; 75.8% men) using PCI and PCLeB within 12 h of symptom onset in our hospital. None of the patients experienced ventricular tachycardia/fibrillation that required pharmacological intervention or electrocardioversion during reperfusion. None of the patients experienced angiographic no-reflow or required intra-aortic balloon counterpulsation for poor coronary flow recovery. The mean peak CK and CK-MB levels were 2784 ± 2184 and 269 ± 177 IU/L, respectively. The mean corrected TIMI frame count after PCI was 20.4 ± 10.4 (normal value, 21). At 1-year follow-up, none of the patients had died or experienced re-hospitalization for heart failure.

Conclusions: PCLeB induced good microcirculation recovery, abolished reperfusion arrhythmia, and yielded zero mortality and no re-hospitalization for heart failure at 1-year follow-up in 62 consecutive patients with STEMI.

Audience Take Away:

This new approach, targeting reperfusion-induced hypercontracture, may be a promising approach for cardioprotection in patients with STEMI. This approach is easy to apply and is readily available in every catheterization laboratory with no safety concern.

Biography:

Dr. Koyama has expertise in research in myocardial reperfusion injury. He has recently developed a new treatment strategy for myocardial reperfusion injury in patients with ST-segment elevation myocardial infarction (STEMI), based on the results of his previous experimental study using guinea-pig myocytes that was published in *Am J Physiol* in 1991. He is basically a clinical cardiologist, performing percutaneous coronary intervention himself. But his experiences not only in STEMI treatment but also in animal experiments inspired him to develop a new treatment strategy for myocardial reperfusion injury, i.e. postconditioning with lactate-enriched blood.

Effects of a theory-based educational intervention on healthy behaviors among overweight or obese post-menopausal women

Sek Ying Chair*, Ho Yu Cheng, Kai Chow Choi, Xi Cao, Sally W.S. Lo

The Nethershole School of Nursing, Faculty of Medicine, the Chinese University of Hong Kong, Hong Kong, China

Background: Post-menopausal women have increased risk of developing cardiovascular disease, especially for those who are overweight or obese. Healthy diet and increasing physical activity can improve cardiovascular health among post-menopausal women, whereas most of intervention studies employ didactic approach with limited appropriate guidance of an educational theory, resulting in the unsustainability of behavioral changes.

Objective: To evaluate the effects of a theory-based educational intervention on healthy behaviors among Chinese overweight or obese post-menopausal women.

Method: A randomized controlled trial was conducted. Community dwellings who were: 1) Chinese women aged ≤ 65 years, 2) with natural menopausal for at least 12 months, 3) with BMI $> 22.9 \text{ kg/m}^2$ or central obesity (waist circumference $> 80 \text{ cm}$) were recruited. A 3-month educational intervention, which was developed based on Health Literacy Model and Constructivist School of Learning theory, was provided for the intervention group. The intervention included one individual session on menopause and healthy lifestyle, three group sessions on healthy diet and moderate-intensity physical activity practice, and five telephone calls, provided by a multidisciplinary team including a dietitian, a physiotherapist, and a nurse. The control group received one group session of general information on menopause and healthy lifestyle. Data on diet behavior and physical activity were collected at baseline and the end of the intervention. Generalized estimating equation (GEE) model was used for data analysis.

Results: One hundred-fifty five participants were recruited, with 86 for intervention and 67 for control group. The mean age was 59.05 (3.94). Results of GEE showed that intervention group demonstrated significant increase in healthy diet behavior (Group*Time: $\beta=0.24$, 95%CI: 0.09, 0.39, $p=0.002$) and physical activity (Group*Time: $\beta=684.31$, 95%CI: 27.58, 1341.03, $p=0.04$) at 3-month compared to the control group, after adjusting the sociodemographic and clinical characteristics.

Conclusion: This theory-based educational intervention was effective in improving healthy behaviors of overweight or obese post-menopausal women.

Audience Take Away:

- Post-menopausal women, especially those with overweight or obesity, have increased risk for cardiovascular disease.
- Theory-based educational intervention is also helpful in improving healthy diet behavior and physical activity among overweight or obese post-menopausal women.
- A multidisciplinary team is needed when providing a multifaceted intervention or service.

Biography:

Prof. Chair is the Director and Professor at the Nethersole School of Nursing, Faculty of Medicine, the Chinese University of Hong Kong. She is a Fellow of the American Academy of Nursing (since 2017) and the Hong Kong Academy of Nursing (since 2012). She has published over 120 peer-refereed journal papers and obtained more than 20 competitive grants. She has rich research experience in using different strategies to promote cardiovascular health among various populations.

Experience of complex high risk PCI cases in tertiary level referral center in north India: It's time to look beyond Syntax score

Dr. Neeraj Chaturvedi

Associate Professor, Department of Cardiology, SMS Medical College, Jaipur, Rajasthan, India

According to recent guidelines, Syntax score up to 22 PCI is preferable over CABG while for syntax score >22 CABG is preferred. Syntax score should not be the sole criterion of appropriateness of PCI success. Other clinical features like age, renal function, ejection fraction, degree of MR, presence of mechanical complications also need to be taken into account. It is not possible for CHIP cases to be randomized in any clinical trial because of the clinical scenario and multiple co-morbidities. As there is high risk of death on table in these cases, these are often rejected by cardiac surgeons. Importantly, it is not necessary to perform PCI in CHIP cases in a single stage. Goal is adequately and functionally complete myocardial revascularization. As no 2 CHIP cases are alike, guidelines can never dictate approach for these cases. PCI [may be in stages] performed judiciously is a safer and viable alternative to CABG.

In SMS Medical College Jaipur, we have been regularly performing CHIP cases refused by surgeons. In a series of 48 patients with CAD with severe LV dysfunction with severe MR [with preserved anatomy of mitral apparatus and viability], PCI has been able to drastically reduce the degree of MR from severe to mild in 34 cases and moderate MR in 8 cases. All patients improved symptomatically. Patients with papillary muscle rupture or no viability were excluded. Also, in 63 patients with >75 years of age with CAD and severe LV dysfunction, PCI has not only been able to reverse the degree of LV dysfunction, but in 29 patients LV dysfunction disappeared altogether. From 2011 to August 2019, total 481 cases were performed all anterogradely with 84% success rate.

Audience Take Away:

- No two CHIPS are alike
- Guidelines cannot dictate approach in CHIP cases, so every CHIP case is to be dealt with an individualized approach
- Functionally complete revascularization is better than anatomically complete revascularization
- PCI [may be in stages] performed judiciously is a safer and viable alternative to CABG.
- Present methods to predict procedural success and long term benefits including Syntax score are far from adequate.

Biography:

Dr. Neeraj Chaturvedi did his M.B.B.S from S.N. Medical College Agra in 2003. He did his M.D. [Internal Medicine] from SMS Medical College Jaipur in 2006. He did his super-specialization in cardiology from GSVM Medical College Kanpur in 2010. He started his career as assistant professor in cardiology in SMS Medical College Jaipur since December 2010. He became associate professor in the same college in April 2016. He has active interest in teaching and research [SMS College has 12 D.M. cardiology students per year]. He has participated in no. of conferences including chairing a session in IJCTO 2019.

Patient specific iPSC disease model identified the pathogenesis of Loeys-Dietz syndrome

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OBJECTIVE: To develop a patient specific induced pluripotent stem cells (iPSCs) disease model of Loeys-Dietz syndrome (LDS) and to identify how TGFBR mutation result in dysfunction of vascular smooth muscle cell (VSMC) and implicated in LDS vascular pathogenic course.

METHODS: Peripheral blood mononuclear cells (PBMCs) were isolated from three LDS patients carrying TGFBR2R193W, TGFBR1R487W and TGFBR1R487Q mutations and one healthy volunteer. PBMCs were reprogrammed into induced pluripotent stem cells (iPSCs) by electroporation with episomal plasmids. The generated iPSCs were induced into contractile VSMC. Patient specific iPSC derived VSMC were then used to study how TGFBR mutation result in structural and functional abnormalities of the derived VSMC and cause LDS vascular pathogenic course.

RESULTS: The generated iPSCs retained the same mutation with PBMCs, presented normal karyotype, expressed pluripotent markers and differentiated into tree germ layers in vivo. iPSCs were induced into VSMC. Immunofluorescence staining, Q-PCR and western-blot analysis showed that iPSC-derived-VSMC highly expressed specific markers including α -SMA, CNN1 and SM22 α . The expressions of those specific markers were decreased in LDS-iPSC-VSMC compared with control both on gene and protein levels. Transmission electron microscope showed decreased and abnormal organized myoneme in LDS-iPSC-VSMC. Consistent with reduced expression of VSMC markers and abnormal organized myoneme, VSMC from LDS iPSC showed reduced contractility in response to carbachol stimulation. Furthermore, increased deposition of collagens was confirmed by Q-PCR and western-blot analysis. In addition, Flow cytometry measurement showed more cell apoptosis both in early and late state of culture in LDS-iPSC derived VSMC. Then we detect the activity of canonical TGF- β signalling under normal culture conditions and found defective activation of this pathway in the early stage of culture, but enhanced activation in the late stage. We also found a higher level of TGF- β 1 in LDS-iPSC-VSMC medium compared with control medium. Moreover, we examined the activation of non-canonical TGF- β signalling, and western-blot showed that phosphorylation of p38 was persistently enhanced in early and late culture stages while ERK1/2 was decreased in LDS cells compared with control.

CONCLUSIONS: Mutations in TGFBR result in abnormal activation of TGF- β signalling pathway and cause structural and functional abnormalities of VSMC which could be a cause of LDS. This in vitro cellular model of LDS may provide a promising platform to investigate disease mechanisms and explore new therapeutic targets.

Audience Take Away:

- The limited understanding of disease pathogenesis and disease mechanism of Loeys-Dietz syndrome (LDS) remains the most significant obstacle for improving diagnostic and therapeutic approaches
- By using patient specific iPSC derived vascular smooth muscle cells (VSMCs), we investigate the pathogenesis and clarified the underlying mechanism of LDS. Our results suggested that mutation in *TGFBR1/2* resulted in errant activation of TGF- β signaling and cause structural and functional abnormality of VSMCs, which may contribute to the development of arterial aneurysms and dissection in LDS
- This study not only further the understanding of cellular and molecular pathogenesis as well as mechanism of LDS, but also provide evidence for developing new medical therapy

Biography:

Dr. Kui Hu graduated from Fudan University with MD & PhD degree. He currently serves as a cardiovascular surgeon at Guizhou Provincial People's Hospital. Dr. Hu is clinically interested in cardiovascular surgery in elderly patients, minimally invasive cardiovascular surgery, surgical treatment of aortic pseudoaneurysm, etc. He has been focusing his research on Loeys-Dietz syndrome and induced pluripotent stem cell (iPSC). He established the Loeys-Dietz syndrome patient-specific iPSC disease model and was invited to give oral presentations on ESC CONGRESS 2017 and the 98th AATS Annual Meeting, etc.

Acute pulmonary thromboembolism in a patient with primary pulmonary hypertension: A diagnostic challenge

Bilal Bin Abdullah

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We report an event of acute pulmonary thromboembolism (APTE) in a patient with primary pulmonary hypertension (PPH). As there is paucity of literature, diagnosis of APTE in the setting of PPH remains a diagnostic challenge and warrant clinicians to be alert of this rare possibility

A 29-year-old man presented to emergency of a tertiary hospital with symptoms of chest tightness, breathlessness, and profuse sweating. He was diagnosed and treated by us for PPH six days ago and was discharged with sildenafil citrate 25 mg twice daily nifedipine 5 mg thrice daily and was advised follow-up after a fortnight.

On examination, the patient was found tachypnoeic; pulse rate, 110 beats/minute; blood pressure, 90/60 mmHg and a raised jugular venous pressure (JVP). The cardiovascular system (CVS) examination revealed tachycardia, right ventricle(RV) S3, short systolic murmur in the tricuspid area. The electrocardiogram (ECG) showed sinus tachycardia, with T-wave inversions in V1-V2. In one study, the T-wave inversion in V2 was related to RV dysfunction and was an independent predictor of adverse clinical outcomes Chest X-ray showed the same findings as before, prominent pulmonary conus, and cardiomegaly with RV configuration Figure 1). A diagnosis of APTE was considered based on Wells score for clinical probability of patient's score (PE) of 4.5 and revised Geneva score (PE 5. Echocardiography showed dilated right atrium(RA), RV, and pulmonary trunk, RV hypokinesia with apical sparing (MC Connell's sign), moderate tricuspid regurgitation(TR), severe pulmonary arterial hypertension (PAH), TR jet =86 mmHg, TR jet velocity 4.25 m/s, LVEF 62%, and no shunts clot or vegetation (Figure 2].

These echocardiography finding scorroborated with our clinical suspicion of APTE.



Figure 1: Prominent pulmonary conus and cardiomegaly with RV configuration

A D-dimer assay showed high values 1.3 mg/L (normal: 0.3 mg/L). The patient underwent pulmonary CT angiogram

The patient underwent pulmonary CT angiogram which showed features of APTE involving the left and right branches extending into lobar and segmental branches with grossly dilated pulmonary artery and cardiac chambers

with severe PAH and pulmonary artery clot score of 7.5% (Qanadli's dvt scoring)

To studies found the clot burden score proposed by Qanadli et al. to be a significant predictor of death, with positive results computed tomography (CT). pulmonary angiography ($P < 0.002$).

Peripheral vein Doppler study excluded deep vein thrombosis,

The diagnosis of APTE was confirmed and the patient was thrombolysed with alteplase (tPA) 100 mg followed by unfractionated heparin for five days.

Heparin was overlapped and maintained with warfarin. A repeat pulmonary CT angiography was done after six days, which showed mild interval reduction in the clot load- pulmonary artery clot load score of 30-35%.

Repeat echocardiography post thrombolysis showed a reduction in transvalvular pressure gradient across tricuspid valve from 86 mmg to 51 mmg.

The patient showed improvement and was discharged from the hospital on oral anticoagulation patient underwent pulmonary CT angiogram Figure 3), which showed features of APTE involving the left and right branches extending into lobar and segmental branches with grossly dilated pulmonary artery and cardiac chambers with severe PAH and a pulmonary artery clot score of 7.5% (Qanadli's dvt scoring)

To studies found the clot burden score proposed by Qanadli et al. to be a significant predictor of death, with positive results computed tomography (CT). pulmonary angiography ($P<0.002$).

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Repeat echocardiography post thrombolysis showed a reduction in transvalvular pressure gradient across tricuspid valve from 86 mmHg to 51 mmg.

The patient showed improvement and was discharged from the hospital

Audience Take Away:

- Acute Pulmonary thromboembolism in Background of Primary Pulmonary Hypertension
- Early diagnosis of APTE ; A Life Save .
- This is a research for other faculty to experience their teaching
- It improves the accuracy in the Management of Patient having APTE with PPH and Author explains Distinguishing Features of APTE , CPTEH and clinching towards An appropriate diagnosis of APTE

Biography:

Dr. Bilal Bin Abdullah is presently working as a Professor of Medicine at AL-Ameen Medical College ,Bijapur Karnataka ,India. Affiliated to Rajiv Gandhi University Of Health Science ,Bangalore India ,

Also he was Former Head of the Department of Medicine at Al-Ameen Medical College Bijapur , India

He has published more than 21 research articles in International Medicine Journal , his article ,were cited as reference He is also an Reviewer to many International Journal and Presented Many papers in CME and Conferences,

He is also appointed as a Senior post graduates examiner in Many Universities Across India.

VIDEO PRESENTATION

CARDIOLOGY WORLD CONFERENCE

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CWC-2019



Hypertension and myocardial infarction risk from inhalation of iron brake particulate matter

William J Rowe, MD, FBIS, FACN

Former Assistant Clinical Professor of Medicine, Medical University of Ohio at Toledo

Of 12 moon walkers, James Irwin on day after return from Apollo 15 mission, showed extraordinary bicycle (B) stress test (ST) hypertension (275/125) after 3 minutes exercise; supervising > 5000 maximum treadmill ST, author never witnessed ST- blood pressure approaching this level. Symptom-limited maximum B stress test showed “cyanotic fingernails”; possibly venous blood trapped peripherally, supporting author’s “Apollo 15 Space Syndrome,” postulating that severe fingertip pain during space walks, triggered by plasma fluid, trapped distally; mechanism could be related to endothelial dysfunction, providing “silent ischemia” warning. Neil Armstrong returned to Earth with severe diastolic hypertension (160/135), consistent with ischemic left ventricular dysfunction; 50 mm increase in comparison with resting BP 110/85. With inhalation of lunar dust, brought into habitat on space suit, with high lunar iron (I) this dust inhalation, along with reduced (R) space flight- transferrin, R antioxidant, calcium (Ca) blocker - magnesium, conducive to severe oxidative stress, Ca overload with potential endothelial injuries. Using moon walker studies as example, my recent editorials show that I dust, released from brakes, with over 90% of brakes made of I, is a major hypertension factor and may also contribute to myocardial infarctions.

Audience Take Away:

- How the inhalation of particulate matter released from iron brakes is conducive to both hypertension and myocardial infarctions
- Magnesium deficiencies conducive to oxidative stress and in turn endothelial dysfunction are very common world-wide
- The recognition of Mg deficiencies is limited because serum Mg deficiencies lack sensitivity.

Biography:

William J. Rowe M.D. FBIS (Fellow British Interplanetary Society), FACN (Fellow American College of Nutrition), is a board certified specialist in Internal Medicine. He received his M.D. at the University of Cincinnati and was in private practice in Toledo, Ohio for 34 years. During that time he supervised over 5000 symptom - limited maximum hospital-based treadmill stress tests. He studied 3 world class extraordinary endurance athletes and published their exercise-related magnesium deficiencies. This triggered a 20 year pursuit of the cardiovascular complications of Space flight. Of only 4 space syndromes, he has published 2: “The Apollo 15 Space Syndrome” and “Neil Armstrong Syndrome.” www.femsinspace.com

POSTERS

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OCTOBER

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Echocardiographic assessment of left ventricular filling pressures using data from invasive left ventricular filling pressures in patients with normal left ventricular ejection fraction

Zhang fen

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Objectives: The aims of this study were to assess the accuracy of multiple echo parameters of diastolic dynamics and the 2016 ASE/EACVI algorithm to detect elevated invasive LV diastolic pressures in patients with normal ejection fraction; the accuracy of the 2016 algorithm was compared to that of a newly derived algorithm.

Background: Echocardiographic assessment of left ventricular (LV) diastolic function is an integral part of the routine examination. Simultaneous measurements of LV pressures and echocardiographic parameters are sparse.

Methods: Patients (n=120) underwent left heart catheterization and coronary angiography for chest pain due to suspected coronary artery disease. Transthoracic echocardiography and LV pressure recordings were simultaneous. Receiver-operating characteristic curves were constructed to define optimal cut points for multiple echocardiographic parameters. Five were selected for new algorithm to estimate LV diastolic pressures: velocity of tricuspid regurgitation ($> 280\text{cm/s}$), average e' ($\text{Av } e' < 9$), average E/e' ratio ($\text{Av } E/e' > 13$), velocity of pulmonary vein A wave reversal (PV ArV $> 32\text{ cm/s}$) and left atrial volume index (LAVi $> 32\text{ ml/m}^2$). The accuracy of the algorithm was examined for a LV pre-A $> 12\text{ mmHg}$ and LV end diastolic pressure (LVEDP) i.e. post-A $> 15\text{ mmHg}$.

Results: All patients had a normal LV ejection fraction. Individual echocardiographic parameters of diastolic function (n=12) had moderate diagnostic utility. Using the algorithm of the 2016 guidelines, an elevated LVEDP $> 15\text{ mmHg}$ was identified with an accuracy of 69.1% (60.1-77.3); the newly derived algorithm that utilized the 5 echocardiographic variables had an accuracy of 84.2% (76.4-90.2), $p < 0.001$.

Conclusions: Simultaneous recordings of LV diastolic parameters and invasive LV pressures in a homogenous cohort confirmed that no single echocardiographic parameter can accurately assess LV diastolic pressures. Importantly, left ventricular diastolic pressures in patients with a normal LVEF were fairly reliably assessed by the 2016 guidelines. The new algorithm improved the accuracy of detecting abnormal LV filling pressures.

Audience Take Away:

- Simultaneous recordings of LV diastolic parameters and invasive LV pressures in a homogenous cohort confirmed that no single echocardiographic parameter can accurately assess LV diastolic pressures. The new algorithm improved the accuracy of detecting abnormal LV filling pressures.
- All patients had a normal LV ejection fraction. Individual echocardiographic parameters of diastolic function (n=12) had moderate diagnostic utility. Using the algorithm of the 2016 guidelines, an elevated LVEDP $> 15\text{ mmHg}$ was identified with an accuracy of 69.1% (60.1-77.3); the newly derived algorithm that utilized the 5 echocardiographic variables had an accuracy of 84.2% (76.4-90.2).
- The aims of this study were to assess the accuracy of multiple echo parameters of diastolic dynamics and the 2016 ASE/EACVI algorithm to detect elevated invasive LV diastolic pressures in patients with normal ejection fraction; the accuracy of the 2016 algorithm was compared to that of a newly derived algorithm.

Biography:

Dr. Yan received his PhD degree from the Fourth Military Medical University of China in cardiology. He works in the Affiliated Hospital of Jiangsu University, director of Cardiology department. Dr. Yan is Leader of national key clinical specialty disciplines. He has published more than 80 research articles in SCI(E) journals.

Acute limb ischemia: A case report

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Acute limb ischemia (ALI) is a sudden decrease in limb perfusion that may threaten limb viability. The most common cause is acute arterial total or near-total occlusion. Mortality and morbidity rate were high even after surgical or endovascular intervention. Early recognition and revascularization are essential. A case of ALI is presented to illustrate the diagnostic and therapeutic approach.

Case report:

A 54-year-old man had history of ascending colon adenocarcinoma status post right hemicolectomy, sick sinus syndrome and complete atrioventricular block status post permanent pacemaker implantation, hypertension, type 2 diabetes mellitus and coronary artery disease. He presented with acute onset of numbness, pain and weakness of the right leg. Vital sign in emergency department revealed blood pressure 217/88 mmHg, body temperature 36.5 Celsius degree and heart rate 91/min. Physical examination revealed weak pulsation of right dorsal pedis artery, and swelling and erythema of the right leg (Figure 1). Electrocardiography showed atrial fibrillation and pacemaker ventricular pacing rhythm (Figure 2). Laboratory data revealed leukocytosis and hyperglycemia. Computed tomography of the right lower extremity demonstrated an acute thrombosis with total occlusion from right common femoral artery (CFA) to superficial femoral artery (SFA).



Figure 1. Swelling and erythema of the right leg.

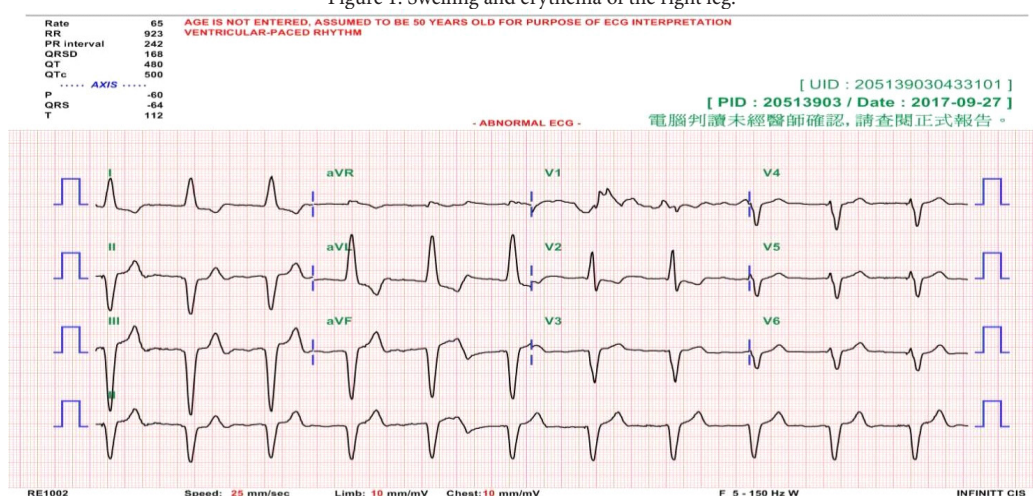


Figure 2 Electrocardiography showed atrial fibrillation and pacemaker ventricular pacing rhythm.

The patient underwent endovascular therapy with balloon angioplasty and thrombus fragmentation. The flow of SFA was restored after angioplasty but distal embolization of thrombus was noted to popliteal artery. Consequently, a multi-hole infusion catheter was placed over popliteal artery. Intra-arterial infusion with Urokinase 1,000,000 units for 24 hours and Enoxaparin were administered. His right lower limb became warm during therapy and his symptoms improved. Angiography was repeated on the next day. Flow of popliteal artery was restored. Mild reperfusion tissue swelling of the right leg was observed. Finally, the patient was discharged with non-vitamin K anti-coagulant Rivaroxaban.

Discussion: Acute limb ischemia is related to high possibility of limb amputation, severe complication such as reperfusion injury, and mortality. It is essential to achieve early recognition and diagnosis. Revascularization in viable case as soon as possible plays the major role in limb rescue and complication prevention. Surgical intervention and endovascular treatment are effective choices with quick response. Available treatment must be chosen rapidly in this emergent disease. In our case, endovascular therapy was decided. Blood flow of the acute ischemic limb was restored effectively with the minimally invasive procedure.

Conclusion: Acute limb ischemia (ALI) is a critical condition with high mortality and morbidity rate. Early recognition and early revascularization are essential. Endovascular treatment is one minimally invasive procedure with effect and quick response.

Current paradigm on how to approach Atrial Flutter in young population with no identifiable Coronary Risk Factors

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Background: Atrial flutter is a form of arrhythmia resulted from rapid spontaneously formed electrical circuit in the atrium. Atrial flutter can be caused by scarring of the heart resulting from prior cardiac disease or heart surgery, but it can also occur in some patients with no other identifiable heart problems.

Case Illustration: A 35-year-old male, came to our hospital with chief complaint of high fever since 5 days before admission. He complained of shivering with nausea, vomiting, decreased appetite, epigastrium pain, joint pain, and diarrhea. Since 1 day before admission he started to have difficulties in breathing with palpitation. On admission, he admitted increased palpitation. He has no history of hypertension, diabetes, or any heart disease. On physical exam, the irregular heart rate was noticed without any signs of murmur or gallops. No cardiomegaly on chest x-ray and relatively normal systolic and diastolic functions examined on echocardiography without any thrombus identified.

Discussion: Initiation of atrial flutter starts from electrical activity resulted from circuitry formed in the atria, which intervene the normal firing of electricity from the sinoatrial node. The rapid beating of the atria can in turn cause the ventricles to beat rapidly. Studies from the Marshfield Epidemiologic reported the incidence rate of atrial flutter in those younger than 50 years is 5/100.000. The classification by Puech and Grolleau described two types of atrial flutter i.e., type 'common' – predominantly negative biphasic flutter waves were seen in inferior leads with a sawtooth pattern, which preceded the positivity in V1 and type 'rare' or 'atypical' – if the ECG morphology was different from the common type.

Atrial flutter usually occurs from 2 broad identifiable causes, i.e., ischemic and non-ischemic atrial flutter. Usually ischemic atrial flutter occurs in patients with previous myocardial infarction resulted from accumulation of coronary risk factors such as diabetes, hypertension, dyslipidemia, or obesity. In this case we encountered an atrial flutter which is non-ischemic in nature. The patient is a young male with no identifiable risk factors who developed atrial flutter in presentation. We treated this patient with rate and rhythm control agents, and anticoagulation properly. Suspectedly we relate the atrial flutter with dehydration occurred in this patient due to decreased appetite for days. After proper intravenous fluid replacements and hydration the atrial flutter disappeared on ECG evaluation the day before discharge.

Conclusion: Atrial flutter in special population like young age is not common, especially if the patients have no identifiable risk factors. Specialized diagnostics is needed to identify non ischemic nature of the culprit and hence treat the patients accordingly.

Biography:

Dr. Jeffri Aloys Gunawan, SpPD has completed his general medicine education at the age of 24 years-old from Universitas Padjadjaran and specialty program in internal medicine (internist) in 2018 in Universitas Indonesia. Previously he had completed 2 years period as intern staff in Cipto Mangunkusumo Hospital, specifically for research in Division of Endocrinology, Department of Internal Medicine and concurrently involved in research held by Indonesian Society of Gastroenterology. He has published several research articles and clinical cases in reputed international journals including in European Society of Cardiology. Currently he conducted studies in internal medicine and routinely practicing internal medicine in several hospitals in Indonesia.

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Vaccine against *S. pyogenes*

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StreptInCor, a candidate vaccine against *S. pyogenes* is based on protective 55 amino acids residues of C-terminal portion of the M protein. Experimental assays have demonstrated that the StreptInCor peptide induces high titers of opsonic and neutralizing and protective antibodies in outbred immunized mice. Using HLA class II transgenic mice, it was possible to evaluate the immunogenicity and safety of the StreptInCor vaccine epitope for a period of one year. Specific and non-auto reactive antibodies were produced as well as no autoimmune or pathological reactions were observed in the heart or other organs of these animals. We also performed several studies in mini-pigs in order to evaluate the immune response and safety by submitting these animals to echocardiogram examination before immunization and after the four doses treatment. No alterations were observed. In addition, both repeated intramuscular-dose toxicity tests (28 days) with four doses and echocardiography procedure in mini pigs after 28 days were performed. No harmful effects to the tissues and organs studied were observed indicating that the vaccine is safe. StreptInCor vaccine also induces regulatory T cells (Treg) that strongly indicate that the vaccine peptide may have therapeutic potential to control both inflammatory and autoimmune response in RF/RHD patients.

Asymmetrical dimethylarginine in uncontrolled arterial hypertension

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Objective: We conducted a comparative analysis of ADMA plasma concentration in two groups of patients diagnosed with arterial hypertension (AH). Group I - patients with uncontrolled course of disease and group II- patients with controlled course of hypertension. We studied the correlation analysis of ADMA level with laboratory and instrumental data in both groups.

Methods: We included 109 patients in our study: group I – 73 patients, group II – 36 patients. The following procedures were performed: measurement of blood biochemical parameters, including lipid profile, concentration of creatinine and glomerular filtration rate (GFR) in the blood serum and a carotid Doppler ultrasonography (CDU). The criteria for including patients in group II was the constant use of correctly selected therapy for hypertension (according to international standards), the 24-hour BP monitoring indexes within the reference values and also absence of the hypertensive crises during the last 3 years.

Results: The concentration of ADMA in patients with uncontrolled hypertension was 0.69 [0.62-0.81] $\mu\text{mol/L}$ and was significantly higher than in patients in the group II, where the mean ADMA concentration was 0.63 [0.59 -0.70] $\mu\text{mol / L}$ ($p < 0.05$). In patients of group I, there was a positive correlation between the ADMA level and the creatinine level ($r = 0.615$, $p < 0.05$), and a negative association between the ADMA level and the renal filtration function which was assessed by GFR ($r = -0.444$, $p < 0.05$). In the group II ADMA level was not correlated to renal function ($p > 0.05$), but a positive association of moderate strength were revealed with serum glucose and triglyceride concentrations. Correlation coefficients for these pairs of indicators were $r = 0.416$ and $r = 0.409$, respectively ($p < 0.05$). Other parameters of the lipid profile in the group II, as in group I, were not associated with the level of ADMA ($p > 0.05$). When analyzing intergroup differences of the results of CDU, no significant differences were found ($p > 0.05$). However, a correlation analysis revealed a positive relationship between the level of the brachiocephalic arteries stenosis and the level of ADMA in patients of group I ($r = 0.495$, $p < 0.05$). Also, we found a positive correlation between the level of the brachiocephalic arteries stenosis and some laboratory data: creatinine and triglycerides concentrations in group I; $r = 0.423$ and $r = 0.433$ respectively ($p < 0.05$). According to the results of our analysis, in patients of group I, there was a negative association between the Intima-Medial Thickness and the renal filtration function which was assessed by GFR ($r = -0.4$, $p < 0.05$), while in patients with controlled course of hypertension, no correlations were found.

Conclusion: Significant increase in the level of ADMA in patients of both groups was found in comparison with the physiological norm ($p < 0.05$), and it was significantly higher in patients with uncontrolled course of hypertension in comparison with the ones in group II. Our study showed significant positive correlations between indicators of target organ damage and ADMA level and it was significantly higher in patients with uncontrolled course of hypertension.

Audience Take Away:

- A number of researchers consider asymmetric dimethylarginine as one of the markers of endothelial dysfunction in arterial hypertension. Asymmetric dimethylarginine (ADMA) is an endogenous competitive inhibitor of endothelial NO-synthase (eNOS), which is synthesized as a result of the hydrolysis of proteins rich in methylated arginine residues. The physiological concentration of ADMA in plasma is about $0.46 - / + 0.19 \mu\text{mol / L}$.
- Significant increase in the level of ADMA in patients with arterial hypertension was found in comparison with the physiological norm ($p < 0.05$), and it was significantly higher in patients with uncontrolled course of hypertension in comparison with the ones in another group.
- The presence of significant correlation of ADMA level in the blood plasma with a number of clinical, instrumental and laboratory data of patients with arterial hypertension indicates the potential use of this substance as a marker of the severity of pathological changes in microcirculation and prognosis of the disease.

Biography:

Dr. Dinara Natkina graduated from the Medical Academy in 2012 with a degree in General Medicine. Then she went through internship and residency. Dr. D.Natkina has 3 certificates: "General Therapy", "Cardiology", "Functional Diagnostics". Currently she is carrying out research work at the Department of Faculty Therapy at Sechenov University, as well as working as a practicing physician and cardiologist at a private medical clinic in Moscow. She has numerous publications of abstracts in international print media and 3 original articles in Russian medical journals.

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