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INTERNATIONAL HEART CONGRESS

MAY 24-25, 2023

TOKYO, JAPAN

Venue:

Ana Crowne Plaza Narita 68, Horinouchi, Narita-Shi, Chiba, 286-0107

Tokyo, Japan

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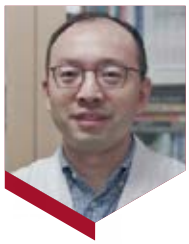

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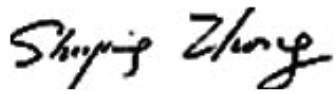
Thank You All...

Welcome Message

With the continuous advancement of biological science and technology, the study on the pathogenesis of cardiovascular diseases has also made great progress. As we known, no matter of the cause of heart diseases, it eventually leads to myocardial dysfunction. Myocardial hypertrophy is a symptom of compensation caused by different heart diseases. Myocardial hypertrophy is a critical risk factor of cardiovascular diseases, including heart failure, arrhythmia, and sudden death and so on. Myocardial hypertrophy involves both the processes of embryonic gene expression and transcriptional reprogramming. If it cannot be controlled in time, it will cause congestive myocardial failure and life-threatening even. However, the mechanism remains to be addressed.

Therefore, increasing the basic research on myocardial hypertrophy and exploring its molecular mechanism may Bring fundamental breakthroughs in the prevention and treatment of cardiovascular diseases.



Shuping Zhong

University of Southern California, USA

Welcome Message

Dear colleagues!

For a long time we have been observing stagnation in development in the field of cardiology. Current investigations are fragmented and limited mainly to the molecular level. There is no system-related advance to provide a public access and an effective solution for CVD patients. Expensive, very sophisticated, complex equipment cannot be treated as a way out of this complicated situation in cardiology healthcare. We have succeeded in breaking-through scientific discoveries and applications thereof in practice that is capable to fundamentally improve the healthcare quality and make it accessible even to low income population. The conferences at this level make possible to discuss all the questions in a free atmosphere. In this case, an audience response is of great value. Let's hope the conference participants will have a positive attitude thereto that may be a potential for their further success in their noble healthcare work.

Mikhail Rudenko

Russian New University, Russian Federation

Welcome Message

Dear congress participants!

Cardiovascular diseases that are associated with atherosclerosis are the leading cause of complications and mortality among adults worldwide. The pace of this process has decreased in developed countries over the last years, however, and it continues to grow in developing countries. Considering global scale of the problem, it is fair to acknowledge it as serious medical and social issue. Our success depends not only on modern technology, although it has certainly created a breakthrough in medicine, and in cardiology in particular. Primary and secondary prevention is still highly relevant for the management of cardiovascular diseases. Scientific research and discoveries in this area of medicine do not lose their importance nowadays.

I sincerely hope that the information and knowledge gained during the congress will be useful for the participants.

I wish you prolific work during the congress.

Mekhman N Mamedov

National Research Center For Preventive Medicine,
Russian Federation

Welcome Message

As a member of the organizing committee, it is my absolute pleasure to welcome you all to the much-awaited scientific feast Heart Congress 2023' to be held in the beautiful city of Tokyo, Japan.

Cardiovascular Medicine is the most paced field of Medicine with innovative research and cutting technology. You will have an opportunity to listen to keynote speakers and world-renowned experts in the field of Cardiovascular Medicine. There will keynote lectures, plenary scientific sessions and posters. I can assure you 2 days of a high-class learning experience blended with professional networking as well as plenty of time to explore city of historical culture and mouth-watering cuisine.

The conference organizers are working hard to put together a conference worth remembering.

I personally cannot wait to see you all in May 2023.

Syed Raza

Leighton Hospital, United Kingdom

Welcome Message

On behalf of CARDIOMERSION and INTERNATIONAL HEART CONGRESS

I welcome Cardiac Surgeons, Cardiologists, Cardiac Anesthetists, Intensivists, Endocrinologists,

Pulmonologists, Nephrologists, Radiologist, Echocardiographers, Nurses, Physiotherapists, Nutritionists, technicians, Perfusionists and Healthcare managers, Unconventional therapists as well as others involved in management of Cardiovascular and other lifestyle diseases to actively participate in the Forthcoming XII Global Workshop on Integrated Approach to Comprehensive management of Cardiovascular Thoracic and other lifestyle diseases.

There has been tremendous progress in management technologies however there is a need to develop Team approach to combat the rising Menace of Cardiovascular and other lifestyle diseases with the aim of improving Health Span as well as Lifespan of each individual.

You are cordially invited to participate in the unique experience and help in promoting Team approach in order to facilitate best possible outcomes in management of Cardiovascular Thoracic and other Lifestyle diseases.

Deepak Puri

Max Health Care, India

Welcome Message

Dear congress visitors, speakers and chairs, it is an honor and pleasure to participate in this prestigious event. The field of cardiovascular and heart research is fastly growing with many innovations being discovered along the way.

Other promising ideas and hypothesis are being discussed and tested among our courageous researchers. This opens new opportunities to better detect, treat, and manage heart and cardiovascular diseases, with the hope that in the future curative approaches will be discovered. The theme of our conference this year is "Advances in Cardiology: Research and Innovations". The Conference will provide an opportunity for participants to present their work and provide an updated-on areas related to both theoretical and applied research in the field of heart and cardiovascular research. Furthermore, the Conference will provide a nourishing environment for visitors to exchange idea, knowledge, information, learn new things and possibly build new collaborations based on the common interested between them. For the International Heart Congress 2023 I would be very glad if we could reach a record number of participants, presentations and if this conference would lead to the establishment of fruitful interactions among participants and new cultural proposals that can grow up for the positive development of the Conference and for the intellectual growth of all the participants. Finally, I would like to thank all the participants, visitors and a special thanks goes to the organizing Committee and everyone who helped facilitate this conference for the tremendous human effort they made.

Nura A Mohamed

Nura Adam Mohamed

Biomedical Research Center,
Qatar

Keynote Speakers

Shuping Zhong
Keck School of Medicine, United States

Syed Raza
Leighton Hospital, United Kingdom

Mikhail Rudenko
Russian New University, Russia

Mekhman N Mamedov
National Research Center for Preventive Medicine, Russia

Toshihiro Fujimatsu
Hokuto Hospital, Japan

Tomoko Kato
International University of Health and Welfare, Japan

Deepak Kumar Satsangi
Maitreya Foundation, India

Deepak Puri
CTVS Max Health Care, India

Ciprian Constantin
Carol Davila Military Emergency Hospital, Romania

Nura Adam Mohamed
Biomedical Research Center, Qatar

Thank You All...

ABOUT
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 conferences 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
HEART CONGRESS 2023

Magnus Group is ecstatic to invite one and all to its well-established event “International Heart Congress (Heart Congress 2023)” which is going to be held virtually during May 24-25, 2023 at Tokyo, Japan. This Hybrid Event allows you to participate in person at Tokyo, Japan or Virtually from your home or work. The congress will revolve around the theme “HEART: Hindrances, Evolutions, Advancements and Recent Trends in Cardiology”.

The two-day worldwide summit will elucidate the recent trends and advancements in the field of cardiology. We cordially invite eminent researchers, cardiologists, cardiac and cardiothoracic surgeons, healthcare professionals, students from medical schools, professors, nurses, scientists and business professionals to discuss Heart Diseases, Clinical Cardiology, Nuclear Cardiology, Diabetes and the Heart, Sports Cardiology, Cardiac Surgery, Cardiac Nursing, and other topics under a solitary rooftop for a brief but intense period of time. It will be an international meeting featuring a selection of high-quality plenary talks, intriguing keynote sessions, brainstorming panel discussions, informative oral and e-poster sessions as well as a forum for direct contact and knowledge exchange between delegates from academic institutions, hospitals, and industry.

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24-25 MAY

DAY 01

KEYNOTE FORUM

INTERNATIONAL HEART CONGRESS

Brf1, a potential therapeutic target of cardiovascular disease

Regardless of the cause of heart disease, it eventually leads to myocardial dysfunction. To meet the body's blood transfusion function, cardiomyocytes do not proliferate continuously like other tissue cells. Cardiomyocytes only increase in its size, eventually leading to compensatory hypertrophy of the myocardium and compensatory thickening of the heart wall, namely myocardial hypertrophy. This change in the heart requires the body to synthesize large amounts of extra protein to meet the demands of the increased heart size. Myocardial hypertrophy is a critical risk factor for cardiovascular disease, including heart failure, arrhythmia, and sudden death. Myocardial hypertrophy involves both the processes of embryonic gene expression and transcriptional reprogramming. However, its mechanism remains to be addressed. Brf1 (TF IIB-related factor 1) plays critical role in protein synthesis of body. Brf1 is a key factor to specifically modulate the transcription of RNA Pol III genes (RNA polymerase III-dependent genes), such as TRNAs and 5S rRNA. The products of RNA Pol III genes are changed with the alteration of cellular level of Brf1. The major biofunction of Brf1 and RNA Pol III genes are to participate protein syntheses. Both Brf1 and RNA Pol III genes are essential in this process during protein synthesis. It prompts that Brf1 expression and RNA Pol III gene transcription may be increased in myocardial hypertrophy.

In past a dozen year, we have been studying the deregulation of Brf1 expression and RNA Pol III gene transcription in tumor development. Our studies have demonstrated that Brf1 expression is increased in human cancers, such as hepatocellular carcinoma, breast cancer, gastric cancer and lung cancer. High expression of Brf1 displays short survival period and worse prognosis. These studies indicate that Brf1 plays important role in tumor development. Here, we report that cellular levels of Brf1 expression is increased in the human sample of myocardial hypertrophy. This result encouraged us to deeply explore the molecular mechanism of myocardial hypertrophy. Further studies show that knock-out Brf1 results in the alteration of myocardial structure of Brf1 conditional-knock-out mouse. Ultrastructure analysis displays that Intracellular myocardium space is enlarged, liver glycogen is significantly reduced, whereas lipid droplets are increased when Brf1 knock out (Brf1-/-). These studies have opened a new insight about myocardial hypertrophy and provided a complete novel way to develop a therapeutic approach for heart disease.

Audience Take Away Notes

- This is fundamental study of heart diseases, which provides complete new direction
- Brf1 expression is increased in myocardial hypertrophy
- Overexpression of Brf1 in myocardial hypertrophy may be potential therapeutic target

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[2]The First Affiliated Hospital, Shantou University Medical College, China, Shantou

[3]Keck School of Medicine, University of Southern California, Los Angeles, USA

Biography

Dr. Shuping Zhong studied deregulation of Brf1 and RNA Pol III genes at University of Southern California (USC), Los Angeles, USA. He gained degrees of MS in 1991 and PhD in 1998 and finished postdoctoral training in University of Minnesota in 2001. In past dozen years, he has been studying fundamental projects on Brf1 expression and RNA Pol III gene transcription on heart disease and human cancer. He joined USC in 2001 and gained the position of whole professor in 2017. Up to now, he has published more than 60 research article in peer-review journals (SCI).

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24-25 MAY

DAY 01

SPEAKERS

INTERNATIONAL HEART CONGRESS

John R. Doty* M.D, William T. Caine M.D, Stephen H. McKellar M.D, Bruce B. Reid M.D

Division of Cardiovascular and Thoracic Surgery, Intermountain Medical Center, Salt Lake City, UT, USA

Long-term results of concomitant stentless aortic root replacement and reconstruction of the ascending aorta

Purpose: Concomitant ascending aortic aneurysm and aortic valve disease is common in bicuspid aortic valve or in older patients with degenerative valve disease and hypertension. Bioprosthetic aortic root replacement can be combined with a traditional ascending graft for concomitant aortic root and ascending aorta reconstruction for simultaneous treatment of all existing pathology.

Methods: One hundred consecutive patients underwent elective concomitant aortic root replacement with a Medtronic Freestyle bioprosthesis and ascending aorta reconstruction with a prosthetic graft during a 17-year period. Indications for root replacement were dilation of all three aortic sinuses, small aortic root, or failed prior root replacement. Patients were followed with scheduled clinic evaluation and transthoracic echocardiography.

Results: There was one operative mortality and one permanent neurologic complication. Mean length of follow-up was 5.2 years (range 1 week to 14.9 years). There was no valve-related mortality or death attributable to aortic disease. Freedom from thromboembolism, endocarditis, and reoperation for valvular disease was 97%, 98%, and 93%, respectively. At last follow-up, 6 patients required reintervention; 2 for endocarditis, 3 for structural valve dysfunction and 1 for pseudoaneurysm. Four of these patients underwent successful transcatheter valve replacement and two patients required redo mechanical valve replacement. Echocardiography was performed at a mean of 4 years (range 1 week to 14 years). Mean and peak gradients were 5 mmHg (range 2 to 14) and 9 mmHg (range 2 to 30), respectively. One patient developed valve thrombosis which was successfully treated with anticoagulation. No patient has developed permanent valve-related impairment or additional aortic pathology.

Conclusions: Concomitant Freestyle aortic root replacement and ascending aortic reconstruction is a safe and effective approach that eliminates both valvular and aortic pathology, and may subsequently reduce the incidence of reoperation for either disease. We recommend prompt intervention for such patients when appropriate criteria are met for either valvular or aortic indications.

Audience Take Away Notes

- This paper demonstrates safe and effective use of stentless biologic prostheses for reconstruction of the aortic root and ascending aorta
- This operation provides durable treatment for patients with aortic root and ascending aneurysms.
- Other institutions can readily adopt this approach for aortic patients
- This surgical technique cures both aortic root and ascending aneurysm disease in a single operation

Biography

Dr. Doty received his bachelor's degree at Brigham Young University in 1990 and his medical degree from Georgetown University School of Medicine in 1994. He completed general surgery residency in 2000 and cardiothoracic surgery residency in 2003, both at the Johns Hopkins Hospital in Baltimore, Maryland. He is the chief of cardiovascular and thoracic surgery for Intermountain Healthcare in Salt Lake City, Utah.

Johannes Mueller
Berlin Heals, Germany

A novel approach to the treatment of heart failure by the application of a pulse-free constant direct electrical microcurrent

Objective: It has been shown in a pilot clinical trial with 10 patients with non-ischemic dilated cardiomyopathy and markedly impaired left ventricular ejection fraction that chronic application of a subthreshold constant direct current in the microampere range leads to a rapid and sustained improvement in cardiac function.

Methods: To achieve a current flow together with an electric field encompassing as large an area of the left ventricular myocardium as possible, it is necessary to place a patch electrode (electrically conducting area 30 cm^2) epicardially over the free wall of the left ventricle. As a counter electrode, a coil electrode is placed in the right ventricle, which is advanced transvenously like the electrode of an internal defibrillator. The DC generator is positioned in a subclavian pocket, similar to the position of a pacemaker. Both electrodes are connected to the current generator via cables.

Results: In a pilot study, 10 patients with non-ischemic dilated cardiomyopathy, a left ventricular ejection fraction (EF) of < 35 percent, and NYHA class III were treated with constant microcurrent over a 6-month period. After 6 months, EF showed a mean improvement of 9.8 percent ($P < 0.001$), six-minute walk distance (6-MWT) had nearly doubled on average (increase of 95 percent; $P < 0.001$), and NYHA class had improved by two classes in 80 percent of patients, by 1.5 in 10 percent of patients, and by only one class in 10 percent.

Conclusions: The application of microcurrent represents a completely new concept in the treatment of heart failure. Initial clinical data are extremely promising. A randomized pivotal trial with 100 patients is underway and will be completed by the end of the year. If successful, patients will certainly benefit from the use of microcurrent therapy who would otherwise have required heart transplantation or support with a mechanical ventricular assist device.

Shivaling Nisty
Nisty Heart Centre, India

A clinical profi le of acute coronary syndrome in COVID-19 patients in a provincial town of South India

Background: COVID-19 patients are at a higher risk of ACS as associated inflammatory response leads to endothelial damage and plaque rupture. The clinical data of such patients presenting with ACS is limited, we did a clinical study of ACS with COVID-19 patients focusing chiefly on clinical profile.

Methods and materials: A total 25 patients with ACS and COVID-19 were enrolled in the studied, ACS was diagnosed by clinical presentation, ECG and cardiac biomarkers. COVID-19 was diagnosed by RT-PCR, evidence of pneumonia on HRCT thorax and COVID-19 IgG antibodies was done to confirm the post-COVID status. COVID-19 IgG antibody immunoassay was done by CLIA method, which is authorized by EUA.

Results: A total 25 patients were enrolled in this studied, out of which 18 patients presented with ACS and were later diagnosed to have COVID-19, and 7 patients who were already being treated for COVID-19, developed ACS during the hospital course. Chest pain was the most common clinical presentation, which was seen in 23 patients, second most common symptom was dyspnea which was present in 9 patients and fever was present in 7 patients. ST segment elevation MI (STEMI) was the most common type of ACS found i.e. 14 patients (7 were anterior wall STEMI and 7 were inferior wall STEMI). Non-ST segment elevation MI (NSTEMI) was seen in 8 patients and unstable angina was seen in 3 patients. Patients with STEMI had statistically significant (P value <0.05) higher levels of inflammatory markers (serum LDH, serum Ferritin, IL-6, d-dimer). Thrombolysis was done in 8 patients (6 patients with Tenectaplase and 2 with streptokinase). 6 patients died, in which all were STEMI, and their inflammatory markers were statistically (P value <0.05) on higher side (serum LDH, serum ferritin and d-dimer). Patients with NSTEMI and unstable angina had lower levels of inflammatory markers. 15 patients had no comorbid conditions; rest 10 patients had comorbid conditions like hypertension, diabetes, smokers, bronchial asthma and old ischemic heart disease. Among the 25 patients, 13 patients were RT-PCR positive and 12 patients were post-COVID status and had positive COVID-19 IgG antibody titres.

Conclusion: The uniqueness about this study is that majority of the patients (18 patients) presented with ACS and later on diagnosed to have COVID-19. Most patients had ST segment elevation MI. Mortality was seen only in patients with STEMI, possibly due to extreme thrombotic burden. Statistical correlation with mortality was observed with serum LDH, serum ferritin and d-dimer, hence these inflammatory markers can be considered prognostic markers. Patients with NSTEMI and unstable angina showed favourable clinical course and low levels of inflammatory markers.

Ho Chang Kuo
Kaohsiung Chang Gung Memorial Hospital, Taiwan

Impact of FCAR methylation on susceptibility and coronary artery lesions in Kawasaki disease

Backgrounds: Immunoglobulin (Ig) A is a first-line antibody of mucosal defense and a significant prognostic factor of Coronary Artery Lesions (CAL) in Kawasaki Disease (KD). We aimed to determine whether DNA methylation of the FCA genes was associated with KD.

Methods: Pre- and post- Intravenous Immunoglobulin (IVIG) blood samples were collected from 73 KD subjects in this case-control study. The DNA methylation levels in the FCAR promoter region were evaluated using pyro sequencing. Blood samples from 61 controls were also analyzed. FCAR mRNA levels were then analyzed using a real-time polymerase chain reaction.

Results: Two CpG sites in the FCAR gene demonstrated a significant elevation in patients without CAL compared tofebrile controls but were not elevated in patients with CAL after therapy. The methylation levels were lower inKD patients with CAL than in non-febrile controls six months after IVIG treatment. We found that FCAR was more highly expressed at the mRNA levels in the pre-IVIG KD group than in the post-IVIG groups. FCAR mRNA levels during inactive disease were significantly lower in patients without CAL compared to those before treatment, but not in those with CAL by paired t-test. DNA methylation levels at the FCAR negatively correlated with mRNA in the leukocytes.

Conclusions/Learning Points: This study is the first to identify FCAR methylation and that its expression levels suggest their involvement in both the development of KD and CAL. Our results revealed that IVIG regulated both the FCAR mRNA and methylation effectively in the KD patients without CAL. Other methylation or FCAR-modulating agents would be considered for patients with CAL whose AR methylation did not respond well to IVIG.

Audience Take Away Notes

- Kawasaki disease
- Coronary artery lesions
- FCAR expression
- Methylation expression

Biography

I, Ho-Chang Kuo (birth year 1973), graduated from National Yang-Ming University, Taiwan with a M.D. degree in 1999 and PhD degree from Graduate Institute of Clinical Medical Science at Chang Gung University, Taiwan in 2011. I worked as an attending pediatrician, physician scientist and Professor at Kaohsiung Chang Gung Memorial Hospital and Chang Gung University, Taiwan. My research and clinical expert field are Kawasaki disease and allergic diseases. Now, I am the Director of “Kawasaki Disease Center” in Taiwan. I published more than 250 peer-reviewed SCI journal papers including 2 Nature Genetics (2011 and 2012), 1 Circulation Research (2015), 2 The Journal of Allergy and Clinical Immunology (2016), 1 Arthritis and Rheumatology (2015), 2 Allergy and a total of 150 Kawasaki disease related SCI papers. I also served as associated editor for Frontier in Immunology, Frontiers in Pediatrics, Children, BMC Pediatrics, Medicine and International Journal of Rheumatic diseases as well as Guest Editor of IJMS. I am ranked as "World's Top 2% Scientists 2020 and 2021" (Stanford University published).

Tamer Moustafa
Zagazig University, Egypt

Prevalence of microvascular dysfunction in patients with heart failure with preserved ejection fraction: Angiographic pararmeters

Backgrounds: Heart failure with Preserved Ejection Fraction (HFPEF) is a health care problem of epidemic proportions, currently accounting for roughly 3 million patients in the United States alone.

Objective: To study, using validated angiography indices, coronary blood flow and myocardial perfusion of the microcirculation to assess whether there is greater Microvascular Disease (MVD) in patients with microvascular angina and HFPEF compared to those who do not have.

Patients and methods: This retrospective study took place in El-Mahalla Cardiac Center on 160 patients with stable angina undergoing coronary angiography and echocardiography. All patients were subjected to complete history taking, full clinical examination, echocardiography, coronary angiography and angiography indices. Our patients were divided into two categories: 80 patients with HFPEF and 80 without HFPEF.

Results: There were statistically significant differences between the studied groups. We found lower Myocardial Blush Grades (MBG) in three coronary arteries in HFPEF than non-HFPEF patients, with good statistical significance regarding MBG Left Anterior Descending (LAD) and MBG left circumflex (LCX). Also, there was statistically significant difference between the studied groups regarding total MBG value. Between Thrombosis in myocardial infarction Frame Count (TFC) and MBG, there was a good correlation. The best cutoff of total TFC in diagnosis in diagnosis of HFPEF was ≥ 98.55 with sensitivity of 92.5% and specificity of 73.8%. Also, the best cutoff of total MBG in diagnosis in diagnosis of HFPEF was ≤ 6.55 with sensitivity of 80% and specificity of 87.5%.

Conclusion: The HFPEF population has a greater involvement of microcirculation than patients without HFPEF.

Keywords: Angiography, Coronary microvascular dysfunction, Heart failure with preserved ejection fraction.

Biography

Tamer Moustafa has a medical degree (M.B.B.Ch.) from Zagazig University and completed house officer and cardiology residency in the same university hospitals from 1997-2001. He has a Master's degree in Cardiology and completed a fellowship of coronary intervention in Paris in 2004. He later completed an M.D. in Cardiology and became an Assistant Professor of Cardiology at Zagazig University. He currently holds the position of Professor of Cardiology & Intervention. He have 22 years of experience in echocardiography and are an interventional cardiologist with a specialization in coronary intervention, including primary PCI, and skills in dealing with IABP, pacemakers, IVUS & FFR. Tamer Moustafa also have specific training in congenital echocardiography and IVUS. He was previously an instructor in the European Advanced Life Support and Egyptian Echocardiography for Congenital Echocardiography. He is the founder of the Sharkia Cardiac Association group and an executive member of the Egyptian Atherosclerosis and Vascular Biology (EAVA).

Dr Nidhish Niranjan Nisty[1]*, Dr Shivaling Nisty[2], Dr Suresh Harsoor[3]

[1]Cardiologist, Nisty Heart Centre, Kalaburagi, Karnataka, India
[2]Internal Medicine, Nisty Heart Centre, Kalaburagi, Karnataka, India
[3]Internal Medicine, MRMC, Kalaburagi, Karnataka, India

The study of cardiac troponin I in s.t segment elevation myocardial infarction and its complications

Background and Objective: A flawless and prompt approach is required to manage patients with STEMI and its course especially its complications. Many studies earlier have suggested cardiac troponins like troponin I levels are elevated in STEMI and are directly proportional to prognosis of course of the disease. Present study was performed to study the prognostic and diagnostic significance of cardiac troponin I in ST elevation and its complications. It was also to study the quantitative corelation of cardiac troponin I with ST elevation MI and its complications.

Methodology: Fifty cases were studied from November 2018 to May 2020. Cases diagnosed to have of ST elevation MI as per AHA/ESC/ACC guidelines within 6 hours onset of symptoms. All the patients were examined and investigated according the proforma. They received treatment as per AHA/ESC/ACC guidelines. During hospital stay, they were observed for predefined complications.

Results: Among the fifty cases, mean age ▫ SD in the study group was 53.76±11.03 years and ranged from 22 to 70 years. Male patients 36(72%) outnumbered the female patients 14 (28%) and male: Female ratio is 2.51:1. Most common symptom was chest pain (100%) followed by sweating (34%) and pain radiating to arm (34%). Major risk factors were cigarette smoking (62%), Diabetes Mellitus (42%), hypertension (32%). AWMI was more common with 70% of patients and 30% were IWMI. Tenecteplase 30mg was most used as thrombolytic agent administered to 70% of patients. In these patients 92% of them had elevated Cardiac Troponin-I levels and 8% had normal Troponin –I levels. Among these with elevated Troponin-I levels 44% of the patients experienced complications. Most common complications being arrhythmia 45.46% and next being the heart failure 40.9%. Mortality in the study is 6%.

Interpretation and conclusion: Cardiac Troponin-I is a reliable diagnostic as well as prognostic indicator in patients with STEMI. The magnitude of Cardiac Troponin-I levels is directly proportional to myocardial damage and adverse course of STEMI including its complications and mortality.

Audience Take Away Notes

- Audience can learn about Troponin I diagnostic and prognostic importance
- They'll also learn about the clinical profile of 50 patients of STEMI and its complications

Biography

Dr Nidhish Nisty is consultant Physician and Administrator at Nisty Heart Centre, Kalaburagi. Studied MBBS and M.D Internal Medicine at MRMC, Kalaburagi. He has secured highest grades at college in Internal Medicine and has been awarded gold medal in MBBS. He is also co-author for abstract "Primary PCI in a small hospital in a provincial town in India with no on-site surgery facility, a study of 175 cases over two years" which was selected at EuroPCR at paris 2020 during his post-graduation and also presented posters in India. He has visited 6 countries.

Waleed Etman[1*], Mohamed Loutfi[2], Kamal Mahmoud[1], Salah Eltahan[2], Amr Rayan[2]

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Outcome of percutaneous coronary intervention versus coronary artery bypass grafting for patients with intermediate SYNTAX II score

Background: Patients with intermediate SYNTAX II score have been representing confusion in our daily practice for interventional cardiologists whether to treat them by Percutaneous Coronary Intervention (PCI) is using second generation drug eluting stents or by Coronary Artery Bypass Grafting (CABG).

Methods: We enrolled 214 consecutive patients with intermediate SYNTAX II score to undergo revascularization (109 patients underwent PCI and 105 patients underwent CABG) after heart team discussion. We compared both procedures with respect to the primary composite end point of major adverse cardiac or cerebrovascular events (all- cause mortality, myocardial infarction, target vessel revascularization or stroke) at 40 months post procedure.

Results: At 40 months post revascularization procedure, the primary end-point occurred in 22 patients and 15 patients in the PCI and CABG groups, respectively (hazard ratio, 1.65; 95% confidence interval, 0.87 to 3.14; P = 0.13). No significant differences were detected between both groups regarding the composite incidence of all-cause mortality, myocardial infarction, target vessel revascularization and stroke. CABG significantly provided better quality of life than PCI for patients with intermediate SYNTAX II score.

Conclusion: In patients with intermediate SYNTAX II score, there was no statistically significant difference between PCI using second generation drug eluting stents and CABG with respect to the incidence of MACCE at 40 months post revascularization procedure.

Audience Take Away Notes

- To our knowledge, this is the only study which included only patients with intermediate SYNTAX II score, excluding low and high SYTNAX II scores
- The aim was to solve the puzzle in our daily practice and answering a daily asked question by the cardiologists, the patient and his family 'Is treating the patient via PCI using newer generations of drug eluting stents is a better option than a more invasive procedure by sending him to surgery?'
- When and how to choose the best revascularization option
- How to share all the information with the patient and his family to decide the best option

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Virtual surgery design of double-patch for pulmonary arterioplasty in complete repair of tetralogy of fallot using computational hemodynamics

Objective: In Tetralogy Of Fallot (TOF) with combined Pulmonary Artery (PA) branch stenosis, proper management of Right Ventricular Outflow Tract (RVOT) stenosis is the key to successful surgical correction. The purpose of this study is to evaluate the effective design of double-patch implantation in complete repair of TOF based on computational hemodynamic simulation and Computer-Aided Design (CAD).

Methods: On the basis of preoperative Computed Tomography (CT) imaging data obtained from the TOF patient, we reconstructed a three-dimensional (3D) geometric model of PA. The original reconstructed model displayed severe stenosis in the main pulmonary artery (MPA) and the proximal Left Pulmonary Artery (LPA), mild stenosis in the origin of the right pulmonary artery (RPA). The angle between the centerline of LPA and the centerline of RPA, defined as θ, equals to 120°. The "virtual surgery" was carried out to simulate four possible postoperative states with the aid of the technique of CAD. Model 1: double patches implanted in the MPA and the LPA with θ=120°; Model 2: double patches implanted in the MPA and the bifurcation of the LPA and RPA with θ=120°; Model 3 and Model 4 were separately created with θ=110° and 130° based on Model 2. Combined with computational hemodynamic simulation, the parameters including pressure, velocity, Wall Shear Stress (WSS) and Energy Loss (EL) after four double-patch implantations were analyzed.

Results: The CFD results suggested that the flow field improved when the angle θ was changed. The pressure and WSS on the pulmonary flow field were decreased significantly in four virtual postoperative models, but there were still the high-WSS regions at the bifurcation of LPA and RPA. The obvious flow disturbance was observed in the distal of LPA and RPA of Model 1, while the flow disturbance decreased and flow velocity increased downstream the LPA-RPA patch of Model 2, Model 3 and Model 4. The EL was greatly reduced after virtual surgery, and was the lowest in Model 4.

Conclusions: The angle between LPA and RPA should be considered in the double-patch design for pulmonary arterioplasty in complete repair of tetralogy of Fallot. CAD and CFD, as noninvasive and useful methods to explore the appropriate design of double-patch implantation meeting the optimal hemodynamic characteristics, might provide assistance for individualized surgical planning.

Key words: Patch, Virtual surgery, Tetralogy of Fallot, Pulmonary artery angulation, Hemodynamics.

Audience Take Away Notes

- The technique of computer-aided design is an effective tool to virtually perform surgeries on individualized vascular model for simulation of possible postoperative states
- The effect of the angle between left pulmonary artery and right pulmonary artery on the hemodynamics should be considered in the double-patch design for pulmonary arterioplasty in complete repair of tetralogy of Fallot
- The hemodynamic analysis with the application of the computer-aided design and the computational fluid dynamics techniques may contribute to predicting the optimal design of double-patch implantation in complete repair of tetralogy of Fallot

Biography

Miss.YU Pingping graduated from Fujian Medical University with a bachelor's degree in clinical medicine. As a master's student, she is studying at Shanghai Jiao Tong University School of Medicine, focusing on research related to surgical planning and hemodynamics of congenital heart disease (CHD), under the supervision of Prof. Jinlong Liu, who dedicates to research on CHD, computational hemodynamic simulations, virtual surgery.

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Computational hemodynamic evaluation for postoperative thrombosis risk based on virtual surgery of systemic-to-pulmonary artery shunt

Systemic-to-pulmonary artery shunt is widely used as a palliative operation to treat complex congenital heart disease. Postoperative thrombosis-induced shunt occlusion is a life-threatening complication. Different surgical designs affect the hemodynamic characteristic, which is intimately related to shunt thrombosis. This study aims to explore the effects of different shunt locations and shunt sizes on postoperative hemodynamic parameters related to thrombosis risk, thus to provide reference for preoperative planning and postoperative thrombosis risk assessment. The three-dimensional vascular model was reconstructed based on the patient-specific medical images. A 4mm artificial conduit was interposed virtually between the ascending aorta (or right subclavian artery, or left innominate artery, separately) and pulmonary artery using Computer-Aided Design (CAD). Three virtual models were formed, and named Model 1, Model 2 and Model 3 in sequence. Another two conduits (diameter of 3.5mm and 5mm) were modified on Model 3. Computational fluid dynamics was applied to calculated hemodynamic parameters including Wall Shear Stress (WSS), Oscillatory Shear Index (OSI), particle Relative Residence Time (RRT). The results suggested that the distribution of WSS and OSI of the shunt and pulmonary artery changed with the change of shunt location, but the shunt conduit was always associated with high WSS and high OSI. With the increase of shunt size, the WSS of the shunt decreased and the area of high OSI and high RRT decreased partly, which was not conducive to reducing the potential risk of postoperative thrombosis. The shunt location significantly changes the distribution of hemodynamic parameters related to postoperative thrombosis risk. Comparing with the impacts brought by the change of shunt location, the shunt size has limited effects on the parameters related to thrombosis risk. The evaluation and monitoring of postoperative thrombosis risk cannot be ignored when the shunt size is larger.

Audience Take Away Notes

- The vascular morphology and shunt configuration play an important role in hemodynamics which should be considered in patient-specific virtual surgery design
- The risks of shunt thrombosis and occlusion are still worth noting in perioperative period and long-term follow-up even if the shunt size is larger
- Computational fluid dynamics and computer-aided design provide quantitative and qualitative hemodynamic assessment to help surgery design and postoperative prediction, and are expected to become an effective tool to help clinical decision-making precisely in the future

Biography

Dr. Xiong studied Pediatrics at the Shanghai Jiao Tong University, supervised by Prof. Jinlong Liu and received her master degree in June, 2021. She then joined the research group of Prof. Liu at the Institute of Pediatric Translational Medicine and Department of Cardiothoracic Surgery, Shanghai Children's Medical Center. She mainly focused on the research of computational hemodynamics-based surgery design for congenital heart disease and obtained the position of an Assistant Research Fellow at the same institute. She has published 6 research articles in both SCI (E) and Chinese journals.

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The art of reflection: A case report of primary percutaneous coronary intervention in dextrocardia and situs in versus

A 74-year-old woman presented to the Emergency Room (ER) with the clinical presentation of typical chest pain accompanied by cold sweat and nausea. Patient's risk factors include menopause and dyslipidaemia. Upon arrival, her blood pressure was 106/62 mmHg, heart rate was 82 bpm, respiratory rate of 22 bpm, and peripheral O2 saturation was 98%. Her physical examination revealed that her heart sound was auscultated on the right side of her chest. Chest x-ray showed a right-sided cardiac silhouette and right-sided aortic knuckle. In 2009, it was discovered that the patient's liver and stomach were inverted. ECG of standard limb leads with right-sided precordial leads showed right axis deviation, negative p wave in lead I and aVL, positive R wave in lead aVR, and ST-segment elevation in anterior leads. She immediately underwent primary Percutaneous Coronary Intervention (PCI). PCI was performed via right trans-radial access. Engaging the coronary ostium during Coronary Angiography (CAG) is an art itself in cases of dextrocardia and situs inversus. Modifications were made for image acquisition as it was necessary to achieve selective coronaries' cannulation and interpretation of images to avoid potential errors. The mirror-image angiographic views are thus useful for catheter manipulations and image acquisition. It should be noted that for both the right and the left coronary arteries in biplane angiography, LAO and RAO angulations are essentially reversed from the normal biplane angulations, keeping the cranial/caudal tilts the same. Therefore, an appropriate mirror-image view with modified angulations is mandatory to visualise coronary arteries better. In this case, we utilized a mirror image with subtle angle modification and opposite-direction catheter rotation to acquire the coronary artery visually, preserving the coronary arteries' true orientation and cardiac silhouette.

Audience Take Away Notes

- Given the rarity of dextrocardia, patients with dextrocardia present a diagnostic challenge, especially in acute coronary syndrome, as it influences the interpretation of ECG and subsequent management
- The audience will learn the unfamiliarity of anatomical coronary artery and angiographic orientation differences of coronary anatomy in dextrocardia
- The audience will learn techniques of catheter torque (counter-direction of standard procedure for ostium engagement)
- The audience will learn image projection in dextrocardia to improve the accuracy of image acquisition and interpretation during performing PCI in dextrocardia

Biography

Dr. Rizkiawan is a cardiology resident at Dr. Soetomo General Hospital – Airlangga University. He is passionate in learning invasive cardiology. He will complete his residency in 2023 and wish to continue pursuing his goal to become an interventional cardiologist.

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Computed tomography angiography-guided orbital atherectomy as an alternative imaging modality in severe calcification percutaneous coronary intervention

Background: The use of contemporary devices such as the micro crown Orbital Atherectomy System (OAS) has emerged as an option for calcium modification to facilitate stent delivery and optimal deployment in patients with severe calcification coronary lesions. Recent studies have highlighted the significance of utilizing intravascular imaging techniques, such as IntraVascular UltraSound (IVUS) and Optical Coherence Tomography (OCT), to aid in the need for calcium modification procedures. These imaging modalities' main purposes are localizing calcified lesion as well as lumen optimalization. However, despite their effectiveness, IVUS and OCT can be prohibitively expensive and accessibility to these modalities may be limited across medical facilities. Coronary Computed Tomography Angiography (CCTA) has been proposed as an alternative option. CCTA is a non-invasive modality, thus it could be utilized to help roughly evaluating calcium burden and its location utilizing its cross-sectional projection. We present several cases of CCTA-guided orbital atherectomy PCI with satisfactory results.

Case summary: Four patients with recurrent angina were evaluated by CCTA. Their reports revealed multiple severely calcified lesions. Three patients have severely calcified lesions, and one patient underwent calcium scoring evaluation without further CCTA with contrast. Orbital atherectomy followed by stent implantation guided by prior CCTA report was done. Target vessel reference diameter was ≥2.5 and ≤4.0 mm with lesion length of ≤40 mm and stenosis of ≥70% and <100%; and CCTA evidence of severe target lesion calcification. Two patients underwent OAS in staged PCI procedure and the rest underwent OAS and PCI during index procedure. One of the patients developed ST-segment elevation in inferior leads. Intracoronary nitrate and eptifibatide were administered and ST-segment elevation was resolved. No complications were observed in other patients. Final angiography of all patients showed TIMI-3 flow without dissection and residual stenosis. All patients reported symptoms free during follow-up.

Conclusion: These cases show that CCTA may serve as an alternative imaging modality in PCI centres without intravascular imaging to help operator assess calcified lesions before OAS and PCI.

Audience Take Away Notes

- Sufficient lesion preparation before PCI in severely calcified lesion is important
- Orbital atherectomy uses a differential sanding mechanism of action to reduce plaque while potentially minimizing damage to the medial layer of the vessel and its use has resurged for the purpose of optimal lesion preparation
- Imaging assessment should be done to evaluate the desired location of orbital atherectomy
- CCTA may serve as an alternative to IVUS or OCT to predict the need for calcium modification technique

Biography

Dr. Ghassani is a cardiology resident at Dr. Soetomo General Hospital – Airlangga University.

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PCSK9 affect ventricular remodeling after myocardial infarction through regulation of regulatory T cells

Objective: To explore the effects and potential mechanisms of PCSK9 on ventricular remodeling after myocardial infarction.

Methods: Mouse was used to construct a model of acute myocardial infarction. To assess the effect of PCSK9, we used WT mice treated with PCSK9 inhibitor (alirocumab) or PCSK9-/-mice. Regulatory T (Treg) cells in WT mice were depleted by intraperitoneal injection of CD25 antibody. Cardiac function was assessed by cardiac ultrasound on day 1, 14 and 28 after successful construction of the myocardial infarction model; the infarct size was measured by Masson staining of tissue sections, the cross-sectional area of cardiomyocytes was measured by WGA staining and the collagen content was assessed by Sirius Red (PSR) staining 28 days after myocardial infarction. The proportion of Treg cells, proliferative Treg cells, M1 and M2 macrophages in the cardiac tissue was analyzed by flow cytometry on day 7 after myocardial infarction. The induced human iTreg cells were treated with human-derived PCSK9 recombinant protein-treated, and the cellular Reactive Oxygen Species (ROS) level and cell proliferation was analyzed by flow cytometry.

Results: Knockdown and inhibition of PCSK9 improved cardiac function, reduced infarct size and cross-sectional area of cardiomyocytes, increased collagen content in the margins of the infarct zone, and increased the proportion of Treg cells and proliferative Treg cells in cardiac tissue. PCSK9 inhibitor promoted M2 polarization of macrophages in cardiac tissue. PCSK9 Recombinant Protein Promoted ROS production and inhibited proliferation of human iTreg cells. After depletion of Treg cells in mice, PCSK9 inhibitor did not improve cardiac function.

Conclusion: Knockdown and inhibition of PCSK9 alleviated ventricular remodeling after myocardial infarction by regulating the proportion of Treg cells in cardiac tissue and promoting proliferation.

Audience Take Away Notes

- This study uncovered the effects of PCSK9 on Treg cells, broadening its pleiotropy
- We found that PCSK9 plays an important role in immune regulation after myocardial infarction, and more in-depth mechanisms can continue to be explored
- This study may broaden the clinical indications for PCSK9 inhibitors, and clinical studies can be conducted to confirm

Biography

Miss Xia graduated from Guangxi medical university with a bachelor's degree. She is studying in Tongren Hospital, Shanghai Jiao Tong University School of Medicine as a master's student, working on the basic and clinical researches related on ventricular remodeling after myocardial infarction. Under the supervision of Prof. Lei Hou, she got the national scholarship.

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24-25 MAY

DAY 01

CARDIOMERSION WORKSHOP

CARDIOMERSION
INNOVATE | INTEGRATE | EDUCATE

INTERNATIONAL HEART CONGRESS

Cardiomersion is a Global group promoting Integrated Approach to Comprehensive Cardiac Care started in 2011 by Dr Deepak Puri (Founder Chairman). Heart and lifestyle diseases are the leading causes of mortality and morbidity nowadays. There has been tremendous improvement in the management of Cardiac Diseases and advancement in techniques of Cardiac surgery, cardiac anesthesiology and related technology as well as comorbidities associated with cardiac disease has necessitated the need for developing an integrated approach for management of such patients where all the allied specialities come together to address all the aspects of management right from prevention ,diagnosis treatment and rehabilitation of the patients to deliver comprehensive care.

We Promote Integrated Approach Involving Team work to deliver Comprehensive cost-effective management of Cardiovascular and Thoracic Diseases. This Involves Primordial & Primary Prevention of Cardiovascular and other lifestyle diseases from an early age apart from initializing early diagnosis and holistic management of diseases before any complications arise. This is followed by timely Intervention which may be Medical percutaneous or surgical as appropriate decided by Heart Team approach. After Intervention proper Rehabilitation is provided to ensure full recovery so that person can resume normal activity and work as soon as possible and proper protocols are followed for Secondary Prevention.

We deliver world class Comprehensive management and perform Surgeries at most economical cost-effective rates according to patient's affordability in main center as well as all Cardiomersion allied center in the region also impart training to doctors, surgeons, anesthesiologists, nurses, technicians, physician, asistants, dietitians, physiotherapists, healthcare IT and media and healthcare managers. Also help in doing projects/clinical research as well as organize events and bring updates regularly and organize Global conferences since 2011 to achieve uniformity in management of Cardiavascular disease menace.

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24-25 MAY

DAY 01

KEYNOTE FORUM

INTERNATIONAL HEART CONGRESS

Are we ready for building transition programs for heart transplant recipients in Japan? -Knowing the unique background is the first step for discussion

Although Japan is one of the most developed countries from an economic, educational, and even medical viewpoint, several specific areas in medicine have straggled far behind the US or European countries. Such specific areas included transplant medicine and the transition of patients with childhood-onset chronic diseases from pediatric to adult healthcare systems. Especially, the transition medicine specific to heart transplantation (HTX) has never been fully discussed in Japan to date. Indeed, thanks to the recent advances in post-transplant care including immunosuppressive management, more and more pediatric organ recipients are surviving to adolescence and adulthood. The transition from pediatric to adult care is a crucial period with a risk of non-adherence and poor outcomes for organ transplant recipients. One of the goals of transition is self-management of immunosuppressants and infection prophylaxis; however, non-medical issues such as marriage and family planning should be also carefully discussed depending on their primary diseases or medications. In addition to the donated organs' care, transplant teams also need to pay attention to the recipients' spiritual growth and conflicted feelings. While waiting for transplant surgery, they are unable to interact with healthy peers of the same age. Instead of interaction with their peers, they not only struggle with the end-stage illness but also need to spend an uncertainly lasting long period with a thought of their own and possible donors' deaths. Such unusual circumstances sometimes hinder them from developing mental or emotional growth. Therefore, the transition should be performed through a multidisciplinary process by multidisciplinary medical professionals. This presentation highlight the underlying issues surrounding both HTX and transition medicine in Japan to initiate constructive discussion.

Tomoko S. Kato

Associate Professor of the Department of Cardiology, Director of Cardiac Imaging, Director of Heart Failure Program, International University of Health and Welfare, Japan

Biography

Tomoko S. Kato graduated from Nagoya City University in 1994 and received Ph.D. from Nagoya University in 2003. She trained as a transplant fellow at Stanford University and worked as a faculty member at the Advanced Heart failure Program at Columbia University. She specialized in heart failure, heart transplant and mechanical circulatory support, cardiac imaging, and cardiac pathology. She has served as the Asian Regional Ambassador of the International Heart and Lung Transplantation Foundation since 2022. Tomoko S. Kato published more than 150 peer-reviewed manuscripts, and hear total impact factor to date is over 800.

Comprehensive management of ischemic heart failure improves outcomes

Purpose: Acute myocardial infarction and Heart Failure are major causes of mortality nowadays. Delay in initiating Revascularization after onset of ACS is the most common cause of heart failure in India which has the largest burden of Heart failure patients along with the highest burden of coronary artery disease anywhere in the world. Comprehensive management involves early initiation of prevention, early diagnosis, prompt optimization of guidelines Directed Medical therapy, appropriate and timely interventions which may include surgical Revascularization performed off pump followed by proper Rehabilitation and secondary prevention. We present here our retrospective analyses of outcomes of 2334 cases who had surgical Revascularization, and compared management and outcome before and after initiation of Integrated Approach to comprehensive management of these patients.

Patients and method: We did retrospective analysis of patients who had off pump Coronary Artery bypass (OPCAB) in our unit by single surgeon since January 2004 to April 2023. We divided these patients into Group A (1074) Patients who had OPCAB before November 2011 and Group B :(1260) Patients who had OPCAB after November 2011 since Integrated Approach to deliver Comprehensive cost effective management of OPCAB was initiated. The period between onset of ACS and completion of OPCAB was noted along with number of grafts, ventilation time, inotropic and IABP requirement, ICU and hospital stay. The 30 day mortality and improvement in LVEF, MR as well as PA pressure were noted at 3 months and 12 months after surgery. The patients who had non viable myocardium and found not suitable for surgical revascularization were considered for Cardiac Resynchronization Therapy.

Result: The ventilation time, inotropic and IABP requirement, hospital stay was significantly less in group B. The mortality as well as hospital re-admissions were also lower in group B. Improvement in LVEF; MR and PA pressure was also more in group B.

Conclusion: Comprehensive management improves patient outcomes reduces re- admissions and gives better immediate as well as long term outcome of patients with ischemic heart failure. Early diagnosis and immediately Revascularization helps in preventing heart failure whereas heart Team directed early off pump surgical Revascularization in multi vessel disease improves left ventricular function and gives cost effective survival benefit to patients

Deepak Puri

Director, Ctvs Max Super Specialty Hospital, Mohali, Punjab, India

Global Chairman Cardiomersion

Biography

Dr. Deepak Puri completed his MBBS from IGMC Shimla, MS General Surgery and MCh CTVS from PGIMER Chandigarh India. Thereafter he worked as Assistant Professor at PGIMER Chandigarh before he joined Fortis Hospital Mohali India and worked as Additional Director CTVS. He is presently Director of CTVS Max Super Specialty hospital Mohali Punjab. He is the founder Chairman of Cardiomersion since 2011 which promotes Integrated Approach to deliver Comprehensive management of cardiovascular diseases. He has 78 publications in reputed journals and has organized more than 25 conferences/ workshops across the globe. He has extensive experience in performing off pump Coronary artery bypass in ACS and heart failure with high comorbidities.

Audience Take Away Notes

- The audience will learn about the protocols and benefits of Comprehensive management of ischemic heart failure
- This will help the audience in improving management of Acute MI and prevent heart failure in patients
- This will help other faculty to utilize our experience in management of critically ill patients with ACS needing off pump surgical revascularization

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24-25 MAY

DAY 01

SPEAKERS

INTERNATIONAL HEART CONGRESS

Dr. Sukriti Kaushik*, Dr. Simran Gupta,
IGMC, Shimla, India
Psychiatrist, Chandigarh, India

Personality assessment in substance users at the risk of cardiovascular comorbidity

Personality refers to the enduring configuration of characteristics and behaviour that comprises an individual's unique adjustment to life, including major traits, interests, drives, values, self-concept, abilities, and emotional patterns. The tendency to search out and engagein thrilling activities as a method of increasing stimulation and arousal is known as sensation seeking. It typically takes the form of engaging in highly stimulating activities that have an element of danger, such as skydiving or race-car driving. Impulsivity refers to describing and displaying behaviour characterized by little or no forethought, reflection, or consideration of the consequences of an action, particularly one that involves taking risks. A crossectional study was conducted in the department of psychiatry, in year2020, Indra Gandhi Medical College and Hospital, Shimla, Himachal Pradesh, India. In total 240 Opd patients having substance dependence were assessed, using Impulse sensation seeking scale, a questionnaire designed by Zuckerman and McDaniel in 2003(recent version). Assessing abnormal personality trait and using therapeutic and behavioural approaches in such patients can be used to decrease substance use and prevent cardiovascular co morbidity in opioid, alcohol, cannabis nicotine, and polysubstance dependent patients. Out of 240 subjects 90 of them were jail inmates managed for substance dependence. Rest of them were regular opd patients having substance dependence. All the subjects in the study were males. Among regular opd patients majority were in the age group between 21 to 30 years, with history of opioid and nicotine dependence in the majority of patients followed by alcohol in the second order and thereafter cannabis and lastly polysubstance dependence. Among jail inmates all were males, majority were in the age group above 40, having alcohol and nicotene dependence in the highest percentage followed by cannabis, thereafter opiod and polysubstance dependence lastly. Regular opd patients were found to have high sensation seeking than impulsivity whereas jail inmates were found having decreased percentage of sensation and impusivity as compared to regular opd patients. Incomparison to impusivity sensation seeking was found marginally high in jail inmates. Brain imaging studies in humans have identified structural and functional alterations in impulsive and increased sensation seeking individuals.In impulsive individuals corticostriatal circuit is found affected. In particular dysfunctional monoaminergic signalling (most notabily within dopaminergic and serotonergic system) is found in impulsive individuals. On the other hand high sensation seeking individuals are known to engage in activities of risky activites or negative consequences. They also exhibit greater brain activation for rewards and gains. Such individuals also show reduced neural responses in thalamus and dorsomedial prefrontal cortex during risk taking activities. Assessing personality aspects about impulsivity and sensation seeking can be used as preventive tool. In the patients of known abnormal personality traits, cognitive errors can be rectified and psychotherapy can be given. In substance dependent patients based on particular abnormal personality trait and associated changes in specific regions of the brain specific pharmacological treatment can be given. Impulsivity, sensation seeking traits in substance dependent individuals can be managed, used to decrease substance intake and further can be used as a preventive measure, to reduce the risk of associated co morbidities in patients of opioid,alcohol,cannabis and nicotine dependence.

Biography

Dr. Sukriti Kaushik is a psychiatrist from India. She had postgraduated in the year 2020.She is a member of Indian Psychiatric Association. She has participated in various national and international conferences in the past. She took the initiative for starting the first deaddiction centre under ministry of defense estates in India.

Neha Ranglani*, Deepak Puri
Arohas Workspace, Dr Ambedkar Road, Bandra West, Mumbai, India

Role of whole-food plant based diet in improving cardiovascular health

Cardiovascular disease is the leading cause of death globally, and lifestyle factors such as diet play a significant role in its development. Plant-based diets are rich in nutrients, antioxidants, and fiber, and low in saturated and trans fats, which can help prevent and manage cardiovascular disease. One way that a plant-based diet can improve cardiovascular health is by reducing inflammation in the body. Chronic inflammation is a key factor in the development of cardiovascular disease, and plant-based foods have anti-inflammatory properties that can help reduce inflammation in the body. For example, fruits and vegetables are high in antioxidants, which can help neutralize harmful free radicals that contribute to inflammation. Another way that a plant-based diet can improve cardiovascular health is by improving blood pressure and cholesterol levels. Plant-based foods are naturally low in sodium, which can help reduce high blood pressure. Additionally, many plant-based foods are rich in soluble fiber, which can help reduce cholesterol levels by binding to cholesterol in the gut and preventing it from being absorbed into the bloodstream. Plant-based diets can also help reduce the risk of developing type 2 diabetes, which is a major risk factor for cardiovascular disease. A plant-based diet can help improve insulin sensitivity and blood sugar control, which can help prevent the development of type 2 diabetes. But not all plant based foods are created equally. There are healthy and whole plant based foods and there are unhealthy and junk plant based food. Hence choosing the right foods is imperative for heart health which will be spoken about.

Audience Take Away Notes

- What is a plant based diet
- Difference between a healthy and unhealthy plant based food options and how to choose the right ones
- The ways in which a whole food plant based diet can lower the risk of heart issues and strengthen the heart health
- Tips and tricks to increase the intake of healthy plant based foods in your diet

Biography

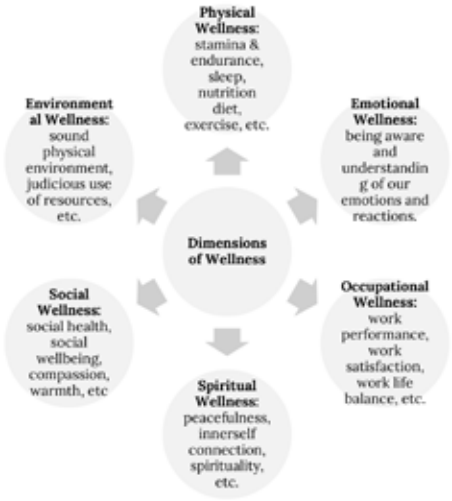
Neha Ranglani is an Integrative nutritionist and health coach practicing for the last 14 years and has helped people across the globe to become health independent and take charge of their own health. She believes our body has this innate ability to heal itself provided it's fed with the right raw materials in terms of food, thoughts, emotions and actions. She helps people reverse or manage obesity, diabetes, thyroid, PCOS, infertility and any other issue in most natural way possible. In less than 3 years she had authored 3 books in her Reboot Series and wishes to write many more. Neha has been educating people about authentic nutrition and wellness information through her social media, corporate and school workshops, authored articles in reputed magazines and publications.

Dr. Rachna Khanna Singh

(H.O.D Psychology and Holistic Health, Artemis Hospital, Gurgaon; Director, The Mind and Wellness Studio, New Delhi) Artemis Hospital, Gurgaon, India

Wellness and stress management

Description: The concept of wellness or complete wellness refers to a completely well rounded human being. It is inclusive of a holistic concept comprising of our mind, body, and soul. However, our wellness can be compromised with the patterns of our faulty lifestyle including stress, faulty diets, sedentary life, smoking and alcoholism. In addition, the pressure to perform, factors related to urbanization, our busy schedules and peer pressure seemingly contributes more to our faulty lifestyle patterns. Consequently, stress has become a normal part of life for most of us owing majorly to these faulty lifestyle habits. But, if left unmanaged, stress can lead to emotional, psychological and even physical problems, including palpitation, high blood pressure, chest pains and even coronary artery disease. Hence it is essential to identify the sources of stress (stressors), types of stress (Eustress and Distress), causal factors, and symptomatology and learn to deal with it effectively before it impacts ones Heart & Health. Therefore, a six pillars approach to wellness has been suggested as shown below:



Objective

- To create awareness about various stressors that effects one's own wellbeing
- Assessment of individual stress by Stress Scan Questionnaire
- Awareness of faulty lifestyle & change over last decade
- To create awareness about stress and its impact on heart
- Symptomatology & response of stress- emotional, psychological & physical
- Levels of stress – Mild, moderate & severe
- To enhance coping skills & strategies to deal with stress
- Simple methods/ tips to de-stress will be given to carry back home which can be easily incorporated in the daily lifestyle

Method: Use of interactive exercises, icebreaker, self-assessment questionnaire +P.P.T.

Biography

Dr. Rachna Khanna Singh is a Mental Health Professional with a medical background focused on providing Individual, Group & Corporate Counseling with a strong focus on Hospital & Clinical care. She is currently the Head of Department of Holistic Medicine & Mental Wellness.

She is also a Corporate Health Care Consultant, and has conducted various workshop, webinars, & one-on-one counsellings for over 500 leading Corporate houses and Banks of the country, like Amazon, Accenture, Ford India, CII, Aditya birla Group, Airtel, SAR group, Ericsson, Genpact, HCL, Hero Honda, Infosys, Nestle, Phillips, Pepsico, Coca-Cola, RBI, HDFC, Bank of America, HSBC, etc, focusing on Mental Wellness & Soft Skills training.

Along with working with adults, her work with students has been highly appreciated. She has been associated with over 300 schools (Mayo college, Scottish high, Cambridge schools, Modern, Salwan Public School, Sanskriti DPS, etc) and colleges (IITs, IIMs, NMIMS, BITS Pilani, Sharda Group, Amity Univeristy, etc) Pan India, and has also made a mark internationally (Royal College of Physicians-London, Tokyo Medical College, University of Exeter-UK).

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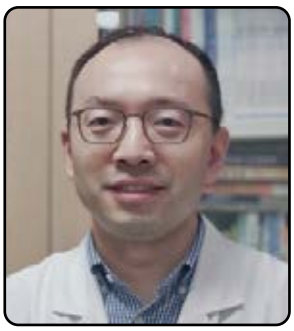
24-25 MAY

DAY 01

POSTERS

INTERNATIONAL HEART CONGRESS



Jinlong Liu[1, 2, 3]*, Jiwen Xiong[1, 2, 3], Qi Sun[1, 3], Jinfen Liu[1, 3]

[1]Department of Cardiothoracic Surgery, Shanghai Children's Medical Center, School of Medicine, Shanghai Jiao Tong University, Shanghai, China
[2]Institute of Pediatric Translational Medicine, Shanghai Children's Medical Center, School of Medicine, Shanghai Jiao Tong University, Shanghai, China
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Computational hemodynamic study of systemic-to-pulmonary arterial shunt with different design of conduit position

Object: Different types of systemic-to-pulmonary arterial shunts are used as the palliative treatment for the first-staged procedure of Congenital Heart Disease (CHD). Although the surgical techniques improved over the years, the position of the conduit implanted between the systemic circulation and the pulmonary artery is still one of the controversial issues. In the present study, we investigate the hemodynamic features in four types of systemic-to-pulmonary arterial shunts with various implantation positions.

Methods: A modified central shunt with a conduit of 4 mm in diameter was reconstructed based on the patient-specific medical images. The technique of Computer-Aided Design (CAD) was employed to perform the virtual procedures according to the initial vascular structures. The geometric models of Modified Blalock-Taussig (MB-T) shunt, Melbourne shunt as well as central shunt with a relatively long U-shaped conduit were acquired. Pulsatile simulations and the hemodynamic analysis were done to capture the physiological information of blood flow using the method of Computational Fluid Dynamics (CFD).

Results: The local hemodynamic features in different models were demonstrated by pressure, streamlines, Wall Shear Stress (WSS), blood flow distribution and energy loss. The pulmonary flow distribution changed as the conduit position varied. But the flow distribution between bilateral lungs was more balanced in the MB-T shunt and modified central shunt with a short conduit, compared to that in the U-shaped central shunt and Melbourne shunt. Relatively higher pressure drops and WSS were generated in almost all the conduits.

Conclusion: The MB-T shunt exhibits proper pulmonary perfusion and balanced pulmonary flow distribution. The conduit implanted between the first branch of aortic arch and the pulmonary artery branch, is associated with better performance in hemodynamics. The numerical simulation is a useful approach for the investigation of local hemodynamics and the evaluation of the different types of systemic-to-pulmonary arterial shunts.

Audience Take Away Notes

- Position of the conduit connected with the first branch of aortic arch could be the better choice of the shunt procedure
- Relatively lager pressure drops and high WSS are generated in the conduit, which may be used to quantitatively evaluate the surgical outcomes
- The virtual design of the conduit implantation by CAD and CFD will be a potential tool to find the optimal implantation position of the conduit in patient-specific shunt surgeries

Biography

Dr. Jinlong Liu studied Power Machinery and Engineering at Shanghai Jiao Tong University, China and graduated as MS in 2008. He then joined the research group of Prof. Mitsuo Umezu and Prof. Itsu Sen at TWIns for Advanced Biomedical Sciences, ASMew Lab., Waseda University, Japan, and received his PhD degree in 2012. After two-year postdoctoral fellowship supervised by Dr. Jinfen Liu at the Department of Cardiothoracic Surgery, Shanghai Children's Medical Center (SCMC), China, he obtained the position of an Associate Professor at SCMC. He has published more than 80 research articles in both SCI (E) and Chinese journals.

Dr. Vivek Vaibhav*, Dr. C.S Ahluwalia, Dr. Abhishek Bhardwaj, Dr. Nikhil Vaid, Dr. Shagun Garg

Rama medical College & Heart center, Consultant at Metro heart Hospital, Noida, India

Anesthetic considerations of ASD with pulmonary arterial hypertension for non-cardiac surgery

Atrial Septal Defect (ASD) is a common cardiac anomaly that accounts for about 10% of congenital cardiac defects in adults. Delayed presentation of the 'congenital lesion', poses several challenges to the surgical as well as anaesthetic team. Clinical suspicion & thorough pre-operative evaluation aids in proper management of such patients both intra and post-operatively.

Conclusion

- Knowledge of pathophysiology of ASD and clinical suspicion for PH is of great importance in anaesthetic management and conduct of surgery.
- Perioperative management of patients of PH revolves around safe induction and maintenance of anaesthesia without significant haemodynamic decompensation.
- Adequate preload and myocardial perfusion of RV is necessary for its optimal function.
- The Bilateral TAP block with NSAIDs provided superior postoperative analgesia without causing any haemodynamic instability.

BOOK OF ABSTRACTS

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DAY 02

VIRTUAL ROOM 1

KEYNOTE

FORUM

INTERNATIONAL HEART CONGRESS

Myocardial revascularization and analysis of endpoints in patients with diabetes mellitus in combination with acute and chronic forms of CHD

Mamedov Mekhman[1*]MD, PhD, Kokozheva Madina[2], Akhundova Khumra[2], Kutsenko Vladimir[3]

[1]Professor of cardiology, Head of the Department of Secondary Prevention of Chronic Noncommunicable Diseases of the National Medical Research Center for Therapy and Preventive Medicine of the Ministry of Health of Russia

[2]Post-graduate student of the department of secondary prevention of chronic non-communicable diseases of the National Medical Research Center for Therapy and Preventive Medicine of the Ministry of Health of Russia

[3]Junior scientific collaborator laboratory of biostatistics of the department of epidemiology of chronic non-communicable diseases of the department of secondary prevention of chronic non-communicable diseases of the post-graduate student of the department of secondary prevention of chronic non-communicable diseases of the National Medical Research Center for Therapy and Preventive Medicine of the Ministry of Health of Russia

The aim of this study was to analyze the features of myocardial revascularization in patients with acute and chronic forms of CHD in combination with diabetes mellitus and to assess complications after a year of observation.

Materials and Methods: A prospective comparative clinical study included 202 patients of both sexes with acute and chronic forms of CHD. Depending on the glycemic status and form of CHD, patients were divided into four groups: acute forms of CHD and T2DM; acute forms of CHD without T2DM; chronic forms of CHD and T2DM; chronic forms of CHD without type 2 diabetes. Depending on the clinical condition and the results of coronary angiography, patients underwent various types of myocardial revascularization: balloon angioplasty without stenting, stenting, coronary bypass grafting, stenting + coronary bypass grafting. One year after discharge, all patients were called to assess complications and endpoints, which included the following incidents: recurrent myocardial infarction, acute cerebrovascular accident, readmission, revascularization, and death. An assessment of the total indicator of endpoints was carried out.

Results: Up to 80% of patients with acute and chronic forms of CHD, regardless of glycemic status underwent revascularization, mainly stenting. It should be noted that the frequency of stenting among persons without DM with acute and chronic forms of CHD was significantly higher compared with patients with diabetes. At the same time, the absolute number of patients with coronary artery bypass grafting, including in combination with stenting, was higher in the diabetic groups. In groups without diabetes, the number of patients with one stent was 2-2.5 times higher compared to groups with diabetes (acute forms of CHD, $p=0.041$ and chronic forms of CAD, $p=0.017$). The groups did not differ in the frequency of implantation of two or more stents. Within 1 year after discharge, there are more hospitalizations and reinterventions among people with acute and chronic forms of CHD and diabetes. The number of non-fatal and fatal complications did not differ between the groups, although the absolute numbers of these indicators were higher in patients with diabetes. However, the total endpoints in people with DM, regardless of the form of CHD, were twice as high as in control groups ($p<0.001$).

Conclusion: Thus, the majority of patients with acute and chronic forms of CHD, regardless of glycemic status, underwent myocardial revascularization. In patients without DM, stenting prevailed, most

often of one coronary artery. At the same time, coronary bypass grafting, as well as a combination of these two procedures, was performed in diabetic patients along with stenting. After a year of observation, the number of complications in diabetic patients was 2 times higher than in patients without diabetes, which emphasizes the importance of secondary prevention, including complex drug correction.

Keywords: Myocardial Revascularization, Endpoints, Ischemic Heart Disease, Diabetes Mellitus.

Biography

Mekhman N. Mamedov MD, PhD, Professor of Cardiology. He is the author of 400 scientific works, 16 monographies in Russian, 4 monographies in Englishand 3 patents. Hirsch Index: RSCI — 36, Scopus — 6, Web of Science — 6. Under Dr. Mamedov's supervision, 10 PhD and 1 doctoral thesis have been defended. Recently, Professor Mamedov M.N. has initiated 12 research projects, including some presented at the congresses of the American College of Cardiology, the European Society of Cardiology, the World Heart Federation, as well as at other international and national scientific events. Professor Mamedov M.N. annually gives lectures in Russia and other countries. His research interests include: cardiometabolic disorders, lipid metabolism disorders, male health issues, cardiovascular risk assessment and correction, early markers of atherosclerosis, prediabetes and diabetes mellitus, risk factors and cardiovascular disease epidemiology, cardio-oncology, and comorbidities in internal medicine. Dr. Mamedov is the editor-in-chef of the "International heart and vascular disease journal", member of the editorial board of the "Cardiology" and "Cardiovascular Prevention and Therapy" journals, head of the Department of Secondary Prevention of Chronic Noncommunicable Diseases of the National Medical Research Center for Therapy and Preventive Medicine, and President of the Cardioprogress Foundation.

Improving awareness and adherence to medications amongst heart failure patients is the most cost effective way of reducing healthcare costs

Background: Heart Failure (HF) is a common medical condition and an important public health issue. This carries with it high mortality and frequent hospitalization. There is generally high re-admission rate and patients of heart failure tend to have duration of stay in the hospital. Heart failure management is costly and puts a burden on healthcare budget. Lack of awareness of different aspects of management of heart failure leads to poor adherence to treatment which further adds to the healthcare cost. Despite a number of evidence based medications being available, the utilization is not always satisfactory.

Objective: We conducted a study to explore patients' understanding and adherence to Heart Failure (HF) medications at a general hospital setting.

Materials and Methods: We prospectively studied from January 2016 till December 2017, 196 patients (outpatients plus inpatients) of HF at our hospital. The information was gathered by oral interview as well as using questionnaire.

Results: There were 110 male and 86 female patients with average age of 54 years. The majority of patients (78%) were in NYHA class II and III and 72% of patients were from Outpatient visits.15% of patients stopped or reduced the dose of diuretics on their own as they thought they didn't need them anymore or they were thought to interfere in their life style. 36 % patients believed that ACE Inhibitors or ARBs were for blood pressure and therefore they had either stopped or were intending to stop. 43 % patients were not keen on taking beta-blocker because of fear of various side effects and 12% of them already stopped the beta-blocker on their own.56% of patients did not like the idea of increasing the dose of ACE Inhibito, ARBs or beta-blocker to the maximum, mainly out of fear of side effects. In addition, 54% of the patients reported that they were not informed by the prescribing physician regarding the purpose and benefits of up titrating the dose of this medication. Patients were ignorant of the role of different HF medications such as Aldosterone antagonists (86%), ACE Inhibitor or ARBs (76%), Beta blocker (70%). None of the patients who were on Ivabradine knew the role of the drug in HF but at the same time were not informed of any known side effects.

Conclusion: Inadequate understanding and poor adherence to medications is a common problem among Heart Failure (HF) patients. As shown in our study. Inadequate adherence leads to increased HF de-compensation, reduced exercise tolerance, poor quality of life and higher risk for hospital admission and death. They all lead to increase in heart failure treatment and management costs.

Syed Raza[1]*, Sameena Razzak[2], Seemal Maqsood AbdulQadir[3]

[1]Consultant Cardiologist, Leighton Hospital, Crewe, Cheshire, UK

[2]Medical Resident, Awali Hospital, Bahrain

[3]Medical student, RCSI Bahrain

Biography

Dr Syed Raza graduated from Aligarh University in India in 1993. After completing his postgraduate degree in Medicine from the same university, he moved to the UK for higher specialist studies. He successfully completed MRCP and CCT and later also awarded Fellow of the Royal College of Physicians of Edinburgh (FRCP). He was awarded Professor John Goodwin prize for outstanding performance in Diploma Cardiology exam at Hammersmith Hospital, University of London in 2001. Dr Raza is Fellow of American College of Cardiology and American College of Chest Physicoans He is also Fellow of European Society of Cardiology and Fellow of European Society of Cardiovascular Imaging. He is also on the committee of Acute Cardiovascular Care. Heart Failure and Cardiovascular Imaging (European Society of Cardiology). He is currently working as Consultant Cardiologist and Head of

the department of Medicine at Awali Hospital, Bahrain. Dr Raza is a board member of the Hospital Excecutive Committee. He also chairs the Resuscitation committee and Privileging and Credentialing Committee. Prior to this he worked as consultant in Cardiology at Mid Cheshire Hospitals, NHS trust, United Kingdom. He is the regional educational coordinator for RCP Edinburgh and examiner for MRCP exam for the Royal College of Physicians of UK. He has partipcpated in some well-known trials and research. He has to his credit numerous publications and he has presented his scietific work in different parts of the world. He is peer review author for some well-respected International journals. He is permanent Review author for abstracts for European Society of Cardiology Annual Congress. He is on the editorial board of International Journal of Endovasculat Treatment and Innovative Techniques. Dr Raza is a teaching faculty member for Healthcare Management and Leadership at Westford University, Dubai campus. He is certified American Board in Medical Quality. Dr Raza frequently organises a number of seminars, webinars, symposia and workshop on various healthcare, quality and safety topics. Dr Raza has led the first awareness campaign in Heart Failure in the Middle East in 2017.He is chairman of BAPCO's health promotion unit. His special interests are Cardiovascular Imaging, Heart Failure and Acute Cardiovascular Care. He is founder and chairman of Raza Foundations which works for educating and increasing awareness on various health related topics amongst the general public as well as provide free healthcare services to poor as one of the charity initiatives.

Cardiometry: A new fundamental scientific field in cardiology

Listeners will learn about a fundamental discovery of a new blood flow mode with low friction due to structuring the flow in each cardiac cycle in the form of alternating rings of blood cells and plasma, which is accurately described mathematically by the authors. This radically changed the paradigm of knowledge about the cardiovascular system. New opportunities for highly efficient non-invasive cardiac diagnostics appeared. It became possible to measure the blood volume and heart muscle metabolism and qualitatively assess the relationship between heart and central nervous system only with the help of an electrocardiogram in each cardiac cycle. Discovery allowed creating a new theory of cardiac cycle phase analysis and, for the first time after V. Einthoven, introducing a new symbol on the ECG point L, that is the beginning of rapid ejection phase. That is just the phase structure of the cardiac cycle that creates and supports hemodynamics. The results of the fundamental research allowed the authors to create a new field of science, cardiometry, science of accurate measurements in cardiology. It is based on revealed laws and created axiomatics for proving the studied phenomena compliance with the truth and broad practical use of serial electrocardiographs based on information technologies. This allowed to attribute cardiometry to the natural science field for the first time. The report will acquaint listeners with the real commercially manufactured unique devices non-invasive diagnostics and therapy, in which the cardiometry theory is implemented. Practicing cardiologists will learn about the cardiometry opportunities to significantly improve the quality of their work. It reveals the possibility of new topics for doing research.

Mikhail Rudenko

Russian New University, 105005, Russia, Moscow

Biography

Graduated from the Taganrog Radio Engineering Institute in 1979. After graduation engaged in biophysics. Defended the thesis. Established several major private educational institutions. Made 9 fundamental scientific discoveries in the field of cardiology. Founded a new fundamental field of science, cardiometry. Developed the theory of cardiac cycle phase analysis. 1980-1999 led the development of a unique set of diagnostic equipment for assessing the human operator health state in the conditions of space flight on reusable spacecraft "Buran". Since 2000 supervised the development of diagnostic and therapeutic equipment of wide application on the basis of theory of cardiometry. Now conducts research on the following topics: hemodynamics, neurocardiometry, heart muscle metabolism, adaptation reactions of the organism, heart expectancy.

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24-25 MAY

DAY 02

VIRTUAL ROOM 1

POSTERS

INTERNATIONAL HEART CONGRESS

Sijin Wu*, Yuanhao Jin, Yan Dai, and Keping Chen

Arrhythmia Center, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences & Peking Union Medical College, Beijing, China

Efficacy and safety of leadless pacemakers for atrioventricular synchronous pacing: A systematic review and meta-analysi

Background: Leadless Pacemakers (LPs) have been developed to overcome lead- and pocketrelated adverse effects of conventional Transvenous Pacemakers (TVPs). In recent years, In recent years, a novel generation of leadless pacemakers, with an accelerometer-based Atrioventricular (AV) synchrony algorithm, was introduced. The device could track mechanical atrial contraction and allow for atrioventricular synchronous pacing when it was programmed to VDD pacing mode. However, current evidence is limited to several small- scale observational studies. We performed a systematic review and meta-analysis to investigate the efficacy and safety of this new technology.

Methods: We systematically searched PubMed, Embase, and the Cochrane library databases from inception to 12 September 2022. The primary efficacy outcome was defined as AVS after implanting atrioventricular synchronous LPs, whereas the secondary efficacy outcome was the change in cardiac output represented as left ventricular outflow tract velocity time integral (LVOT-VTI). The primary safety outcome was specified as major complications. Means or Mean differences (MD) with a 95% confidence interval (95%CI) were combined using a random effects model or a fixed effects model. Where heterogeneity was detected, we performed univariable meta-regression with the residual maximum likelihood method of baseline variables to screen for factors contributing to heterogeneity. The funnel plot and egger's test of included studies were examined to assess potential publication bias. Additional sensitivity analyses by omitting each eligible trial iteratively were conducted to account for different types of emerging bias.

Results: 8 published studies with 464 participants were included in this meta-analysis. The pooled AVS proportion was 78.9% (95%CI 71.9%-86.0%), with high heterogeneity between studies ($I2 = 90\%$, $P < 0.01$). Further meta-regression of basic variables did not screen factors that contributed significantly to heterogeneity. Additionally, a significant increase in AVS of 11.3% (95% CI 7.0%-15.7%, $P < 0.01$) was achieved in patients experiencing programming optimization. LVOT-VTI was significantly increased by 1.9cm (95%CI 1.2-2.6, $P < 0.01$), compared with VVI pacing mode. The overall incidence of complications was approximately 6.3%, and major complications related to the AVS algorithm were extremely low. Conclusions: Leadless pacemakers for atrioventricular synchronous pacing demonstrated favorable safety and efficacy. This new device could improve AV synchrony and cardiac output in patients qualified for VDD pacing, with a low complication incidence. Future data on its long-term performance are required to facilitate its widespread adoption in clinical practice.

Audience Take Away Notes

- This is the first systematic review and meta-analysis to examine the efficacy and safety of leadless pacemakers for atrioventricular synchronous pacing
- We found that atrioventricular synchronous leadless pacemakers could improve AV synchrony and cardiac output in patients qualified for VDD pacing, with a low complication incidence

- Our findings demonstrated the favorable efficacy and safety of the new generation Pf leadless pacemakers, which could emerge as a potential alternative to conventional dual- chamber pacemakers implantation.Our findings will appeal to more cardiologists and engineers to promote the adorpotion of this new technology
- Our findings will appeal to more cardiologists and engineers to promote the adorpotion of this new technology

Biography

Dr. Sijin Wu is a PhD candidate specializing in cardiac pacing and electrophysiology at the Chinese Academy of Medical Sciences & Peking Union Medical College (CAMS & PUMC). He is also a resident physician at Fuwai hospital, the National Center of Cardiovascular Disease (NCCD). He joined the research group of Prof. Keping Chen at Fuwai Hospital in 2019 and has been involved in various cardiac pacing and radiofrequency ablation procedures. He has also led or participated in multiple clinical studies related to cardiac pacing and electrophysiology.

Lin Zhao*, Yan Zeng, XianLiang Zhou

Department of Cardiology, Fuwai Hospital, National Center for Cardiovascular Disease, Chinese Academy

Association of plasma endothelin-1 with re-hospitalization due to heart failure in psoriatic patients with coronary artery disease

Background: The plasma big Endothelin-1 (big ET-1) plays an important role in endothelial dysfunction and thrombogenesis, and it is closely related to cardiovascular adverse events. However, for patients with psoriasis who have already suffered from Coronary Artery Disease (CAD), whether big ET-1 is independently correlated with prognosis is still uncertain.

Methods: We conducted a retrospective cohort study of consecutive psoriatic patients with CAD between January 2017 and May 2022 in our hospital. The clinical records were collected, and comparisons were made between groups. The Kaplan-Meier survival analysis was used to evaluate the association between variables.

Results: Of the 223 participants, one hundred and fifty-three patients were with elevated big ET-1. The proportions of diabetes, hypertension and hyperlipidemia were not different between the two groups. Compared with patients with normal big ET-1, the levels of hemoglobin ($p = 0.007$), high-density lipoprotein cholesterol ($p = 0.031$) and left ventricular ejection fraction ($p < 0.001$) were lower in patients with elevated big ET-1. After the mean follow-up of 35.26 months, the rates of re-hospitalization due to heart failure were not different between the two groups ($p = 0.351$). However, in the subgroup analysis, elevated big ET-1 was associated with the re-hospitalization due to heart failure in patients with age < 60 years old (log rank $p = 0.048$).

Conclusion: In psoriatic patients with CAD, the plasma big ET-1 can independently predict re-hospitalization due to heart failure in patients with age < 60 years old. Moreover, plasma big ET-1 can improve the predictability of a well-established risk score.

Audience Take Away Notes

- In patients with psoriasis and coronary artery disease, elevated endothelin-1 (big ET-1) levels were associated with re-hospitalization due to heart failure in patients with age < 60 years old
- The results contribute to risk stratification in this subset of patients and will provide a clearer understanding of the effect of big ET-1 on the prognosis of these patients
- It is suggested that big ET-1 level should be closely detected in young psoriatic patients concurrent with coronary artery disease, and regular follow-up should be considered to avoid adverse clinical events

Biography

Dr. Lin Zhao is currently studying for her PhD in cardiovascular medicine at Fuwai Hospital, National Center for Cardiovascular Disease, Chinese Academy of Medical Sciences and Peking Union Medical College. Her research interests are basic and clinical research of common cardiovascular diseases.

Sijin Wu*, Wenzhao Lu, Yan Dai, and Keping Chen

Arrhythmia Center, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences & Peking Union Medical College, Beijing, China

A propensity score-matching cohort study comparing the immediate effects between left bundle branch area pacing and right ventricular pacing on blood pressure

Background: Left Bundle Branch Area Pacing (LBBAP) is an emerging physiological pacing modality. LBBAP can preserve intraventricular and interventricular electrical and mechanical synchrony by directly stimulating the cardiac conduction system. However, little attention focused on its acute hemodynamic effects. Although prior studies have investigated the potential Blood Pressure (BP) variations in patients undergoing Right Ventricular Pacing (RVP), the association between LBBAP and BP change remains unknown. The objective of our study was to explore the acute BP variations in both LBBAP and RVP receivers.

Methods: We conducted a retrospective cohort study that included all patients who underwent de-novo dual-chamber pacemaker implantation at a high-volume center in China, from January 2019 to June 2021. Patients were divided into two groups according to their pacing strategy, namely LBBAP and RVP, and we used Propensity Score-Matching (PSM) to balance confounding factors. Given the dynamic nature of Blood Pressure, BP variations were analyzed over three time periods: baseline (within 24 hours before implantation), hyper-acute period (0-24 hours after implantation), and acute period (24-48 hours after implantation). The primary outcome was the change in systolic BP after the implantation. We extracted and analyzed BP data for each time period. In the PSM cohort, we used repeated measures ANOVA to examine the overall SBP changes across all three time points, and Tukey's method was used for multiple comparisons. An independent sample t-test was used to compare the LBBAP and RVP groups. Furthermore, we performed subgroup analyses within each group to explore potential factors that could influence the BP variations. Subgroup categories were specified by baseline SBP, hypertension status, and use of AHDs.

Results: From an entire cohort including 898 patients, 193 LBBAP receivers were propensity matched to 193 RVP controls. A gradual decrease in systolic BP after the implantation was observed in overall populations, from its baseline of 137.3 ± 9.2mmHg to the hyper-acute period of 133.4 ± 10.3mmHg, and then to the acute period of 127.7 ± 9.4mmHg ($P < 0.001$). A similar decreasing trend was observed in both LBBAP and RVP groups. The LBBAP group exhibited a greater reduction than the RVP group (11.6 ± 6.2mmHg vs. 7.6 ± 5.8mmHg, $P < 0.001$). In further subgroup analysis, LBBAP receivers who had a high baseline SBP ($P < 0.001$) and those without using anti-hypertensive drugs ($P = 0.045$) appeared to have a higher magnitude of BP variations. Likewise, a similar trend was also found in RVP receivers. However, there was no significant difference between patients with or without HTN in either group ($P = 0.045$ in LBBAP group and $P = 0.005$ in RVP group).

Conclusions: Permanent pacemaker implantation may contribute to an acute decrease in systolic BP shortly after the procedure, which was more pronounced in LBBAP receivers. Baseline SBP and the use of anti- hypertensive drugs were potentially associated with the magnitude of BP variation. Future experimental and clinical investigations are necessary to explore the underlying mechanisms and the long-term hemodynamic effects of LBBAP versus RVP.

Audience Take Away Notes

- This study produced the first insight into the immediate hemodynamic effects in both LBBAP and RVP receivers. We first characterized the acute blood pressure changes after pacemaker implantation
- We found that the implantation of permanent pacemakers for patients with conduction system diseases might contribute to a decrease in blood pressure shortly after the implantation, and this immediate effect was more pronounced in LBBAP receivers, suggesting that LBBAP might have stronger physiological hemodynamic effects. This will promote the adoption of this new technology
- This study also indicated that baseline SBP and the use of anti-hypertensive drugs were potentially associated with the magnitude of BP variation. This provided a hypothesis for physicians to conduct well-designed prospective clinical trials to explore the underlying mechanisms and the long-term hemodynamic effects comparing between the two pacing strategies

Biography

Dr. Sijin Wu is a PhD candidate specializing in cardiac pacing and electrophysiology at the Chinese Academy of Medical Sciences & Peking Union Medical College (CAMS & PUMC). He is also a resident physician at Fuwai hospital, the National Center of Cardiovascular Disease (NCCD). He joined the research group of Prof. Keping Chen at Fuwai Hospital in 2019 and has been involved in various cardiac pacing and radiofrequency ablation procedures. He has also led or participated in multiple clinical studies related to cardiac pacing and electrophysiology.

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24-25 MAY

DAY 02

VIRTUAL ROOM 1
SPEAKERS

INTERNATIONAL HEART CONGRESS

Charlotte Frost* MD BBiomed MS, Cheng He MBBS BMedSc FRACS
Department of Cardiothoracic Surgery, Gold Coast University Hospital, Southport, QLD Australia

The congenitally absent right coronary artery in aortic valve surgery

Congenital absence of the right coronary artery is an uncommon coronary anomaly and is often benign, unless the vessel has a malignant course. Optimal management of these patients during elective cardiac surgery for pathology is relatively unknown. A 65-year-old female presented with symptomatic aortic stenosis for aortic valve replacement. Routine preoperative angiography demonstrated congenital absence of the right coronary artery with dominant left circumflex circulation. A very large posterior descending artery branched from the circumflex to supply the inferior myocardium. Congenital absence of the right coronary artery was confirmed on CT coronary angiogram, with no evidence of interarterial malignant course. The patient proceeded to surgical aortic valve replacement with cardiopulmonary bypass and retrograde cardioplegia for myocardial protection. A 19mm perimount magna ease bioprosthesis was inserted. Root enlargement was not performed due to the risk of coronary injury. The patient was discharged from hospital on day 7. We discuss the implications of single coronary anatomy on myocardial protection, cardiac reoperation and transcatheter intervention.

Biography

Dr Charlotte Frost is a Cardiothoracic Registrar at the Gold Coast University Hospital. She graduated from Medical School in 2014 at The University of Melbourne. She has a Master of Surgery, Diploma of Surgical Anatomy and a Bachelor of Biomedicine, majoring in Biosystems Engineering.

Dae Wook Lee, Medicine (MbChB), MSC, BSc

Medical Director and Medical Franchise Head, Cardiovascular, Metabolism, Neuroscience, and Gene Therapy, Novartis Pharmaceuticals, Korea

Powering biopharma research with data and genomics in cardiology – Spearhead of excellence

The rapid success of using human big data has been a novel trend for drug development and discovery. The human genetic techniques including coding GWAS are generically associated with diseases whereas the expansions of human data ecosystem in multi-geographic regions provide valuable insights on disease specific cohorts and genomic data. The investment on human genome research and analytics based on health records is expanding globally, with a more strategic approach to accessing human data. The research into big human data investment has their continuing synergistic influence for testing or generation and validation of hypothesis from the understanding of diseases to experimental validation in human samples and data. In addition, the data from population specific variants could identify novel genetic associations with diseases, and also, the compilation of big data has a huge impact on the pharmaceutical industry's research methods by using rapid analysis on demand with sufficient statistical power to derive future potential hypotheses. Since the deliverable from bio bank analysis provides both disease risk and safety in the general population, the bio bank scale genomic data identifies rare variants such as the Loss Of Function (LOF) variant that is associated with health. In subgroups, the functional variants (Missense, LOF) accelerate medical development by reinforcing already validated and enriched genomic data sets where the potential of providing the opportunities for new drug indications and discovery. With more innovation and evolution we are closer to greater successes in the generation of diverse population genome data and at the same time deriving safety information and discovering new indications for drugs.

Audience Take Away Notes

- Provide comprehensive overview on genomic landscape in Cardiology
- Innovative Medicine with latest Research in Cardiology
- Sharing of advancement of future new indications for drug discovery using genomic sequence data

Biography

Dr. Dae Wook Lee is a Medical Director of Novartis Korea in Cardiology, Renal, Metabolism, and Gene Therapy. He was Head of Medical Portfolio Management in Rare disease, Gastroenterology, PDT, Neuroscience and New Molecular entities from the Asia-Pacific Region of Takeda Pharmaceutical Ltd Pte. Dae Wook Lee obtained his Medical Degree from the University of Warwick, U.K. awarded MbChB Medicine & Surgery, and completed MSC Genetic Epidemiology at the Medical Research Unit in the University of Sheffield, U.K with an additional BSc Biomedical Science degree. He is currently an Executive Master of Business Administration (MBA) Candidate for Harris College of Business, Faulkner University in North Alabama in U.S. Dae Wook received the Best Research Award in the International Research Awards of Cardiology and Cardiovascular Medicine in 2022.

Charlotte Frost* MD, BBiomed MS, Cheng He MBBS BMedSc FRACS, Sylvio Provenzano FRACS

Department of Cardiothoracic Surgery, Gold Coast University Hospital, Southport, QLD Australia

Surgical resection of a massive mediastinal tumour with mass effect

Thymolipoma is a rare subtype of benign thymic tumour containing a combination of thymic and adipose tissue. They are often found incidentally or when the tumour causes compression with symptoms varying depending on the location. A 52-year-old female presented to the emergency department with anxiety attacks, dyspnoea and chest pain. She had no risk factors for cancer, cardiac or respiratory disease. On examination she was normotensive, tachycardic, afebrile and saturating at 97% on room air. Chest auscultation revealed abscent air-entry and dullness to percussion on the left to the midzone. Chest x-ray was performed demonstrating opacification of the left hemithorax to the mid-zone with mediastinal shift, consistent with a large pleural effusion, or space occupying lesion. CT scan demonstrated a large mass measuring 14.4 x 16.7 x 25.7cm in the left hemithorax with significant positive mass effect on the mediastinum. Tumour density was consistent with fat with no evidence of calcification, cystic or solid components. The tumour was supplied by multiple traversing vessels and there was no evidence of invasion. Surgical resection was performed via median sternotomy due to the lesion size and complex blood supply. The lesion was excised as a complete specimen, measuring 34.2 x 23.9 x 8.0cm and weighing 3111g. Histopathology confirmed thymolipoma with a well circumscribed lesion composed of adipose and thymic tissue with a thin fibrous capsule. We discuss the surgical and anaesthetic complexities of resecting a large tumour causing significant mediastinal mass effect.

Biography

Dr Charlotte Frost is a Cardiothoracic Registrar at the Gold Coast University Hospital. She graduated from Medical School in 2014 at The University of Melbourne. She has a Masters of Surgery, Diploma of Surgical Anatomy and a Bachelor of Biomedicine, majoring in Biosystems Engineering.

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Automated interpretation of congenital heart disease from multi-view echocardiograms

Congenital Heart Disease (CHD) is the most common birth defect and the leading cause of neonate death in China. Clinical diagnosis can be based on the selected 2D key-frames from five views. Limited by the availability of multi-view data, most methods have to rely on the insufficient single view analysis. This study proposes to automatically analyze the multi-view TransThoracic Echocardiogram (TTE) echocardiograms with a practical end-to-end framework and build an automatic and interpretable assistant for the TTE based assessment of Atrial Septal Defect (ASD). Firstly, we collect the five-view echocardiograms video records of CHD and healthy subjects with both disease labels and standard-view key-frame labels. Depthwise separable convolution based multi-channel networks are adopted to largely reduce the network parameters. We also approach the imbalanced class problem by augmenting the positive training samples. Our 2D key-frame model can diagnose CHD or negative samples with accuracy of 95.4%, and in negative, VSD or ASD classification with an accuracy of 92.3%. To further alleviate the work of key-frame selection in real-world implementation, we propose an adaptive soft attention scheme to directly explore the raw video data. Our video-based model can diagnose with an accuracy of 93.9% (binary classification), and 92.1% (3-class classification) in a collected 2D video testing set, which does not need key-frame selection and view annotation in testing. Secondly, we developed a novel Deep Keypoint Stadiometry (DKS) model, which learns to precisely localize the keypoints, i.e., the endpoints of defects, and followed by the absolute distance measurement with the scale. The closure plan and the size of the ASD occluder for transcatheter closure are derived based on the explicit clinical decision rules. The accuracy of closure classification using DKS (0.9425±0.0052) outperforms "black-box" model (0.7646±0.0068; $p<0.0001$) for within-center evaluation. The results in cross-center cases or using the quadratic weighted kappa as an evaluation metric are consistent. The fine-grained keypoint label provides more explicit supervision for network training. While DKS can be fully automated, clinicians can intervene and edit at different steps of the process as well. The presented model has high diagnostic rates for VSD and ASD that can be potentially applied to the clinical practice in the future. The short-term automated machine learning process can partially replace and promote the long-term professional training of primary doctors, improving the primary diagnosis rate of CHD in China, and laying the foundation for early diagnosis and timely treatment of children with CHD. Also, more size-sensitive treatment planning tasks may be explored in the future.

Audience Take Away Notes

- By the assistance of our deep-learning model, the short-term automated machine learning process can partially replace and promote the long-term professional training of primary doctors
- Our deep learning key points localization can provide an automatic and transparent way for assessing size-sensitive congenital heart defects
- More size-sensitive treatment planning may be explored in the future

Biography

Dr. Zhang Xin graduated from Capital Medical University with a master's degree in pediatrics cardiovascular and a doctor's degree in cardiovascular imaging. She worked in the Beijing Children's Hospital, Capital Medical University, National Center for Children's Health. She served as the deputy director of the cardiac ultrasound department of the heart center, obtained the position of chief physician, associate professor. She has published more than 20 papers in SCI and national core journals, charged over 5 projects of the National Natural Science Foundation of China, Natural Science Foundation Beijing of and other funds.

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The protective role of nicotinamide adenine dinucleotide in diabetic cardiomyopathy from db/db mice

Diabetic CardioMyopathy (DCM) is one of the type 2 diabetes complications, usually accompanied by changes in myocardial structure and function. Nicotinamide Adenine Dinucleotide (NAD+), a critical coenzyme present in every living cell, is involved in a myriad of metabolic processes associated with cellular bioenergetics. NAD+ participates various processes that are dysregulated in cardiovascular diseases. Our study investigated the effect of NAD+ in DCM and underlying mechanism. Male C57BL/6 mice and db/db mice at 12 weeks of age were randomly divded into four groups (n = 8/group): C57BL/6J group; C57BL/6J + NAD+ group, db/db group and db/db + NAD+ group. NAD+ (2mg/kg/day) was administrated for treatment. Each group of mice was subjected to their respective treatment for 16 weeks. After 16 weeks, echocardiography, serum analysis, histological tests, and protein detection were performed. The metabolic characteristics of the mice showed that NAD+ significantly attenuated body weight and serum MDA, triglycerides (TG), total cholesterol (TC) levels. Echocardiography also confirmed that NAD+ supplementation ameliorates cardiac dysfunction by increased Ejection Fraction (EF) and Fractional Shortening (FS). In histologically, NAD+ reduced myocardial tissue damage (HE staining) and myocardial cell hypertrophy (WGA staining). NAD+ supplementation reduced oxidative stress (SIRT1, SIRT3, NRF2, SOD), endothelial dysfunction(ICAM-1, ENOS, iNOS, ET), lipid deposition(CD36, CD68, LOX-1, PPAR-γ), apoptosis(BAX, BCL-XL, Caspase-1, Caspase-8) and fibrosis (collagen I, collagen III, Smad3, TGF-β) in Diabetes cardiomyopathy. These results strongly suggest that NAD+ played a role in diabetic cardiomyopathy treatment and provided a promising new therapeutic agent against diabetic cardiomyopathy.

Key words: Nicotinamide adenine dinucleotide, Diabetic cardiomyopathy, DB/Dbmice, oxidative stress.

Audience Take Away Notes

- Diabetes Mellitus (DM) and diabetic complications have to be a major global public health problem, and affecting 415 million peoples grobally. Macrovasculature and microvascular injuries were considers as the major complications of DM. There were 65% of DM patients dying from CVD complications despite numerous advances in treatment. With more in-depth studies, many researches have been suggested that glucose is no longer the single factor contributing to diabetic complications. Rather, dyslipidemia, inflammation and obesity et al. have deeply affected the occurrence and development of diabetic complications. Our studies showed that the mechanism of macrovasculature and microvascular injuries of DM
- Our results demonstrate that NAD+ played a role in diabetic cardiomyopathy treatment and provided a promising new therapeutic agent against diabetic cardiomyopathy. Other faculty could use to expand their research in the treatment of other cardiovascular diseases with NAD+
- Our results show that NAD+ has a good safety, and its role in oxidative stress, endothelial dysfunction, and lipid deposition, which can useful the macrovascular and microvascular diseases caused by diabetes cardiomyopathy

Biography

Zuowei Pei was born on Dalian, China. He received the master's degree in Cardiology from Dalian Medical University of China and the doctor degree in Cardiology from Ehime University of Japan. Experienced in post-doctoral research in cardiovascular medicine and basic medicine. He once worked in the Department of Cardiology of Beijing Hospital affiliated to Peking University, and now works in the Department of Cardiology, Central Hospital of Dalian University of Technology. He is major in at atherosclerosis, hyperlipidemia and cardiovascular drug research in basic research. In clinically, he is major in heart failure, coronary heart disease. He has published more than 40 research articles in SCI (E) journals.

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Association of lipoprotein (a) with clinical adverse outcomes in patients with concurrent psoriasis and coronary artery disease

Background: Elevated LP (a) levels are proven as a marker of increased risk of cardiovascular disease. Also, the evidence indicates that patients with psoriasis are at an increased risk of cardiovascular disease. However, as so far, it is not clear whether increased LP (a) will cause differences on clinical outcomes of psoriatic patients who have already suffered from coronary artery disease.

Methods: This is a retrospective cohort study, including consecutive psoriatic patients with coronary artery disease between January 2017 and May 2022 in our hospital. The clinical records were collected, and comparisons were made between patients in low LP (a) and high LP (a) groups. Survival curves were derived using Kaplan-Meier methods and log-rank tests were used to compare them. Subgroup analysis of the clinical endpoints was performed based on the following factors, including age, sex, diabetes, hypertension, chronic kidney disease and clinical presentation.

Results: Among 295 patients included in the study, 148 patients were in the low LP (a) group and 147 patients were in the high Lp (a) group. There were no significant differences in age, sex, and BMI, the proportions of hypertension and diabetes between the two groups. The levels of white blood counts ($p = 0.026$), platelet counts ($p = 0.038$), uric acid ($p = 0.019$) and HSCRP ($p = 0.012$) were higher in the high LP (a) group than those in the low LP (a) group. Participants in the high LP (a) group had higher TC levels ($p = 0.029$) and higher triglycerides levels ($p = 0.027$). The left ventricular ejection fraction was lower in the high LP (a) group ($p=0.019$). Patients in the high LP (a) group were more likely to have right coronary artery involvement ($p = 0.039$). Kaplan-Meier survival curves showed that among patients with diabetes, there was a statistically significant difference in all-cause death (log rank $p = 0.036$) and re-hospitalization (log rank $p = 0.027$) between the two group; the difference of re-hospitalization (log rank $p = 0.042$) was also found between the two groups among male patients.

Conclusion: Elevated LP (a) levels were associated with the right coronary artery disease and positively related to the higher risk of all cause death and re-hospitalization in patients with diabetes and male patients. These results will provide valuable information for improving the prognosis of psoriatic patients concurrent coronary disease.

Audience Take Away Notes

- Elevated LP (a) levels were associated with the right coronary artery disease and positively related to the higher risk of all cause death and re-hospitalization in patients with diabetes and male patients
- The results contribute to risk stratification in this subset of patients and will provide a clearer understanding of the effect of LP (a) on the prognosis of these patients
- It is suggested that LP (a) level should be closely detected in diabetic and male psoriatic patients concurrent with coronary artery disease, and treatment should be considered to avoid adverse clinical events

Biography

Dr. Lin Zhao is currently studying for her PhD in cardiovascular medicine at Fuwai Hospital, National Center for Cardiovascular Disease, Chinese Academy of Medical Sciences and Peking Union Medical College. Her research interests are basic and clinical research of common cardiovascular diseases.

Donniacuo M*, Cappetta D, Telesca M, Riemma M.A, Bellocchio G, Mele E, Berrino L, Rossi F, De Angelis A, Urbanek K

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Cardiac fibroblast activation in the early stage of anthracycline cardiotoxicity

Background: Doxorubicin (DOX) is a highly effective anticancer drug, but its clinical application is hampered by cardiotoxicity with asymptomatic diastolic dysfunction as the earliest manifestation. Impaired relaxation and elevated passive stiffness result from myocardial fibrosis, but the timing and triggers of the onset of fibrotic process are not clear. The activation of Cardiac Fibroblasts (CFs) following doxorubicin exposure is relatively early event in the development of anthracycline cardiotoxicity, but the mechanistic insight is largely lacking. One possibility to relieve diastolic dysfunction is offered by the use of a selective blocker of late sodium current, ranolazine, capable to reverse altered cardiac Ca2+ and Na+ handling induced by doxorubicin. The role of Nav1.5 sodium channel in the phenotype switch has been recognized in cancer cells. In this study, we tested whether the activation of CFs anticipates the onset of DOX-induced diastolic dysfunction, and evaluated the involvement of Nav1.5 sodium channel in the cellular response to this anti-cancer drug.

Methods: Fischer 344 rats were exposed to 6 i.p. injections of 2.5 mg/kg of DOX over a period of 2 weeks. Heart function was assessed by echocardiography and left ventricular catheterization. Primary CFs were isolated from control and DOX-treated hearts. In another set of experiments, naïve CFs were exposed to DOX in vitro.

Results: Early effects of DOX consisted of unchanged ejection fraction and the evidence of diastolic dysfunction. At the end of in vivo treatment, myocardial lysates showed increased markers of pro-fibrotic remodeling (CTGF, TGFβ, Galectin-3 and MMPs) and histological evidence of CFs transformation. CFs isolated from DOX-treated rats showed upregulated markers of myofibroblast differentiation (βSMA, TGFβ and phospho-SMAD) and maintained their functional property tested in scratch assay. When naïve CFs were exposed to DOX in vitro, they had, as expected, a reduced growth capacity, but surprisingly they overexpressed TGFβ and phospho-SMAD suggesting that DOX induced CFs to produce this pro-fibrotic cytokine that can act in an autocrine-paracrine manner. Following exposure to DOX in vivo, CFs upregulated also NOX2, indicating these cells as a source of reactive oxygen. Western blot and immunofluorescence documented that CFs expressed Nav1.5 channel. Notably, when exposed to ranolazine in vitro, CFs from DOX-treated hearts reduced the expression of βSMA and NOX2.

Conclusion: Sodium channel can play a non-excitable "noncanonical" role in cardiac fibroblasts contributing to cell activation and myofibroblasts differentiation. The recognition of the early activation of CFs as a primary pathophysiological component and the involvement of Nav1.5 channel may allow designing the therapeutic strategies to contrast the anthracycline cardiotoxicity.

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Triglyceride-glucose index for predicting repeat revascularization and in- stent restenosis in patients with chronic coronary syndrome undergoing percutaneous coronary intervention

Background: The Triglyceride-Glucose (TYG) index, a reliable surrogate indicator of insulin resistance, is demonstrated independently associated with coronary artery disease of various clinical manifestations. This study aimed to investigate the prognostic value of the TYG index in predicting repeat revascularization and In-Stent Restenosis (ISR) in Chronic Coronary Syndrome (CCS) patients undergoing Percutaneous Coronary Intervention (PCI).

Methods: A total of 1414 participants were enrolled and divided into groups according to the tertiles of the TYG index. The primary endpoint was a composite of PCI complications including repeat revascularization and ISR. The association between the TYG index and the primary endpoint was assessed by multivariable Cox proportional hazards regression analysis with restricted cubic splines. The TYG index was calculated as Ln (fasting triglycerides (mg/dL)□fasting plasma glucose (mg/dL)/2).

Results: Over a median follow-up of 60 months, 548 (38.76%) patients had experienced at least 1 primary endpoint event. The follow-up incidence of primary endpoint increased with the TYG index tertiles. After adjusting for potential cofounders, the TYG index was independently associated with the primary endpoint in CCS patients (HR, 1.191; 95%CI, 1.038-1.367; P = 0.013). Additionally, the highest tertile of the TYG group was correlated with a 1.319-fold risk of the primary endpoint compared with the lowest tertile of the TYG group (HR, 1.319; 95% CI, 1.063-1.637; P = 0.012). Furthermore, a linear and dose-response relationship was observed between the TYG index and the primary endpoint (non-linear P = 0.373, P overall = 0.035).

Conclusions: An increased TYG index was associated with elevated risk for long-term PCI complications including repeat revascularization and ISR. Our study suggested that the TYG index could be used as a potent predictor in evaluating the prognosis of CCS patients undergoing PCI.

Audience Take Away Notes

- The TYG index is a portable indicator calculated from fasting blood glucose and triglycerides.
- The baseline TYG index could independently predict the risk of developing long-term PCI Complications including repeat revascularization and in-stent restenosis among CCS patients after DES stenting
- As the coronary artery disease is a dynamic process that can be modified by pharmacological therapies and lifestyle, evaluating the insulin resistance by using the TYG index could benefit the risk stratification and management of the patients
- A longitudinal study that monitors changes of the TYG index after discharge might be needed to further provide reference in the practical use
- The condition of insulin resistance calls for attention which might aggravate the progression of atherosclerotic lesions in patients already receiving guideline-recommended therapies

Biography

Dr. Xuantong Guo studied Clinical Medicine at the Nanchang University, China and graduated as BS. Med in 2019. During this period, she completed a bachelor's degree with a double major in Biomedical Science at the Queen Mary University of London, UK. She then joined the research group of Prof. Lihong Ma at the National Clinical Research Centre of Cardiovascular Diseases, Fuwai Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, China. After three years of clinical learning, she received her PhD degree in 2022. She is now working on her MD degree at the same institution.

Joao Rafael Rocha Da Silva[1]*, Mariana[2]

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Physical exercise and patients with chronic pain

The practice of physical exercises is essential to improve cardiovascular conditioning, as well as clinical improvement of pain, promoting a better quality of life for patients. However, in clinical practice, what is observed is a high incidence of kinesiophobia and a sedentary lifestyle in patients with chronic pain, which accompanies a complex clinical picture of several pathologies and comorbidities. New studies point to crucial points such as beliefs and metabolic disorders that may hinder adherence to physical exercise in these patients. Knowing how to assess, prescribe and welcome this group of patients is essential for better adherence and changes in habits. Then we will address new concepts about pain education, present studies that prove the clinical improvement of these patients through the practice of exercises, as well as my two recent studies that demonstrate how to evaluate, and which therapeutic resources can help us to introduce therapeutic exercise to these patients. Discuss the relationship between a sedentary lifestyle, chronic pain, and patients with cardiovascular dysfunction, emphasizing the need for professionals who work with cardiac rehabilitation in chronic patients to deepen their knowledge of pain. At the end of the presentation, it will be possible to conclude the importance of multidisciplinary work, opening the possibility of new studies and better practices based on the scientific evidence of the professionals who will be present at the presentation.

Audience Take Away Notes

- Attendees will deepen their knowledge about the practice of physical exercise in patients with complex chronic pain (cardiopathies)
- Due to the high incidence of these patients with cardiac disorders, professionals can achieve greater adherence and better results for these patients
- Yes, it will certainly open possibilities and directions for new studies to researchers
- Knowing how to deal with and approach these patients is essential to obtain the best results

Biography

Physical Therapist Joao Rafael Rocha da Silva, Postgraduate Degree in Sports Rehabilitation Sports Orthopedics and Traumatology CETE Federal University of São Paulo, Improvement in Pain Assessment and Interdisciplinary Treatment Hospital das Clinicas, USP Medical School. Published two works in 2022 "Manual Therapy in the Treatment of Pain" Revista Neuro Ciencias and "Assessment of the Transversus Abdominal Muscle in Individuals with Pain" Med Crave Neurology Journal, Scientific Reviewer.

Ana I. Faustino-Rocha[1, 2, 3*], Paula A. Oliveira[1, 4], Maria J. Pires[1, 4], Mario Ginja[4, 5]

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How to evaluate rodents' heart by ultrasonography?

Heart morphology and function may be non-invasively evaluated by ultrasonography. Rodent models have been used to study several diseases. This study aimed to describe the technique for the evaluation of rats' heart by ultrasonography. The animals should be anesthetized by an intraperitoneal injection of ketamine (37, 5 mg/kg) and xylazine (5 mg/kg) and the left region of the thoracic wall should be shaved using a machine clipper. The animals should be placed in left lateral recumbency and ultrasound transmission gel applied in the left thoracic wall. We have used the Logiq P6 apparatus and a high frequency linear probe (10-12 MHz). Parasternal Long-Axis (LAX), Parasternal Short-Axis (PAS), 4-chamber view and suprasternal views are obtained, using B- mode, M-mode, Power Doppler, and Pulsed Doppler. The images can be recorded in the ultrasound apparatus, and then exported and analysed using Horos, or similar software. In the LAX images may evaluated the following parameters: diastolic InterVentricular Septal thickness (IVS d), diastolic Left Ventricular lumen (LV d), Diastolic Left Ventricular Posterior Wall thickness (LVPW d), systolic Interventricular Septal thickness (IVS s), Left Ventricular Lumen in systole (LV s), Left Ventricular Posterior Wall thickness in systole (LVPW s) and Aorta artery diameter (Ao d). Heart Rate (HR) and pulmonary artery dimeter (Pa d) can be evaluated in LAX images. In the 4-chamber images can be evaluated the following parameters: Left Atrial area (LA), right atrial area (AD), Tricuspid Annulus Plane Systolic Excursion (TAPSE), and E/a wave ratio. Additionally, Left Ventricular Ejection Time (LVET) can be evaluated in the suprasternal view

Biography

Ana Faustino is Professor at Department of Zootechnics of University of Évora and Researcher at CITAB/UTAD. She holds a Master in Veterinary Medicine and a European PhD in Veterinary Sciences. Animal models of cancer, tumoral angiogenesis and imaging are her main areas of interest. She has collaborating in several Financed Research projects. The results of her works were published in more than 250 publications in several formats. She received several prizes of scientific merit, and highlights and press honors. She has experience in supervising graduate and post-graduate students. She participated in several courses, workshops, international and national meetings. She is editorial member of several scientific journals and reviewer of several manuscripts. She is Guest Editor of two special issues in Veterinary Animals and in Life.

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Measuring fractal dynamics of FECG signals to determine the complexity of fetal heart rate

In this research, we study the fetal heart rate from abdominal signals using multi-fractal spectra and fractal analysis. We use the abdominal and direct fetal electrocardiogram database contains multichannel Fetal Electrocardiogram (FECG) recordings obtained from 5 different women in labor, between 38 and 41 weeks of gestation. We apply autocorrelation or Power Spectral Densities (PSD) analysis on these five FECG recordings to estimate the exponent from realizations of these processes and to find out if the signal of interest exhibits a power-law PSD. We perform multi- fractal analysis to discover whether some type of power-law scaling exists for various statistical moments at different scales of these FECG signals. We plot the multi-fractal spectra of this database to compare the width of the scaling exponent for each spectrum. A quantitative analysis commonly known as the Fractal Dimension (FD) using the Higuchi algorithm has been carried out to illustrate the fractal complexity of input signals. Our finding shows that the fractal geometry can be used as a mathematical model and computational framework to further analysis and classification of clinical database. Moreover, it can be considered as a framework to compare the complexity of FECG signals and a useful tool to differentiate between their patterns.

Biography

As someone who is highly inquisitive and analytical, I am skilled in computational mathematics and mathematical modeling for biological systems and also at developing appropriate model and implementing methodology using data collection and analyzing the results of research. I am currently a Research Associate at University of Wisconsin-Madison. My current work on developing new innovative methods in topological data analysis, computational anatomy and dynamic modelling of brain network using multiple time scale approaches is a neuroscience program in department of biostatistics and medical informatics at University of Wisconsin-Madison. As someone who is highly inquisitive and analytical, I am skilled in computational mathematics and mathematical modeling for biological systems and also at developing appropriate model and implementing methodology using data collection and analyzing the results of research. I am currently a Research Associate at University of Wisconsin-Madison. My current work on developing new innovative methods in topological data analysis, computational anatomy and dynamic modelling of brain network using multiple time scale approaches is a neuroscience program in department of biostatistics and medical informatics at University of Wisconsin-Madison.

Ermoshkin Vladimir Ivanovich
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The cause of transient ischemic attacks

Transient Ischemic Attacks (TIA) accounts for about 80% of all strokes. TIA occurs when microvessels and capillaries in some part of the brain become clogged as a result of one of two mechanisms - either thrombosis or embolism. But where do these obstacles to blood flow disappear 15-60 minutes after the TIA attack passes? There is no answer, even such a question is not posed. In fairness, some modern medical scientists note: in some cases, even with a thorough examination of a patient who has suffered a transient ischemic attack, it is not possible to find out its cause (TIA of unclear genesis). Medicine, of course, does not stand still, but for more than two hundred years no answer has been received to the questions: why does atherosclerosis develop? What is the cause of ischemic brain attacks? Too many people are losing developed countries because of strokes. Let's figure out, what are the reason for the transient ischemic attacks? There should be one reason, not a whole list. The usual medical list is related factors, but not the cause or mechanism. It is necessary to answer the main question. Why do TIA occur? Usually, the answer of doctors is as follows. The main cause of TIA is atherosclerosis, which contributes to thrombosis, or blood clots with blood flow can be moved from other parts of the body, for example, from the heart. In the opinion of the author of the new theory, such an answer regarding TIA is not quite complete. The question as it was, and remained: where did the microthrombs go after 15 - 60 minutes after TIA? And why at these minutes (and before this event) does blood pressure rise very quickly to critical values? According to the new theory, TIA occurs due to a lack of arterial blood volume in the arteries. As an adverse event, blood can flow from the arteries to the veins through open large Arteriovenous Anastomoses (AVA). This may be due to physical or psychological stress. For example, when working continuously for several hours in a sitting position, at a computer or other device. Usually stress, low physical activity, excess weight, fatigue leads to an increase in blood pressure, but not to critical values. With a significant leakage of blood, the internal volume of the arteries should adequately decrease by the same amount, and the venous volume should increase. But since the walls of large arteries are usually more rigid with age due to atherosclerosis, the decrease in the internal volume of the arterial bed occurs due to the small and most distant arteries from the heart. You can observe this yourself: your hands and feet are getting cold. There is a spasm of the smallest, and according to physical laws (gravity), located in the upper parts of the body, specifically in the brain. The optimal pressure difference between arterioles and venules in some parts of the brain becomes critically reduced. The average pressure between them also reaches a minimum. With an increased glucose content in the blood, perfusion also worsens, because blood fluidity decreases. The flow will slow down or stop. At this time, gas bubbles and micro emboli begin to form in the capillaries and in the brain tissue. Not in one or several points, but in a certain volume of brain tissue, on the group of capillaries most remote from a large artery. The system that monitors the normal perfusion of brain tissue reacts to these events and requires an increase in blood pressure to nourish the brain, since the brain is the main organ of a person. But since the volume of arterial blood is already insufficient, an increase in blood pressure can lead to even greater losses of arterial blood through AVA, normal perfusion is not restored. The situation is getting worse. The pressure exerted by the heart and large arteries continues to rise at these minutes. At these minutes, TIA or a brain stroke may occur. Then everything depends on the efficiency of emergency medical care. For example, injection of magnesia solution forcibly dilates arterioles, venules and other

vessels in all organs. The volume of arterial blood increases rapidly due to the reabsorption of a certain amount of blood and tissue fluid through arterioles into large arteries. Gas emboli are spontaneously eliminated (collapse) when the pressure in brain arterioles of increases. After a while, systemic pressure and arterial circulation are restored. If help is provided on time, the symptoms of TIA gradually disappear, memory is restored. Now we can say that the main course of acute cerebrovascular accident is the loss of arterial blood volume - hence hypertensive crises, TIA and, ultimately, strokes. In 2018, author himself went through a hypertensive crisis, TIA and rehabilitation. The experience gained suggested what can happen to the cardiovascular system and the human brain.

Biography

Physicist Ermoshkin Vladimir Ivanovich graduated from the Physics Faculty of Lomonosov Moscow State University in 1978. He worked as a leading engineer. Recently, since 2011, he has been studying cardiology at the Russian New University. He has several hypotheses on cardiology, which are being studied and worked out. He has about 20 articles on medicine.

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Lipid-lowering therapies: Where are we now and where are we heading?

B**ackground:** Coronary artery disease is one of the leading causes of death worldwide and the incidence is on the rise in the past decade. One of the main causes is the obesity epidemic and the increase of metabolic syndrome. Hypertension, diabetes, smoking and hyperlipidaemia are the risk factors that are modifiable and have shown, through various trials, that if controlled reduce cardiac events.

Methods: We search over the medical publications (Web of Science, PubMed, Google Scholar) information about actual therapies.

Results: Statins have been one of the pillars in lipid-lowering therapy for many years with demonstrated benefits in reducing morbidity and mortality related to atherosclerotic disease. Due to their known side effects, new agents such as the PCSK9 inhibitors were developed which have reported to greatly reduce LDL-cholesterol and have proven to reduce cardiovascular events. The most recent approved treatment for hypercholesterolemia is the bempedoic acid which inhibits adenosine triphosphate citrate lyase (ACL) an enzyme with a role in cholesterol synthesis in the liver. Phase 3 studies have shown significant reductions in all lipid levels and further studies demonstrating reduction of cardiovascular events will finish this year. The CO-VID19 pandemic registered a high mortality in patients with cardiovascular risk, obesity, diabetes and hypercholesterolemia. The scientific community globally focused on developing a vaccine through different methods, the SARS-COV2 mRNA vaccine helped pave the way in developing RNA interfering agents. An agent was developed to inhibit translation of the PCSK9 protein and its formation with promising results.

Conclusions: Finally, new evidence in the field of gene editing with alternating lipoprotein structures and controlling their serum concentrations are being tested in primates. All other actual therapies are part of the actual treatment strategies.

Keywords: Lipid-lowering therapies, statins, PCSK9, bempedoic acid, mRNA

Audience Take Away Notes

- The audience will learn the actual and the future therapies in lipidology
- A clarification of actual guidelines will be presented
- This research will use to clarify new direction in lipidology
- We will provide a practical solution, a clear integrated algorithm of 3-4 professional societies in lipidology to act for a prescription

Biography

Ciprian Constanin studied Medicine at Carol Davila Medicine and Pharmacy University, Bucharest, Romania and graduated in 2001. He was part of research group Prof Dan-Mircea CHETA at N Paulescu National Institute of Diabetes. He received her PhD degree in 2014 at the same institution. After one year postdoctoral fellowship supervised by Prof CHETA and a lot of short courses in research (Oxford University, Cambridge University, Perugia University and some stages sustained by European Federation of Internal Medicine, European Association of Study of Diabetes or International Diabetes Association) he obtained a position of an Assoc Prof at Titu Maiorescu University and National Sport and Physical Education University in ROMANIA. He has published more than 30 research articles in SCI(E) journals. He is the HEAD of Research Metabolism Center.

Francisco Mauricio Rincon Tello*, Aura Maria Rivera Herrera, Camilo Rodriguez Gomez, Raquel Sofia Lopez Rincon, M. Catalina Quinones, David R. Madronero, Javier Francisco Orozco, Andres C. Vidales Mejia

Cardiovascular Surgery Team-Clinica Los Nogales, Bogota, Colombia

A less invasive, multivessel, multiarterial technique of coronary artery bypass graft surgery with conventional instruments in the real world

This work shows the development of an innovative surgical technique that makes it possible to treat ischemic heart disease with lower associated risks, offering complete revascularization. We routinely perform a technique via left mini-thoracotomy or video-assisted multi-arterial grafts without manipulating the aorta. Depending on the patient's stability and the possibility of offering complete revascularization, we implement techniques outside or in extracorporeal circulation. After a learning curve with dedicated teams, we believe that this technique offers better results than conventional ones.

Materials and methods: Data are collected and described from patients who underwent minimally invasive techniques at our institution in the last two years when the routine less-invasive revascularization program began. We will prospectively describe the technique and its development. Type of intervention. Grafts used. Bridges made. Length of stay, complications, and follow-up of patients.

Results: 48 patients underwent myocardial revascularization under a minimally invasive technique, mostly multi-arterial grafts and without touching the aorta. Some of them with hybrid procedures. Summary of results: Reintervention for bleeding 0%. Reoperation 1 (2.08%) Perioperative cerebral infarction 0%. Deep infection 0%. Superficial infection 0%. Foreign body reaction / granuloma 2%. Residence time like conventional techniques. Less time to return to daily life / work 3 to 4 weeks vs. 6 or more. Greater pain during the first postoperative week. Minor pain from the second postoperative week

Audience Take Away Notes

- The development of these techniques demonstrates (compared to conventional ones) a lower rate of complications and faster recovery to daily life, while still offering the advantages that surgical myocardial revascularization has demonstrated over time. It must be part of the management and treatment tools for our patients
- These experiences will serve as an example and motivation for others in the field who are trying to enhance their job development favoring patients experiences and results
- Health teams that care for underserved patients in developing countries can develop and maintain less invasive programs generating a huge impact on health care
- Aligned with the purpose of the conference; these techniques will overcome hindrances, will make evolutions and advancements and should be part of the recent trends in cardiology

Biography

Dr. Rincon Tello began his academic preparation at the Pontificia Universidad Javeriana (PUJ) where he graduated as a Surgeon, with a postgraduate first specialization in General Surgery and later a second specialization in Cardiovascular Surgery. He was the winner of First National Place in the 2011 Surgical Resident Contest of the Colombian Society of Surgery, and in 2015 he received the Observership Mount Sinai NY scholarship Santo Domingo program of the Colombian Society of Cardiology and Cardiovascular Surgery. He is a Cardiac Surgeon at the Fundación Santa Fe de Bogotá and the head of the Cardiovascular Surgery Service at the Los Nogales Clinic. Member of the Colombian Society of Cardiology and Cardiovascular Surgery since 2014, the Society of Thoracic Surgeons (STS) since 2018. And the Latin American Association of Cardiac & Endovascular Surgery (LACES) since 2020.

Nura Adam Mohamed
Biomedical Research Center (BRC), Qatar University, Doha P.O. Box 2713, Qatar

Nanotherapeutic strategies for the treatment of diabetes mellitus

Being the most common metabolic disorder in the world Diabetes Mellitus (DM) can benefit from developing new therapeutic strategies particularly with conventional therapies struggling to properly manage it. Such therapeutic strategies can be made to achieve targeted and controlled delivery by benefiting from the advances made in the nanomedicine field. The nanomedicine field has many attractive properties that can be utilized in developing better non-conventional tools to manage and diagnose DM. DM is known to be associated with dysfunctional endothelial cells, which is a link that can be used to develop nanoformulations that can both deliver and better control the release of the anti-diabetic drug release and can restore the normal endothelial cell function. Herein we will be discussing different nanoformulations that have the ability to protect the endothelial cells, and deliver the antidiabetic drugs. Furthermore, we aim to benefit and transfer advances made in nanomedicine in different disease fields to the DM. In addition, prototypes that are proven to benefit DM and to restore the endothelial cells function can be then tested using in vivo DM models. This research is highly novel as it aims in finding better therapeutic and diagnostic tools for one of the most common diseases in the world.

Audience Take Away Notes

- Nanomedicine status in the diabetes research area
- Nanoparticles functionalization
- Involvement of endothelial dysfunction in the development of diabetes mellitus

Biography

Dr. Nura Adam Mohamed studied at Qatar University where she obtained her BSc in Biomedical Science, she then got her MRes and PhD from Imperial College of London (2012-2016). She is currently working as a research associate at the Biomedical Research Center at Qatar University. Dr.Nura has published in many peer-reviewed journals, also she was presented with several local and international awards and she is currently holding both local and international grants with different prestigious research institute. Dr.Nura's main research focus is functionalizing nanoparticles to be used in improving the treatment and detection strategies for cardiovascular diseases and diabetes mellitus.

Dr. T. Rajini Samuel M.D

Associate Professor of Biochemistry, Shri Sathya Sai Medical College and Research institute, Sri Balaji Vidyapeeth Deemed to be University, Guduvancherry-Thiruporur Main Road, Ammapettai Village, Chengalpattu, India

Cardiac vector theory! A paradigm shift in ECG interpretation or a perspective rethinking in ECG translation from scalar to vector form

Electrocardiography (ECG) has offered valuable insights in health and disease for nearly a century yet its interpretation remains an arduous task and needs the help of medical experts in that field. Einthoven used the concept of cardiac vector to describe the electrical activity of the heart even before a century but never published a detailed description. Various other researchers attempted to solve this problem but was not completed. The complete heart-lead vector relationship and Einthoven's equilateral triangle hypotheses was described in detail by the current author in previous research articles. cardiac vector hypothesis states that voltage (scalar quantity measured in volt) recorded in a particular lead is the result of dot product between cardiac vector (electrical field vector of dimension volt/metre) and lead vector (measured in metre). The lead vector denotes the orientation of the electrode position. The magnitude and orientation of heart vector with lead vector will cause deflections in the ECG voltage in the vertical axis resulting in the formation of ECG waves. The velocity of cardiac vector is related with time in the horizontal axis of ECG. In the hex-axial reference system of ECG, plot the net voltages of bipolar limb leads and connect them. Similarly, plot the net voltages of unipolar limb leads and connect them. Each forms equilateral triangles. The voltage recorded by the electrodes (Lead I, II, III, AVR, AVL and AVF denoting right arm, left arm and left leg) are the vertices of an electrical equilateral triangle. The equilateral triangle can be converted into a circle. Each circle have same origin, same orientation, but different radii because bipolar and unipolar limb leads have different resistance. Multiply each unipolar limb lead voltages by correction factor 1.154 and then plot. The two equilateral triangles are on the same circle. Each cardiac wave can be represented in the form of circles. The diameter of the circle denotes the resultant cardiac vector. The perimeter (circumference) of the circle denotes the electrical field of the heart which it generates with heart at the center of the circle. Each cardiac wave (P, QRS, T) can be represented in the form of circles. All circles (see the diameter) should be formed in the left lower quadrant except QRS which can go up to -30 degree. When the angle between 'QRS' and 'T' circles deviate it usually denotes ischemia. The size of a circle will be greater for higher voltage and vice versa. During ST-segment no circle will be formed since it is an Iso-electric period. The amount of myocardial injury will be related to the magnitude of circle during the ST-segment. The better understanding of vector physics principle and its application in each ECG tracing helps to overcome the arduous task of ECG interpretation. The combination of the 12-lead ECG with this Novel Perspective ECG translation (resultant cardiac vector represented by circle in the hex-axial reference system) provide the optimum approach to ECG interpretation resulting in saving millions of cardiac patients.

Keywords: Cardiac Vector, ECG Translation, Perspective ECG interpretation.

Audience Take Away Notes

- Basic mathematical concepts of scalar and vector
- Formulation of Cardiac Vector theory and its application in ECG Interpretation

- Novel Perspective ECG Interpretation - ECG Translation from scalar to vector form
- Understanding the cardiac vector theory will help in prompt Interpretation of ECG report that helps in reducing the mortality of the number one killer disease of the world

Biography

Dr.T.Rajini Samuel is presently working as an Associate Professor of Biochemistry in Shri Sathya Sai Medical College and Research Institute, Chennai. He did MBBS (2004 -2010) in Chengalpattu Government Medical College, Tamil Nadu, and India. He worked in Venkateshwara Hospitals, Chennai to complete the ECG project, proposed cardiac vector hypothesis and developed a Novel perspective ECG interpretation method. He completed M.D Biochemistry in Sree Balaji Medical College and Hospitals, Chennai in 2015. He then focused his research on ABG (Arterial Blood Gas) analysis, had proposed a novel ABG interpretation method, developed a novel four quadrant graphical tool for ABG interpretation and also derived novel equations of motion in Ventilator Graphics Interpretation for mechanical ventilation. He had published 36 research articles, 3 books and one chapter. He received Atmanirbhar Bharath Award 2022 and Indian Achievers Award 2021 for Excellence in Innovation awarded by the Indian Achievers Forum.

Geeta Deswal[1*], Sonam Grewal[2], Ajmer Grewal[1], Ashwani K. Dhingra[1], Kumar Guarve[1]

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Bioactive constituents for heart care

Herbal medicines have been used continuously and most frequently throughout history. Numerous human ailments have traditionally been treated by herbal treatments under every condition. Nowadays, we have the option to use them instead of synthetic drugs because they have fewer side effects. Throughout the past century, numerous plant extracts have been the focus of pharmacological and chemical studies to better understand their chemical properties and possible uses in traditional medicine. Due to the high risk of cardiovascular problems such as congestive heart failure, irregular heartbeat, renal failure, and coronary heart disease may shorten life expectancy and increase morbidity. Healthy lifestyles and dietary naturally occurring bioactive substances are thought to protect against coronary artery disorders. Consuming plant-food bioactive derivatives, such as polyphenolic chemicals, peptides, oligosaccharides, vitamins, and unsaturated fatty acids, has been shown to have preventive benefits against cardiovascular disorders in pre-clinical and clinical research. Several dietary components may support human cardiovascular health as has been identified in recent years. Fruits, vegetables, cereals, and other dietary plants contain more than 5,000 unique phytochemicals including vitamins C and E, flavonoids, flavanols, catechins, anthocyanins, polyphenols, tannins, polysaccharides, fibre, saponins, sterols, as well as minerals like K, Ca, and P are some of their primary bioactive components which are used for the treatment of heart-related diseases. The current manuscript outlines bioactive components that lower blood pressure, including their physiological mechanisms, particularly emphasizing ACE inhibitors.

Keywords: Bioactive compounds, Heart disorders, Hypertension, Phenolic compounds, ACE inhibitors.

Audience Take Away Notes

- Audience will be able to learn about the phytoconstituents available in mother nature specifically for heart care
- Audience will be able to utilize these bioactive constituents in their daily routine life
- They will get to know the benefits of dietary supplements for heart care
- Researchers will get an insight on the mechanism of bioactive constituents in heart disorders which will help in their future studies

Biography

Dr. Geeta Deswal is presently working as Associate Professor (Pharmacognosy) at Guru Gobind Singh College of Pharmacy, Yamuna Nagar, Haryana, India. She has obtained PhD from M.M. University, Mullana, Haryana (India) in Quality Audit of Herbal Formulations. She is an expert in bioactivity-guided extraction and isolation of phytoconstituents, standardization of drugs and herbal formulations, and phytochemical screening of medicinal plants and plant tissue culture. She is also working on the formulation and evaluation of herbal products as antimicrobial agents. She has worked on HPLC, UV spectrophotometer, Soxhlet Apparatus, Clevenger Apparatus, Sonicator, Rota evaporator, and Thin Layer and Column Chromatography. She owns to her credit 25 publications in national and international journals of repute and 2 book chapters. She received the Young Achiever Award on Occasion of Pharma Vision 2K25 by Shree Balaji Books and Innovational Ambassador by MHRD Innovational Cell, AICTE, New Delhi.

Dr. Yasser Mohammed Hassanain Elsayed

Critical Care Medicine, Egyptian Ministry of Health (MOH), Damietta Health Affairs, Damietta, Egypt

Oxygen reversal of coronary artery spasm with modification of international standards for the diagnostic criteria of coronary vasomotor disorders (yasser's modification or oxygen test)-Retrospective-observational study; 17-case reports

Aim of the study: The study aims to clear the initial effect of non-baric oxygen inhalation on the coronary artery spasm.

Background: Coronary Artery Spasm (CAS) is a cardiovascular disorder that plays an important role in the pathogenesis of stable angina, unstable angina, myocardial infarction, and sudden cardiac death. Nitrate, calcium channel blockers, and statins are known established medications in the reversal of coronary artery spasms. Oxygen safety versus adverse effects of nitrate, calcium channel blockers, and statins are comparable.

Method of study and patients: My case study was an observational-retrospective seventeen case report series. The study was conducted in Fraskour Central Hospital, Kafr El-Bateekh Central Hospital, and physician outpatient. The author reported seventeen cases of acute angina with rest chest pain over about 38 months; starting on December 15, 2018, ended on February 7, 2022.

Results: The mean age is 43.2 with the female sex predominance (64.71%). Housewives (29.41%) and students (23.53%) are the most affected occupations. The main complaint is chest pain (64.71%). The most common associated risk factors are female sex (64.71%) and stress (23.53%). Drug-induced (23.53%); hyperventilation syndrome-induced (23.53%); and CO toxicity-induced coronary artery spasm (17.65%) are common diagnoses. The dose of inhaled O2 dose that achieved the reversal of CAS varied from 5 to 12 liter. A maximal dose (12 minutes) was given for CO toxicity. The duration of inhaled O2 dose that achieved the reversal CAS varied from 15 to 80 minutes. Maximal duration (80 minutes) was given in CO toxicity. The complete response had happened in 94.12%.

Conclusion: Dramatic clinical reliving and reversal response of electrocardiographic ST-segment depression after oxygen inhalation is an indication of its initial use in coronary artery spasms. Yasser's Modification or Oxygen test for the past "International standards for the diagnostic criteria of coronary vasomotor disorders" improves patient safety and decreases the hazards of nitrate and other medications.

Keywords: Coronary artery spasm, Ischemic heart disease, Oxygen, International standards for the diagnostic criteria of coronary vasomotor disorders, Yasser's modification, Oxygen test.

Audience Take Away Notes

- Yasser's Modification or oxygen test enables the clinician to test the presence of coronary artery spasm
- This test or modification is easy, safe, cheap, and available
- Widening this research to expand their research or teaching is advisable

- The modification already provides a practical solution for starting with oxygen in coronary artery spasms before drugs
- I think that the test will be effective if co-associated and is studied with coronary angiography
- Avoidance of nitrates, calcium antagonists, and statins side effects is the main target

Biography

Dr. Yasser Mohammed Hassanain Elsayed is a Critical care physician, cardiologist, and researcher (Egyptian Ministry of Health). He obtained MBBch (Al-Azher University) and a PGDip Cardiology (Middlesex University). The researcher has (109) articles and (4) medical books. He has (9) innovative issues; (3) innovative "Signs", (4) "Phenomena", (1) "Modification", and (1) " Maneuver". He has peer-reviewed (142). He was a Speaker at (14) International Conferences. He is an instructor; (6) lectures. He is an editorial member (about 40 medical journals).He was honored for research by several institutes. Research Interest: Critical Care, Emergency, Cardiology, Internal Medicine, Pharmacology, and Toxicology.

Samir Rafla FACC, FESC, FHRS
Professor of Cardiology, Alexandria University, Cardiology Department, Egypt

ECG in athletes: limits of normal

Group 1: common and training-related ECG changes: Sinus bradycardia, First-degree AV block, Incomplete RBBB, Early repolarization, Isolated QRS voltage criteria for LV hypertrophy

Group 2: uncommon and training-unrelated ECG changes: T-wave inversion, ST-segment depression, Pathological Q-waves, Left atrial enlargement, Left-axis deviation/left anterior hemiblock.

The different types of congenital arrhythmogenic syndrome swill be presented, with the specific differential diagnosis.

We feel that this subject of great importance to know or to refresh the already known knowledge.

Biography

Professor Samir Rafla graduated from Alexandria University in June 1970. He was resident in the cardiology department then assistant lecturer then lecturer in June 1982. Spent 10 months research fellow in Cleveland clinic Ohio; in the research institute with Late Prof. R. Tarazi and in the electrophysiology department with Prof. James Maloney. Became professor of cardiology in June 1994. Then head of the cardiology department from 1/8/2004 till 30/8/2007. He was appointed in the National council for promotion of professors in cardiology and critical care starting from December 2004 for four years then extended another 4 years as assessor. He is editor in the Egyptian Heart Journal and Heart Mirror Journal. He is Fellow in the American College of Cardiology, Fellow in the European Society of Cardiology, member in EHRA (European Heart Rhythm association), and member in European Association for Echocardiography and Imaging. Member in the steering committee of the Egyptian Cardiac Arrhythmia Association (ECRA). His main areas of interest are in electrophysiology and pacemakers, also in Echocardiography. He published over twenty abstracts and papers outside Egypt and has presented over 300 lectures / chairmanships at national and international meetings. He organized summer meetings of the ECRA group every year starting 1998, at first alone then with Professor Mostafa Nawar. Also was co organizer of the international CardioAlex conference in the years 2005 to 2007.

Tooba Sahar*, Asaad Akbar Khan, Raja Wajid Shabbir
Department of Cardiology, Shifa International Hospital, Islamabad, Pakistan

Takotsubo syndrome with underlying pheochromocytoma

A 63 year-old-man with an adrenal mass and no other medical history presented to the emergency department with central chest pain radiating to neck and 4-5 episodes of vomiting in the last 15 hours. His 12 lead ECG was performed which revealed normal sinus rhythm with ST segment elevations in leads V2 – V3, and initial laboratory workup revealed elevated cardiac enzymes, which suggested acute anterior wall myocardial infarction. Patient was shifted directly to the cardiac catheterization lab for Emergency Primary Percutaneous Intervention for suspected acute Myocardial Infarction (MI). However, the procedure revealed normal coronary arteries. His echocardiography showed a reduced ejection fraction of 45% with severe apical hypokinesis. The stressor precipitant was identified and he was diagnosed to have Takotsubo syndrome. The fluctuating blood pressure was controlled with glyceryl trinitrate infusion. Patient was discharged home on oral medications. Later his adrenalectomy was performed and the mass was identified to be a pheochromocytoma upon biopsy. After surgical resection, the patient's ejection fraction improved back to normal and symptoms were resolved without medications.

Audience Take Away Notes

- In patients presenting with typical chest pain with ST-elevation myocardial infarction and later revealing non-obstructive coronary arteries on angiography, alternative diagnosis of Takotsubo syndrome should be considered
- Patients with history of adrenal mass and presenting with fluctuating blood pressure and typical chest pain are at increased risk of having Takotsubo syndrome
- In above mentioned presentations, it is therefore, essential to think about pheochromocytoma-induced myocardial infarction at an early stage to reduce the risk of further myocardial damage and prompt removal of the causative factor

Biography

Dr. Tooba Sahar, I studied MBBS at Gujranwala Medical College, Gujranwala, Pakistan. After completing my house job, I joined Shifa International Hospital, Islamabad as Medical Officer first in Cardiothoracic Surgery and then later switched to Cardiology Department due to my interest. I have always been interested in research activities. It was a training department and I had multiple opportunities to express my capabilities.

Elmira Jafari Afshar*, Parham Samimisedeh, Amirhossein Tayebi, Neda Shafiabadi, Hadith Rastad, Shahrooz Yazdani

Cardiovascular Research Center, Alborz University of Medical Sciences, Karaj, Iran

Epinephrine for managing no-reflow phenomenon: A systematic review

Currently, no pharmacological or device-based intervention has been fully validated to reverse the no-reflow phenomenon. Several agents can be used in the case of primary or refractory no reflow phenomenon, but none of them have a promising effect. We conducted a systematic review of the literature to evaluate the efficacy and safety of Intracoronary (IC) epinephrine in the management of no-reflow phenomenon following Percutaneous Coronary Intervention (PCI). We searched PubMed and Scopus databases up to 28th May 2022, with additional manually searching google scholar and reviewing the reference lists of the relevant studies. Cohort studies, case series, and interventional studies written in english which assessed the efficacy and/or safety of IC Epinephrine in patients with no-flow phenomenon were included in our review. Six of the 646 articles identified in the initial search met our inclusion criteria. IC epinephrine was used either as a first-line treatment of the no-reflow phenomenon (two Randomized Clinical Trials (RCTs) or after the failure of conventional agents such as adenosine, calcium channel blockers, and nitrates (two cohort studies and two case series) for restoring the coronary flow, mainly after primary PCI. As first-line therapy, IC epinephrine reinstated coronary flow in over 90% of patients in both RCTs, which significantly outperformed IC adenosine (78%) but lagged behind the combination of verapamil and tirofiban (100%) in this regard. In the refractory no-flow phenomenon, successful reperfusion (TIMI flow grade = 3) was achieved in 3 out of four patients after the administration of IC Epinephrine based on the results from both case series. Their findings were confirmed by a recent cohort study that further compared IC epinephrine with IC adenosine and found significant differences between them in terms of efficacy (% TIMI flow grade 3: [69.1% vs. 52.7%, respectively] and one-year Major Adverse Cardiac Events (MACE) outcomes [11.3% vs. 26.7, respectively]).Overall, malignant ventricular arrhythmias were not reported in the patients who were treated with IC epinephrine. Results from available evidence suggest that intracoronary epinephrine might be an effective and safe agent in managing the no-reflow phenomenon. Despite other agents, using epinephrine is not limited by hypotension and cardiogenic shock. Further randomized clinical trial studies are recommended to confirm its usage in the no-reflow phenomenon.

Audience Take Away Notes

- We have described the no-reflow phenomenon and different management ways
- Our review may help interventional cardiologists to consider intracoronary epinephrine as a primary choice for the treatment of the no-reflow phenomenon
- We suggest further studies with greater sample sizes to understand better

Biography

Dr. Elmira Jafari Afshar studied Medicine at Alborz University of Medical Sciences, Iran, and graduated as Medical Doctor (M.D) in 2021. Then she joined the research group at the cardiovascular research center, Alborz University of Medical sciences, and also, she works at the emergency of Kamali hospital as an emergency doctor. She has published several articles in the cardiovascular field since beginning his career as a post-doctoral fellowship in 2022. She is interested in interventional cardiology, cardiac imaging findings, cardiovascular rehabilitation, and new machine-learning-based technology in the cardiovascular field.

Parham Samimisedeh*, Elmira Jafari Afshar, Amirhossein Tayebi, Hadith Rastad

Cardiovascular Research Center, Alborz University of Medical Sciences, Karaj, Iran

Clinical and cardiac imaging follow-up of the patients with Covid-19 vaccine-associated myocarditis: A systematic review and meta-analysis

Myocarditis has emerged as a serious adverse event after the COVID-19 vaccination. Our review study summarized the findings of Cardiac MRI and clinical follow-up of the patients with COVID-19 vaccine-associated myocarditis. We systematically searched MEDLINE, Embase, and Scopus databases up to 21 Oct 2022. We included studies performing initial and follow-up cardiac MRIs for patients with COVID-19 vaccine-associated myocarditis. Case reports, as a single series of cases, were combined with the case series using random effect models according to study heterogeneity. Twenty-one case reports/series (n = 109 patients) met our eligibility criteria. At the time of follow-up, myocarditis symptoms were resolved in all patients, but an abnormal Electrocardiography (ECG) and elevated troponin level were detected in 21% (9/43) and 4% (3/71) of them, respectively. Median imaging follow-up times varied from 3 to 6.3 months. On follow-up Cardiac MRI, the persistence of Late Gadolinium Enhancement (LGE) was observed in 74% (95% confidence interval (CI): 66 to 82%), but its extension declined compared to the baseline in almost all patients. Persistent LGE was accompanied by myocardial edema (LGE + and raised T2) in six patients and it was consistent with myocardial fibrosis (LGE without edema) in remained cases (n=67). Mean changes (95% CI) of cardiac MRI Left Ventricular Ejection Fraction (LVEF) (%) was +2.96 (+1.78 to +4.14) from baseline. In terms of adverse cardiac events, non-sustained ventricular tachycardia was experienced by two patients during follow-up. In conclusion, although most patients likely experience rapid clinical improvement, cardiac MRI abnormalities, mainly LGE, may persist in a notable proportion of them beyond the acute phase. Three patients had persistently elevated troponin levels that raised concerns about possible ongoing or recurrent myocarditis. Longer follow-up (at least one year from diagnosis) may be required to have a better vision of COVID-19 vaccine related myocarditis prognosis.

Audience Take Away Notes

- Our review may help cardiologists for a better understanding of COVID-19 vaccine-associated myocarditis and its prognosis
- We suggest further studies with longer follow-up duration, which evaluate people with myocarditis caused by COVID-19 vaccines
- Myocarditis patients need to be followed with cardiac MRI to assess their improvement and complications

Biography

Dr. Parham Samimisedeh studied Medicine at Alborz University of Medical Sciences, Iran, and graduated as Medical Doctor (M.D) in 2021. Then he joined the research group at the cardiovascular research center, Alborz University of Medical sciences. He has published several articles in the cardiovascular field since beginning his career as a post-doctoral fellowship in 2022. He is interested in interventional cardiology, inflammatory cardiac disease, cardiovascular rehabilitation, and new machine-learning-based technology in the cardiovascular field.

Kawa Amin
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Accelerate mobilization & in-patient rehabilitation program

Background: The geriatric population is increasing worldwide due to rapid development in medical technology and novel treatments. The curve of life expectancy and ageing is growing. Adding years to life does not necessarily mean extending wellness. Longevity can be associated with a decline in physical and cognitive capabilities, resulting in falls and frailty. Physical inactivity and being admitted to hospitals make older adults more vulnerable to loss of independence. Patients who undergo strict bed rest lose 1 to 1.5% of their strength per day. One-third of older adults develop a new disability in the activity of daily living during hospitalization and half of these are unable to recover function.

Objective: This program started from September 21 to January 23. The aim was to prevent frailty acceleration by setting up an early therapist assessment and intervention program. The researchers are aiming to set the standard for acute geriatric patients' participation in "Out of bed therapeutic activities". The ultimate goal was to have meals outside the bed.

Methodology: All patients in acute geriatric wards will receive an initial assessment by therapists [Occupational, physical, and swallowing and speech team], using a standard therapist's assessment. The patients will be categorized into active, low-level function, and complete dependent categories based on their functional and cognitive levels.

Results: Despite the difficulties during the pandemic and staff deployment, the researchers recorded 351 patients. With the assistance of the nursing staff, the therapist managed to increase the rate of having meals outside the bed from 25% to 83%. More importantly, it is the embedding of the culture of preparing patients to have meals sitting in a chair in their room or the lunch hall. On average 94% of patients and families received education about mobilization after discharge from the unit to continue physical activities in their home environment.

Audience Take Away Notes

- Approach of in-patient rehabilitation how to categorize the patient based on the physical capabilities
- This will also assist the patient and the service to allocate appropriate rehab service after discharge
- This study is planned to be integrated into a larger study that includes cognitive rehabilitation to prevent delirium and hospital deconditioning
- This a practical study of how to engage patients and families in the physical activities

Biography

Dr Kawa is a consultant Geriatrician working at HMC, joining the growing team in Qatar in 2018. His special interest is in mobility impairment and healthcare education. He is the program director for Geriatric for Non-Geriatrician courses. He trained in the UK and was appointed as a consultant Geriatrician in 2013 at BHRUT NHS Trust. He was the clinical lead for mobility impairment service and represented the British Geriatric Society in the advisory group for the National Audit of In-Patient Falls 2017-2018. He has a special interest in health informatics and geriatric rehabilitation. He has multiple publications in the field.

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Association of thyroid hormones with insulin resistance in female hypertensives with or without type II diabetes

Altered thyroid function is associated with Insulin Resistance (IR). There are scarce and divergent reports regarding association of thyroid function with insulin resistance in hypertension with or without type 2 DM in African women. The present study aimed at investigating the association between Free Thyronine (FT3), Free Thyroxine (FT4) and/or T3/T4 ratio as well as insulin resistance in female hypertensive patients with or without associated type 2 DM. A cross-sectional study involving female hypertensive patients with or without type 2 DM and healthy controls was conducted. One hundred and twenty-two participants (≥18 years) were recruited and divided into three groups (42 control, 40 Hypertensives (HT), 40 Diabetic Hypertensives (HT+DM). Baseline clinical characteristics and biochemical parameters were evaluated and compared. Serum concentrations of free Thyroxine (T4), free Thyronine (T3), Thyroid Stimulating Hormone (TSH), fasting plasma glucose, glycated hemoglobin, and triglyceride were determined and T3/T4 ratio was calculated. The homoeostasis model assessment index for insulin resistance (HOMA-IR) was used to evaluate IR. Mean values of waist circumference, systolic and diastolic blood pressures were significantly higher in the HT ($p<0.001$) and HT+DM groups ($p<0.001$) compared to the control. Also, mean values of plasma FT3 were significantly higher in the HT ($p=0.042$) and the HT+DM ($p=0.012$) compared to control group. Mean T3/T4 ratio was higher in the HT group than HT+DM group ($p=0.016$). However, the mean values of FT4 and TSH were comparable in all 3 groups. The mean values of HOMA-IR were significantly higher in the HT ($p=0.044$) and the HT+DM ($p=0.047$) compared to control group. HT+DM group had a significantly higher mean value of HOMA-IR than HT. Using multiple regression (stepwise) analysis, there was a relationship between FT3 and IR in the hypertensive group ($\beta=0.606$, $p=0.017$, $R2 =0.368$) as well as the diabetic hypertensive group ($\beta=3.424$, $p<0.001$, $R2 =0.309$). Receiver operating characteristic curve showed that the AUC derived for FT3 (0.861) was significantly larger than all other variables for HT group and for HT+DM, area under the curve (AUC) for FT3 was 0.648. In conclusion, the findings in the present study suggest that FT3 could be a better predictor of IR than FT4 or T3/T4 ratio in hypertensive females with or without type 2 DM.

Keywords: Thyronine (T3), Thyroxine (T4), Hypertension, Diabetes mellitus, Female patients.

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Department of Geriatric Medicine, Hamad Medical Cardiovascular Surgery Team-Clinica Los Nogales, Bogota, Colombia

Real benefits of a minimal invasive cardiac surgery program in underserved patients, time to move on!

Our institution is an adult cardiac surgery department as part of a general hospital. The cardiovascular surgery program began on 2015, since then about 200 – 250 cases per year are performed. Our MICS program initiates on 2019 with 10% of the total cases, 70% on MICS techniques. Most of our patients are UNDERSERVED POPULATION (70 to 85 %), and about 20 to 40% off them are under the line of poverty. We strongly believe that a MICS program is of crucial importance on the actual cardiac surgery practice, with a clear incalculable benefit on these individuals.

ICU stay: 1-2 days less compared to conventional.

Pain: 1st week: More on minithoracotomy.

3rd week and after: More on sternotomy.

Ministernotomy: No difference

Time to recovery: After the 3rd week / 1-month; patients are mostly on labor or common activities (90%).

The program – curve: MICS techniques are classically performed by "the" experienced surgeon, chief surgeon. We aim to develop ROUTINE MICS PROGRAMS (MIDCABG, MACABG, No touch aorta, multiarterial, Valve repair, valve replacement, ASD closure) with a learning curve by exposure and team training at all levels. At first learning to our "role models" colleagues. From "easy to hard" cases we are continuously creating a strong program and a devoted team encouraging everyone in and outside of the operating room. Operative time: Half after the 5th case (MIDCABG, MACABG) on the first 10 cases the rate of conversion (complete thoracotomy, full sternotomy) is important (20%). Over the 20-30 cases: Choose the right case. We make patient and family feel informed about that option (3%).

Complications: Take chances, make mistakes. That's how you grow" M. T. Moore (actress). Rate of infection: Less than 1% superficial (0% mediastinitis). Rate of bleeding: Less than 2% (1, 3%). Mortality: 1, 3% all cause. Renal failure (new dialysis): 2, 6%. On a right case, with a right surgical team and adequate instruments: Everyone will see better!

Challenges: Find people who like to develop same ideas (anesthesiologists, scrub nurses, surgeons, perfusionist, nurses, ICU specialists, assistants, administration personnel). Build a team with them and maintain it! Backorders – Shortages – Budget – Instruments - Overcome the bad cases, bad days - non-MICS fans - Maintain volume, training, and continuous development - Progress to more complex cases.

Audience Take Away Notes

- All kind of health personnel involved in cardiac surgery around the globe can initiate a less invasive program like us
- These experiences will serve as an example and motivation for others in the field who are trying to enhance their job development favoring patients experiences and results

- Health teams that care for underserved patients in developing countries can develop and maintain less invasive programs generating a huge impact on health care
- Aligned with the purpose of the conference; These techniques will overcome hindrances, will make evolutions and advancements and should be part of the recent trends in cardiology

Biography

Dr. Rincon Tello began his academic preparation at the Pontificia Universidad Javeriana (PUJ) where he graduated as a Surgeon, with a postgraduate first specialization in General Surgery and later a second specialization in Cardiovascular Surgery. He was the winner of First National Place in the 2011 Surgical Resident Contest of the Colombian Society of Surgery, and in 2015 he received the Observership Mount Sinai NY scholarship Santo Domingo program of the Colombian Society of Cardiology and Cardiovascular Surgery. He is a Cardiac Surgeon at the Fundacion Santa Fe de Bogota and the head of the Cardiovascular Surgery Service at the Los Nogales Clinic. Member of the Colombian Society of Cardiology and Cardiovascular Surgery since 2014, the Society of Thoracic Surgeons (STS) since 2018. And the Latin American Association of Cardiac & Endovascular Surgery (LACES) since 2020.

Timothy F Christian MD, MPA

Div. of Cardiology, Jacobi Medical Center, Albert Einstein College of Medicine, NYC, NY, USA

Utilizing conditional probability and bayes' theorem for harmonizing multi-modality cardiac imaging results

The use of multiple noninvasive tests in a patient for a specific question in cardiology is becoming more common. While it is expected that each new piece of test information will align, the reality is that each test carries strengths and weaknesses that generate a profile of accuracy and associated false positive and false negative results. When two non-gold-standard tests produce non-concordant results, it can be difficult to chart a clinical course. Clinical guidelines for cardiac imaging rely heavily on conditional probability in the form of pre-test clinical risk assessment to maximize the incremental value of the test result. That risk classification is often the main determinant of appropriateness. Bayesian analysis of conditional probability allows the distillation of multiple pieces of information into a single probability of the presence or absence of disease. Probability becomes the common language linking the information. Three noninvasive tests that generate multiple data outcome points will be examined: coronary CT and CT fractional flow reserve, Exercise ECG and SPECT myocardial perfusion, and positron emission tomography with visual analysis and quantitation of absolute myocardial blood flow. Conditional probability will be used to incorporate all of the variables generated by each of these modalities that produce measurable results into a single probability of coronary artery disease. In this manner, all of the prior information on a single patient is accounted for in the final test interpretation.

Audience Take Away Notes

- Attendees will come to understand the principles of conditional probability
- Apply conditional probability principles to their clinical practice
- Understand how conditional probability can be used to provide synergism with heterogenous test results
- Attendees should be able to better synthesize multiple pieces of clinical data for a single patient and establish a post-test probability of the disease in question in a methodical manner rather than guessing

Biography

Dr Christian received his MD degree from Albany Medical College and MPA from Harvard University. He completed his fellowship in cardiology at the Mayo Clinic and was a faculty member in the cardiology division for a number of years, achieving the rank of Professor of Medicine. His work has been centered on noninvasive cardiac imaging with expertise in cardiac MRI, cardiac CT, and nuclear cardiology. Research focuses have included acute imaging for chest pain, animal models of absolute myocardial blood flow by MRI and CT, and statistical methodologies for the application of imaging to clinical questions. He has over 100 peer-reviewed publications.

Abdallah Rezgui[1]*, Riadh Baazaoui[2], Mourad Talbi[3]

[1]Department of Electrical Engineering, University of Tunis/Ecole Nationale Superieure d'Ingenieurs de Tunis (ENSIT), Tunis, Tunisia

[2]Department of Mathematics, University of Tunis-El-Manar/Faculty of Sciences of Tunis, Tunis, Tunisia

[3]Department of Physics, Center of Researches and Techniques of Energy of Borj Cedria, Tunisia/Laboratory of Nanomaterials and Systems for Renewable Energies (LaNSER), Tunis, Tunisia

ECG Denoising based on WATV and Convex fused lasso denoising with non-convex regularization

Abstract: In this paper, we propose a novel approach of Electrocardiogram (ECG) Denoising based on Wavelet/Total Variation (WATV) and Convex fused lasso Denoising with non-convex regularization. This approach consists at first step of applying the Discrete Wavelet Transform (DWT) to the noisy ECG signal for obtaining a noisy approximation coefficient, cAb_1 and a noisy details coefficient, cDb_1. The latter is denoised by soft thresholding and we obtain a first denoised details coefficient, cDd_1. The second step of this approach consists of applying the DWT to cAb_1 in order to obtain a second noisy approximation coefficient, cAb_2 and a second noisy details coefficient, cDb_2. The latter is denoised by Convex fused lasso denoising with non-convex regularization and we obtain a second denoised details coefficient, cDd_2. The noisy approximation coefficient, cAb_2, is denoised by WATV based denoising technique and we obtain a denoised approximation coefficient, cAd_2. The inverse of DWT is then applied to cDd_2 and cAd_2 in order to obtain a denoised approximation coefficient, cAd_1. The inverse of DWT is again applied to cDd_1 and cAd_1 for obtaining finally a denoised ECG signal. The performance of this proposed approach is proved by the computation of the Signal to Noise Ratio (SNR), the Peak SNR (PSNR), the Mean Square Error (MSE), the Mean Absolute Error (MAE), and the Cross-Correlation (CC).

Audience Take Away Notes:

- Explain how the audience will be able to use what they learn?

The audience will be able to use what they learn by simulating our proposed ECG denoising approach via Matlab/Simulink.

- How will this help the audience in their job?

This research work can help the audience in their job by providing them an overview on many research works dealing with ECG Denoising including our approach proposed in this work.

- Is this research that other faculty could use to expand their research or teaching?

Yes of course, this research work can be used by other faculties for expanding their researches or teaching and this thanks to theoretical background on ECG Denoising.

- Does this provide a practical solution to a problem that could simplify or make a designer's job more efficient?

No, it is just a simulation under Matlab/Simulink of our new proposed ECG Denoising technique.

- Will it improve the accuracy of a design, or provide new information to assist in a design problem?

Yes of course, it provide new information to assist in a design problem by giving a new approach of ECG Denoising based on WATV and Convex fused lasso denoising with non-convex regularization.

Biography

Abdallah Rezgui is actually preparing his PhD thesis at Ecole Nationale Superieure d'Ingenieurs de Tunis (ENSIT), Tunis, Tunisia. He has obtained his Bachelor degree in Electrical Engineering from Faculty of Sciences of Tunis in 2020. He has obtained his Master degree in Electrical Engineering from Faculty of Sciences of Tunis in 2022.

BOOK OF ABSTRACTS

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VIRTUAL ROOM 2
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Choice of best prosthetic heart valve

Heart valve replacement is a surgical procedure that involves replacing a damaged or diseased heart valve with a prosthetic valve. There are two main types of prosthetic valves: Mechanical and tissue valves. Mechanical valves are made of durable materials and have better durability, but require lifelong anticoagulation therapy. Tissue valves, on the other hand, are made of human or animal donor tissue and do not require anticoagulation therapy, but have a shorter lifespan. The choice of valve substitute depends on various factors, including the patient's age, overall health, and the severity of the valve disease. Experts usually recommend mechanical valves for people under age 50 and tissue valves for those over age 70. For people in their 50s and 60s, the choice of valve substitute is less clear and depends on individual factors. The ideal valve substitute should mimic the characteristics of a normal native valve, including excellent hemodynamic and long-term durability the guiding principle for any surgeon involved in valvular heart surgery should be “Why replace! Try to repair them all”. Most of the rheumatic valves are repairable. They require unblock resection of calcified & fibrous tissue & reconstruction with ample amount of pericardium and stable support with a ring to ensure free mobility, adequate coaptation of leaflets and a remodelled and stable annulus.

Dr. Deepak Kumar Satsangi

Maitreya Foundation

Biography

Dr. D.K. Satsangi is a Cardiothoracic and Vascular Surgeon with 35+ years of experience. He has performed more than 15000 open heart procedures and 135 cardiac surgeries. He has expertise in Ventricular Remodeling Surgery, Ross Procedure, Valve Replacement and Vascular Surgery. Dr. Satsangi has worked as Director and Hear of Cardiovascular Surgery at GB Pant Institute of Medical Education and Research, New Delhi.

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VIRTUAL ROOM 2

CARDIOMERSION

SPEAKERS

INTERNATIONAL HEART CONGRESS

Dr Nidhi Puri
Additional Professor, HOD Anatomy, AIIMS, Bilaspur, India

3D anatomy of bronchopulmonary segments for vats segmental resection

Bronchopulmonary segments are anatomic, functional and surgical units of lung. There are 10 bronchopulmonary segments in the right lung and 8-9 segments on the left. Left upper lobe is much bigger than the right upper lobe. It has lingula which is tongue like projection while middle lobe is seen only in right lung. Each segment has its own tertiary bronchus and artery but vein and lymphatics run on the edge. Anatomical lung segmentectomy is a common surgical procedure in thoracic surgery and has gained more importance following COVID pandemic for lung preservation. Minimal invasive surgical approaches such as Video-Assisted Thoracoscopic Surgery (VATS) and robotic surgery have been commonly used for segmentectomy. Since lung segments are approached from peripheral aspect, therefore, anatomical segmentectomy requires a thorough assessment of each patient's thoracic anatomy, notably of the peripheral intersegmental veins. Although thoracic surgeons are familiar with the branching patterns of pulmonary vessels and bronchi, however, this remains a challenge because pulmonary anatomy has numerous variations and anomalies. 3D-CT imaging is a powerful tool for thoracic surgeons to determine pulmonary anatomy in a more intuitive manner and help surgeons better understand the pulmonary anatomy of each patient before and during surgical procedures. With the development of 3D printing technology and its introduction into the field of surgery, the relationship between lung anatomy and lung lesion can be visualised preoperatively, which can help the surgeon to determine the specific location of the lesion. Accurate determination of intersegmental planes is a challenge in anatomical segmentectomy, and multiple methods have been proposed including developing inflation/ deflation lines and injecting indocyanine green either intravenously or intrabronchially. Virtual-assisted lung mapping (bronchoscopic multi-spot dye marking) may be an optional approach for optimal anatomical segmentectomy to identify intersegmental planes and obtain adequate resection margins.

Audience Take Away Notes

- 3D anatomy of bronchopulmonary segment
- Identification of segment margins
- Approach to various segments in VATS and robotic thoracic surgeries
- This knowledge will enhance the efficiency of the audience and not only improve outcome but will also reduce complication rate

Biography

Dr Nidhi Puri is working as additional professor and HOD anatomy at AIIMS Bilaspur. She has 30 years of teaching experience She has more than 40 research articles in various national and international journals and 2 chapters in books. She has Supervised 17 Postgraduate thesis and has been awarded with travel grants twice for oral presentation in international conferences. She is reviewer in many national and international journals and reputed text books in anatomy. She is life member ASI, SOCA, NCAS & cardiomersion and has organized many conferences related to her field and is an active member of organizing committee of cardiomersion in many national and international conferences.

Harshant Sairam, Sachin Talwar, Amitabh Satsangi*, Shiv Kumar Choudhary

Department of Cardiothoracic and Vascular Surgery, All India Institute of Medical Sciences, New Delhi, India

Study of results of palliative atrial switch procedure leaving the ventricular septal defect open in patients with d-transposition of great arteries, ventricular septal defects and severe pulmonary arterial hypertension

Background and Aim: Severe pulmonary arterial hypertension and pulmonary vascular disease develops in a majority of patients with Transposition of the great arteries and Ventricular septal defects not undergoing surgery in the first few months of life. This study aims to study the results of Palliative atrial switch operation with the Ventricular septal defects being left open in such patients and to evaluate the early and late clinical progression of pulmonary vascular disease following this procedure.

Materials & Methods: The medical and surgical record of all patients undergoing an atrial switch procedure between 1990 and 2022 underwent the atrial procedure for d-Transposition of great arteries. Of these, twelve patients underwent palliative atrial switch procedure in which ventricular septal defect was left open due to raised pulmonary artery pressures and elevated pulmonary vascular resistance.

Results: Age of surgery ranged between 9 months- 20years. Preoperative echocardiography showed features of severe pulmonary arterial hypertension and right ventricular dysfunction in all patients. Cardiac catheterization showed mean pulmonary artery pressures ranging from 70mmHg-95mmHg. Following surgery, there was improvement in systemic saturation, activity and functional class in all patients. Mean hospital stay was 8-120days. There were no early deaths. Significant morbidity requiring prolonged intensive care unit stay was noted in four patients due to refractory pulmonary arterial hypertension, lower respiratory tract infection requiring tracheostomy and persistent pleural effusion in one patient. At a median follow-up of seven years (range 9 months to 13years), there was a mean increase in arterial oxygen saturation from 62.1% to 92.5% and hematocrit decreased from 49.4% to 36.3%. All patients were in Ross/NYHA class I-II. There were no late deaths or significant pulmonary or systemic venous obstruction or arrythmias.

Conclusion and Clinical significance: The palliative atrial switch procedure improved arterial oxygen saturation, improved activity and functional class, reduced polycythaemia, and provided a better quality of life in patients with d-Transposition of great arteries, Ventricular septal defects and severe pulmonary arterial hypertension.

Biography

Dr Amitabh Satsangi did his MBBS from DY Patil Medical School in 2014, MS (Gen Surgery) From GSVM Medical College in 2018 with Honours, MCh Cardiovascular and thoracic surgery from AIIMS New Delhi with first rank. Selected as Thoracic Surgery Foundation SAHA scholar in 2020. Has published many articles in various national and international journals.

Dr. Surabhi Puri
Senior Resident, AIIMS, New Delhi, India

Cardiovascular manifestations of anemia

Anemia is a condition in which the number of red blood cells or their oxygen-carrying capacity is insufficient to meet the body's physiological requirements. Anemia alters the cardiovascular physiology through compensatory direct hemodynamic and indirect non-hemodynamic mechanisms. While in the initial stages, the non-compensatory mechanisms, like the release of Erythropoietin predominates, on progression of anemia severity or duration hemodynamic mechanisms come into play. These hemodynamic mechanisms result in an increase in the cardiac output to meet the tissue oxygen demand. Chronic state of anemia can irreversibly affect the cardiovascular system in the form of atherosclerotic changes and cardiac remodelling. Anemia has been identified as a predictor of both development of, and prognosis of cardiovascular diseases like coronary heart disease, heart failure, and arrhythmias. Prevention, timely diagnosis and appropriate treatment of anemia can improve cardiovascular disease outcomes.

Audience Take Away Notes

- Pathophysiological pathways of cardiovascular manifestations of anemia
- Anemia as a risk factor and prognostic indicator for cardiovascular disease outcomes

Biography

Dr. Surabhi Puri graduated from Dayanand Medical College and Hospital, Ludhiana, Punjab (2018), and did her post-graduation in Community Medicine at All India Institute of Medical Sciences, New Delhi (2021). She is currently working as a Senior Resident at All India Institute of Medical Sciences, New Delhi since 2021. She was awarded the second prize for her research project on Cardiac risk in young females at the 1st National Undergraduate Medical Conference 2016 at Ludhiana. She represented the north zone at the 29th National Indian Academy for Paediatrics Quiz for undergraduates (2016). She has published articles and presented papers at various national and international conferences in the field of preventive cardiology and anemia.

Somya Puri
MM Medica College, India

Ophthalmological complications of cardiovascular and other lifestyle diseases

Introduction: Lifestyle diseases also known as non-communicable diseases (NCDs) are caused by a lack of physical exercise, a poor diet, alcohol, substance misuse, and tobacco use. Obesity, Type II diabetes, metabolic syndrome, heart disease, and stroke are among these disorders. These lifestyle disorders have an impact on the entire body, including the eyes. Manifestations of lifestyle diseases in the eye include diabetic retinopathy, cataract, glaucoma, age-related macular degeneration, retinal occlusion disease and dry eye. Diabetic retinopathy is known to be the major cause of visual loss worldwide. One-third of all patients diagnosed with diabetes mellitus globally exhibit indications of Diabetic Retinopathy, with another one-third having vision-threatening Diabetic Retinopathy, including diabetic macular oedema. The increased in shift towards a sedentary lifestyle and dependence on technology has opened the way for people to face various ailments at a younger age that traditionally affected the elderly. This presentation will go through the numerous complications of lifestyle illnesses in the eye, their risk factors, presentation, and preventive actions, as well as their function in the integrated management of the underlying lifestyle diseases.

Patient and methods: This presentation will include patients with diagnosed lifestyle diseases manifesting with various eye complications including Diabetic Retinopathy, Hypertensive Retinopathy, Cataract, Glaucoma, age-related macular degeneration, retinal occlusion disease and dry eye disease. All patients were managed and regular follow-up was done.

Result: Lifestyle diseases have a huge impact on the eye and may result in visual impairment. Thus, understanding the different ophthalmological complications of these diseases in important for the management of the disease as a whole.

Conclusion: An integrated approach helps in improving outcome of patients and prevents the development of complications. This can be successfully adopted in lifestyle diseases that involves various organs of the body including the eye.

Aim: The audience will learn about various ophthalmological complications as a consequence of lifestyle diseases and their preventive measures. This knowledge will enhance the efficiency of the audience and not only improve outcome but will also reduce complication rate.

Biography

Dr. Somya Puri has completed her MBBS from MM MEDICAL COLLEGE AND HOSPITAL, Solan, India in March 2022. Presently she is working as Non-Academic Junior Resident in department of ophthalmology in AIIMS BILASPUR, India. She has three publications and completed one ICMR funded research project. She has given an oral presentation and also moderated a session in International Heart Congress 2022. She has also won 1st prize in poster presentation in a CME on suicide “Creating Hope Through Action”. She has presented a paper at the “International Heart Conference” held in Singapore in 2018 and has moderated one session each at international heart conferences in Singapore and Dubai in 2018 and 2015 respectively. She has also attended international heart conferences held in Japan in the years 2013 and 2014.

Shreenithi J
Stanley Medical College, Chennai, India

Electrocardiographic findings in rheumatic heart disease

Rheumatic heart disease is a major public health burden, especially in children of developing nations. Electrocardiographic screening has revealed that the burden of disease is higher than expected, and subclinical cases are manifold higher than clinical cases. Early detection and treatment is imperative for the most favourable outcome.

Rheumatic heart disease can be diagnosed using standard echocardiography or listened to as a heart murmur using a stethoscope. The electrocardiogram, on the other hand, is critical in the study and identification of heart rhythms and abnormalities.The effectiveness of electrocardiogram to identify distinguishing signs of rheumatic heart problems, however, has not been adequately examined.

This review aims to provide a brief overview of studies conducted regarding the same and draw attention to some abnormalities which, when present in conjunction with other clinical findings of rheumatic disease, could be considered convincing diagnostic criteria.

Extensive electrocardiographic datasets were obtained and examined, from both children and adults, at regular intervals.Patients with varying presentations such as subclinical rheumatic activity, quiescent Rheumatic Heat Disease, were included.

The electrocardiograms were analysed for rate, rhythm, PR interval, ST deviation, T wave changes and the QT duration. The results were then statistically analysed and compared with age and sex-matched healthy control subjects.

Conventionally, auscultation has been used for diagnosing Rheumatic heart disease.Most of these studies report an almost 10-fold higher prevalence of Rheumatic heart disease by echocardiography as compared to conventional method of auscultation.

The most recent study conducted in 2023 has several interesting findings:

PR elongation in 47.2 percent of cases

QRS elongation in 26.4 percent of cases

QTc elongation in 44.3 percent of cases

Another study published in the British Heart Journal concluded that close to 90 percent of patients with active Rheumatic heart disease have significant QTc elongation. Thus, the QTc interval measurement is highly significant clinically and could be considered a diagnostic sign.

A study conducted by Dr. Harold EB Pardee in 1947, has an extensive array of thought-provoking findings. The study suggests that nodal tachycardia and the Wenckebach phenomenon are very common appearances and more so than auricular tachycardia. Low voltage QRS complex and increased T wave voltage may also bear some significance. Increased sedimentation rate was also seen for relatively prolonged periods of time.

An exclusive study on children conducted by Dr.Henry Crossfield, found that a PR interval greater than 0.16 seconds should serve as a sign for active disease. Rheumatic heart disease in children also commonly causes large, pointed, broad-base P2 waves in children, while advanced cases may show ST segment depression.

Both the above studies found inverted or diphasic T waves in leads I or II or both.

Significant clinical findings in electrocardiography are several times higher than findings in clinical examination. This highlights the importance of electrocardiographic screening and further research to establish standardized criteria, like that defined by the World Heart Federation. The end product of this research can lead to new medical devices and services which could assist in the detection and diagnosis of the disease in low-resource settings and alleviate the burden of the disease.

Audience Take Away Notes

- Commonly found changes in rate, rhythm, waves and segments of electrocardiograms of patients with Rheumatic heart disease
- Prevalence and the clinical significance of the findings
- This review will update the audience about the progress made so far in this regard, and the questions that need to be answered in the future.
- The importance of widespread screening and establishment of standard criteria for diagnosis

Biography

A highly driven and analytical minded third year Medical student adept at carrying out patient testing and care across multi-disciplinary healthcare environments.

Himanshi Bakshi
National Centre for Human Genome Studies and Research, Panjab University, Chandigarh, India

Emerging trends in cardiovascular regenerative medicine

Early detection of Cardiovascular Disease (CVD) is essential for determining treatment options, such as counselling and medications. The field of regenerative medicine has been making substantial progress in understanding the biomechanics of tissue, biological pathways, and genetic mutations underlying cardiomyopathy and rectifying the disease through an interdisciplinary approach. This review encompasses a curated collection of recent trends in cardiovascular regenerative medicine. One promising strategy for regenerating damaged vascular networks is Therapeutic Angiogenesis (TA). This technique uses cell-based therapy and targets intracellular ion signalling pathways. With the advent of genome editing technologies together with induced Pluripotent Stem Cells (iPSC) tissue engineering strategies, the CVD line of treatment now has better precision by modulating the expression of specific proteins and correcting mutated genes. Researchers have found that exosomes released by stem cells are cardio protective and a source for delivering therapeutic benefits. Exosome-coated stents have been developed to inhibit adverse immune responses. Various studies have evaluated and used adipose stem cells (ASCs) and ASC-derived Extracellular Vesicles (ASC-EVs) for cardiac remodeling and fibrosis prevention. Two-dimensional (2D) scaffold-free cell sheet technology involving engineered Cardiomyocytes (CMs) or Mesenchymal Stem Cells (MSCs) is an emerging tissue engineering technology to prevent myocardial ischemia and improve survival rates after cell transplantation. Ongoing research on recreating womb conditions focuses on genes that are activated or inactivated as the heart loses its ability to regenerate within weeks after birth in an effort to restore it and eventually attempt to repair the damaged heart tissue with this approach.

Audience Take Away Notes

- Use of stem cells in understanding the biomechanics of tissue under damaged conditions and not just for treatment which draws attention to ethical considerations
- Geneless approaches to trigger regenerative potential of circulating progenitor cells to perform angiogenesis
- This review will help people understand the research potential in the field of regenerative medicine and how far it has come in clinical sector in cardiology
- Awareness about cell based therapy and its advantages and limitations can help academicians to fuel the curiosity in young minds

Biography

Passionate about fundamentals of the blueprint (DNA) of the human body. I completed my bachelor's degree in Biotechnology (Hons) and currently studying Human Genomics at Master's level at National Centre for Human Genome Studies and Research, Panjab University. I am absorbed in the pursuit of knowledge in molecular biology and genetics. I am a staunch believer in learning the fundamentals with utmost clarity. Actively engaging in new courses, trainings and skill development. As a young aspiring scientist, my zeal to learn is growing day by day.

Varnika Gupta
Cardiomersion, India

Work-related stress and its impact on coronary heart disease in medical professionals

The relationship between work-related stress and healthcare professionals' risk of developing Coronary Heart Disease (CHD) is examined in this presentation. Numerous mechanisms, including persistent overstimulation and dysregulation of the autonomic nervous system and the hypothalamic-pituitary-adrenal (HPA) axis, are thought to play a role in how chronic work stress contributes to the development of CHD. Such much stimulation may harm the body, causing CHD, infections, and an accelerated ageing process. Additionally, by encouraging unhealthy behaviours, reduced likelihood to seek help and poor adherence to medical treatments, work stress may indirectly increase the risk of CHD. Workplace strain, which is characterised by high job demands and limited control, is known to play a substantial role in stress-related disorders. An expanded version of the job strain model adds social support as a third component, with Iso-strain jobs—those with high demands, little control, and little social support, like that of healthcare professionals—being associated with the highest risk of sickness. Despite the fact that the American Heart Association acknowledges a person's stress response as a potential risk factor for CHD, work stress is not on their list of recognised risk factors. The INTERHEART study found a connection between psychological stressors and an increased risk of acute myocardial infarction. Significant global stress was found to have a lesser effect than smoking but was comparable to hypertension and abdominal obesity. Additionally, the study discovered that cases had more stress at home than controls, proving that stress from both the work and home environments raises the risk of CHD. Additional investigations have shown, with comparable findings across many trials utilising different designs and methodology that self-reported continuing stress is associated with a greater risk of incidents of CHD. In previously healthy people, depression has also been linked to the development of CHD, with clinical depression serving as a more reliable indicator than sad mood. Worsened coronary atherosclerosis and endothelial dysfunction have been seen in experimental investigations as a result of social disruption. Psychosocial factors have been linked to vascular function, inflammation, increased blood clotting, and decreased fibrinolysis. The sequence of events as well as the particular pathophysiological nature of psychosocial variables' influence on CHD are yet unknown. It is crucial to address work-induced stress as a potential CHD risk factor for healthcare professionals given the important findings of the INTERHEART study and the consistency across other investigations. Prioritising job stress reduction, boosting social support, and promoting stress management and coping mechanisms are important steps in the fight against the negative impacts of stress on health. To better understand the pathways connecting stress and CHD, and to develop tailored therapies for healthcare professionals dealing with work-related stress, more study is required.

Shaurya Pratap
Cardiomersion, India

Role of digital intervention in management of lifestyle diseases

Introduction: Most lifestyle diseases are caused by sedentary lifestyles, low dietary trends and poor living conditions, affecting people of all economic backgrounds, transcending age and gender differences. Lifestyle disease risk factors include excessive alcohol and smoking, poor meal planning and physical inactivity leading to excessive weight gain (obesity), high blood sugar, high blood pressure, high blood cholesterol and social distancing. Obesity is a major lifestyle disease that contributes to other lifestyle diseases such as cardiovascular disease (CVD), clinical obstructive pulmonary disease, cancer, type 2 diabetes, hypertension and depression. Digital interventions are being instigated that change negative health behaviors to promote healthy lifestyles. The World Health Organization (WHO) divides digital health interventions into the following 4 categories: customers, healthcare providers, health system managers and data services, where digital and mobile technologies are used to support the needs of the welfare system and achieve health goals. Digital interventions can motivate and incentivize individuals through self-tracking, goal setting, assessment, feedback, or generating recommendations to promote healthy lifestyles. They help monitor and manage lifestyle risks and help individuals prevent complications. In addition to various digital monitoring devices and applications, artificial intelligence is also emerging as a way to effectively manage lifestyle and cardiovascular diseases. One of the applications of artificial intelligence is type 2 diabetes screening, stage diagnosis, complication diagnosis and risk factor analysis. Based on genetic and clinical data, algorithms have been developed to assess the risk of developing diabetes, predict impending hypoglycemia or hyperglycemia based on continuous glucose monitoring, detect and evaluate clinical retinopathy, and stage classification using fundus cameras. Harnessing the power of digital technology as an important tool for health promotion is critical to achieving universal health coverage. This presentation will focus on the role of digital interventions used in the screening, diagnosis, management, complication analysis and prevention in lifestyle diseases.

Conclusion: Most lifestyle diseases arise due to deleterious lifestyle practices that are modifiable. The patient's outcome can be improved by maintaining proper nutrition control and avoiding additional risk factors that contribute to the onset of lifestyle diseases. Digital interventions can effectively supplement the management and prevention of these diseases. They also play role in screening, determining the severity of the condition and complications.

Aim: The audience will learn about the role of several digital interventions in the management of lifestyle diseases. This knowledge will benefit the audience by not only improve the disease outcome by improving patient compliance towards lifestyle modification but also will contribute towards preventing development of complications.

Biography

Dr. Shaurya Pratap Kushwaha graduated from MM Medical College and Hospital, Solan, India in March 2022 and is presently working as Medical Officer for Vishwas Hospital, Punjab, India. Apart from the publication in the International Journal of Surgery Case Reports that got him the Young Researcher Award 2022, he has two more publications and a handful other research projects he is currently involved in. He also presented an oral presentation in International Heart Congress 2022, Japan. He has been an active student member of ACP, AAN, ASCO, ILAE, IAOHNS and was the College Ambassador for MSAI. For his humanitarian and philanthropic efforts through his own NGO- the Nayi Soch Foundation, he received the Covid-19 Warrior award by the Deputy Mayor.

Dr. Kishore Gupta
Consultant Cardiothoracic and transplant Surgeon,
DNB CVTS, MNAMS, MBA HM
Department of Cardiac Surgery, Marengo CIMS Hospital, Ahmedabad, India

Role of non-invasive diagnostic modalities in detection of allograft rejection post cardiac transplantation

Heart transplantation continues to be the definitive treatment for end-stage heart failure. With the median survival of 15 years among first-year survivors, allograft rejection (AR) and allograft injury after cardiac transplantation still remains a challenging obstacle to post surgery long-term survival. So far, the invasive diagnostics in form of endomyocardial biopsy (EMB) remains the gold standard surveillance tool for rejection following heart transplant.

Conventional tests such as electrocardiography, echocardiography, and serum biomarkers have low sensitivity and specificity to detect AR and are not recommended as potential alternatives to EMB. But donor derived cell free DNA (cfDNA), known as liquid biopsy, is rapidly becoming a highly useful tool for surveillance of solid organ transplant rejection. It is more sensitive in picking antibody-mediated rejection than ACR. cfDNA/RNA studies can potentially replace EMB in future. CMR-based surveillance strategy in addition to routine echocardiography for ACAR in the first year after orthotopic heart transplantation is also feasible compared with EMB-based surveillance. Gene expression profiling of the genes involved in cellular rejection has a high negative predictive value of 99.6% for moderate to severe cellular rejection but poor positive predictive value and unclear relevance to antibody-mediated rejection.

Some of the novel approaches successfully tested in preclinical and clinical models while some in the developmental phases, may lead to a prolongation of patient's and heart allograft survival and a step closer to a new diagnostic standard for AR.

Audience Take Away Notes

- Current updates and developments in the field of cardiac rejection monitoring
- Incorporation of newer diagnostic modalities in their setup for diagnosis of heart transplant rejection algorithms
- Updating of allograft rejection algorithms
- Earlier detection of rejection and better outcomes post cardiac transplantation

Biography

Dr. Kishore Gupta is self driven, focused, hard working, qualified, registered surgeon who completed his graduation at Medical college Loni, Maharashtra in 2011 and then joined the superspeciality studies in 2013 at Fortis healthcare Mohali. After completing the studies in 2017, did one year of senior residency at the same institution. He joined Care Instititute of Medical Sciences, Ahmedabad, Gujarat in 2019 as Consultant Cardiac Surgeon. He received MNAMS degree in 2020. He has completed Masters in Healthcare and Management in the year 2022. He has obtained the post of Transplant surgeon at the same institute. He has more than 10 publications in national and international journals.

Dr. Kishore Gupta
Consultant Cardiothoracic and transplant Surgeon,
DNB CVTS, MNAMS, MBA HM
Department of Cardiac Surgery, Marengo CIMS Hospital, Ahmedabad, India

Late presentation of Right coronary artery stent infection as left empyema and pleuro-pericardial fistula

Background: Coronary stent infections are rare but a potentially life-threatening disease, the incidence of which has been on a rise over the last two decades.

Method: We report a case who presented with symptoms of heart failure and shock. Patient was stabilized and diagnosed as a complicated (empyema with pleuro-pericardial fistula) case of coronary stent infection. He was treated by stent removal and decortication.

Discussion: Early recognition and institution of appropriate medical and surgical therapy is vital for patient survival. Blood culture and coronary angiography are the preferred diagnostic modalities followed by PET scan and cardiac MRI for delineating the extent.

Conclusion: Surgery seems the treatment of choice, providing a definitive diagnosis of CSI and removing the source of infection, repairing aneurysms, and providing bypass vascular grafts if feasible. Thorough evaluation and multidisciplinary approach with institution of appropriate medical and surgical therapy lead to detection and better outcome.

Audience Take Away Notes

- Current status of coronary stent infections
- Treatment algorithms for the pathology
- Approach for treatment

Biography

Dr. Kishore Gupta is self driven, focused, hard working, qualified, registered surgeon who completed his graduation at Medical college Loni, Maharashtra in 2011 and then joined the superspeciality studies in 2013 at Fortis healthcare Mohali. After completing the studies in 2017, did one year of senior residency at the same institution. He joined Care Instititute of Medical Sciences, Ahmedabad, Gujarat in 2019 as Consultant Cardiac Surgeon. He received MNAMS degree in 2020. He has completed Masters in Healthcare and Management in the year 2022. He has obtained the post of Transplant surgeon at the same institute. He has more than 10 publications in national and international journals.

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Kashish Dutta
Department of Tuberculosis and Respiratory Diseases, Government Medical College and Hospital, Chandigarh, India

Sarcoidosis: Diagnosis and management

Sarcoidosis is a systemic granulomatous disorder of unknown aetiology. It may cause irreversible damage in different organs. Challenge appears in elucidating the cause and differentiating from tuberculous. Newer interventions are helping us tackle this challenge. Further research in elucidating the cause of sarcoidosis, and relevant biomarkers is the need of the hour. Although, no specific treatment exists, but corticosteroids still remain the mainstay of treatment. But, here another challenge appears about when and how to start steroids. Herein we will discuss important diagnostic modalities and newer treatment approaches.

Audience Take Away Notes

- Sarcoidosis is a multi-systemic disease, so this presentation will give major insights on the diagnosis and the management of this multi systemic disease
- As sarcoidosis involves plethora of organs and sarcoidosis is even compared with cancer in many aspects, so, this topic can be helpful to almost all the clinical practitioners in their job.
- The topic covers recent researches and protocols, so it may be helpful regarding further research on this topic as well as Tuberculosis
- Yes, we will discuss newer modalities in diagnosis and treatment, which will surely help in bringing a solution in Sarcoidosis related researches
- Yes, it surely will provide new information which may improve the accuracy of the researches.
- List all other benefits
- Till now we are not able to solve the puzzle between Tuberculosis and Sarcoidosis. I will try my best that our discussion leads us a step forward towards solving this puzzle

Biography

Dr. Kashish studied MBBS, at Government Medical College and Hospital, Chandigarh, India in January, 2012. She then joined MD in the department of Pulmonary medicine, Government Medical College and Hospital, Chandigarh, India in year 2016 and after completing post-graduation of 3 years, joined as a senior resident in the same department. She completed three years of her teaching experience there and joined as Assistant professor, Department of Tuberculosis and Respiratory diseases in Government Medical College and Hospital, Chandigarh, India in November, 2022. She received Commendation award in year 2021, by the former Governor of Punjab, for her meritorious works in Covid. She is an imminent speaker and has participated as faculty speaker in many national and international conferences. She has published 17 research articles in Indian/ Indexed journals. She is an all-rounder and has even won first runner up in Mrs India International. She is also working with a few NGOs and has adopted a family in India for tuberculosis treatment.

Dr Kusha Korla
Global Healthcare Manager, Bain and Company, India

Artificial Intelligence (AI) in cardiovascular health

The topic will cover increasing use of artificial intelligence from prediction, diagnosis, and treatment of various cardiovascular disorders. The theme will cover the cross section of advancing technology and medicine with its potential implications across the value chain.

Audience Take Away Notes

- Artificial intelligence (AI) and machine learning (ML) based applications currently in use and expected to launch in near future across the globe within cardiology
- Different strategic collaborations/acquisitions done in last 5 years between medical device and technology companies to develop devices
- Where is AI used currently in hospital settings and its impact on revenue
- Barriers to adoption of AI in hospital settings
- Will human intervention still be needed (on which areas) despite increasing AI
- Regulations around AI in MedTech and hospital settings

Biography

Healthcare professional with 10 plus years of experience ranging from clinical practice to research, analytics & consulting within Pharma, MedTech, Payers and Providers. I am currently working as a 'Global Healthcare Manager' based out in India supporting various projects with healthcare, especially for US and EU. Prior to this have experience of working with Boston Consulting Group, ZS Associates, IPD analytics and an independent dental practitioner. I have a degree in 'Bachelors of dental surgery' and 'Masters in healthcare and Hospital Administration.

Ms Vinakshi Devi[1*], Dr. Deepak Puri[2]

[1]Physician assistant cardiac sciences, max super specialty hospital Mohali, Punjab, India

[2]Director Ctvs max super specialty Mohali, global chairman Cardiomersion, Punjab, India

Cardiovascular thoracic rehabilitation and secondary prevention

Cardiac Rehabilitation and Secondary Prevention plays an important role after Cardiovascular and Thoracic Surgeries. After Cardiovascular and Thoracic surgeries we provide care protocols guided meticulous care which helps in recovery of patients. During Rehabilitation strict monitoring of patients hemodynamics and proper physiotherapy, nutritional support are ensured. Daily counselling done which helps to motivate the patient. On post-operative day or following day as the patient is hemodynamically stable, patient is extubated and intercostal drainage removed if no significant drainage and no air leak in VATS/ Thoracotomy patients and patient made to sit in bed orally liquids given followed by soft diet in evening. Patients are usually discharged on 3rd and for low LVEF, ACUTE MI on 4th pod if no contraindication. Simultaneously daily counselling of relatives regarding progress of patient is done and they are educated for to take care of patient at home. Once discharge plan is finalized they are given instructions about patient care, diet and physical activity for next one week and patient is asked to visit in follow up after 1 week. After 1 week patient is followed up in OPD with relevant investigations (CXR, ECG, ELECTROLYTES, RFT, RBS) done and patient is given follow up instructions for 1 month. Patient and relatives are also counselled for about control of risk factors for secondary prevention and followed up every 3 months for next year and subsequently every six months if patient is doing well. Lipid profile is monitored six monthly and for diabetic patients Hba1c 3 monthly. Any re-admissions or unscheduled consultations are strictly recorded and fresh onset of symptoms or any abnormal investigation reports are taken care of.

Conclusion: Proper rehabilitation helps in early recovery and return to work whereas secondary prevention slows down progression of diseases and recurrent complications.

Audience Take Away Notes

- Benefits of guideline directed nursing protocols for comprehensive management of patients undergoing cardiovascular and thoracic surgeries provide care
- This knowledge will help the audience in taking care of patients rehabilitation and secondary prevention

Biography

Vinakshi Devi completed Nursing from DR. RAJENDERA PRASAD GOVERNMENT MEDICAL COLLEGE TANDA at KANGRA HIMACHAL PRADESH and subsequently completed training as Physician Assistant in Cardiac Sciences at Max Super specialty Hospital Mohali India. Currently working as Physician Assistant in Cardiomersion Cardiac team. She handles pre- operative and post-operative follow-up of patients as well as assists surgical procedures and takes care of Rehabilitaion also. Apart from this she is regularly involved in academics, camps and research projects.

Manroop Kaur*, Vinakshi Devi

Department of cardiac sciences, Max Super Specialty Hospital, Mohali, Punjab, India

Under the Guidance and Supervision of Dr. Deepak Puri Director CTVS, Max Super Specialty Hospital, Mohali, Punjab, India

Physician assistant training program for management of cardiovascular and thoracic patients

A physician assistant acts as a bridge between the nursing professionals, doctors and the other members of the health-care team, improving the quality of patient care by providing comprehensive care in coordination with other health-care team members. A physician assistant specialized in dealing with cardiovascular and thoracic patients provides care ranging from preventive services to coordinating with the health-care team in treatment and rehabilitation of cardiovascular and thoracic patients. The physician assistant training program primarily focuses on the role of a physician assistant in the comprehensive management of cardiovascular and thoracic patients. In the physician assistant training program for management of cardiovascular and thoracic patients, Cardiomersion provides theoretical and practical training including 5 levels of basic and advanced training. Qualified physiotherapists, dieticians, pharmacists, BSc. Nursing and GNM graduates are welcomed to participate in the basic course and MBBS, BAMS graduates are eligible for the advanced training program with duration of 6 months that can be extended up to 1 to 3 years. The basic training involves cardiac risk evaluation, cardiac and general health evaluation, primordial and primary prevention, and holistic management of cardiovascular and thoracic patients. It also includes early diagnosis and basic management of cardiovascular cardio-vascular disease, pre-operative evaluation, surgical interventions, post-operative management, follow-up, rehabilitation and secondary prevention, documentation and medico-legal aspects and BLS and ACLS certification. The advanced training, level 4 and level 5 are for advanced clinical and surgical trainings with promotion of academics and research in the field. With proper guidance and training, physician assistants improve the efficiency of patient care and satisfaction.

Audience Take Away Notes

- The concept of a Physician Assistant is less known. Through this presentation, we aim to describe the training program and role of a physician assistant in management of cardiovascular and thoracic patients
- The eligible candidates are those who have graduated from nursing and allied health professions like physiotherapists and pharmacists. The levels of training are explained to get an understanding of the curriculum for theoretical as well as practical training
- A Physician Assistant is trained to perform basic tasks like general and systemic examination, taking history, etc. as well as advanced tasks like assisting in surgical procedures. This eventually improves the efficiency and quality of patient care and satisfaction

Biography

Manroop Kaur has graduated in Bachelor of Science in Nursing at Baba Farid University of Health Sciences, Punjab, India. She is currently training for becoming a Physician Assistant specialized in management of cardiovascular and thoracic patients under Dr. Deepak Puri at Max Super Specialty Hospital, Mohali, and Punjab, India. She has also written newspaper article on World Health Day, 2023 which featured in 16 local newspapers.

Riya Kayarkar[1*], Deepak Puri[2]

[1]University of Perpetual Help and System DALTA- Jonelta School of Medicine-Philippines, Cardiomersion, Hyderabad, Telangana, India

[2]Department of Cardiovascular Thoracic Surgery, Cardiomersion, Medical Director-Max Healthcare, Chandigarh, Punjab, India

The impact of socioeconomic factors on hypertension and obesity: A systematic review

Introduction: Hypertension and obesity continue to be major public health issues with significant morbidity and mortality worldwide. Research has consistently shown that socioeconomic factors, such as income, education, and access to healthcare, play a significant role in the development and management of these conditions. The purpose of this systematic review is to investigate the association between socioeconomic factors and hypertension and obesity, and to identify effective interventions to alleviate their burden.

Methods: A systematic search of electronic databases such as PubMed/MEDLINE, Cochrane Library were conducted using relevant keywords and MeSH terms to identify studies that examined the association between socioeconomic factors and hypertension and/or obesity. Eligible studies were selected based on predefined inclusion criteria, and data were extracted using a standardized form. Quality assessment was performed using the Cochrane risk of bias tool.

Results: A total of 35 studies were included in this systematic review, of which 18 focused on hypertension, 14 on obesity, and 3 on both conditions. The studies consistently showed that lower socioeconomic status was associated with a higher prevalence and incidence of hypertension and obesity. This association was mediated by factors such as poor diet quality, limited access to healthcare, and higher levels of chronic stress. However, one cross-sectional multilevel analysis conducted in India found that higher SES groups accounted for between 70% and 90% of the burden of diabetes, hypertension, and obesity in the population, consistent across different states in India. The studies included in this review had a global scope and varied in demographic focus. Interventions to address socioeconomic factors have shown promising results in reducing the burden of hypertension and obesity. For example, a recent randomized controlled trial found that providing financial incentives to low-income individuals for healthy food purchases significantly improved diet quality, resulting in reductions in both obesity and blood pressure. The latest evidence also suggests that COVID-19 pandemic-related changes in employment and income may further exacerbate socioeconomic disparities in hypertension and obesity. Other interventions such as expanding access to healthcare and implementing policies that promote healthy food options and safe physical activity have also been shown to be effective in reducing health disparities

Conclusion: This systematic review confirms the significant role of socioeconomic factors in the development and management of hypertension and obesity worldwide. Effective interventions targeting socioeconomic factors have demonstrated promising results in reducing the prevalence and impact of these conditions for individuals and communities. Policies and interventions promoting access to healthcare, healthy food options and safe physical activity can help reduce the burden of these conditions worldwide and improve health outcomes. Addressing the impact of the COVID-19 pandemic on socioeconomic factors is also crucial in reducing health disparities related to hypertension and obesity. This review provides valuable information on the link between socioeconomic factors, hypertension, and obesity. It suggests effective interventions such as expanding access to healthcare, promoting healthy food options and safe physical activity, and implementing policies to reduce socioeconomic disparities. The review also highlights the potential impact of the COVID-19 pandemic on exacerbating existing health disparities.

Audience Take Away Notes

- This study informs healthcare professionals on how socioeconomic factors affect hypertension and obesity They can identify high-risk patients and tailor interventions to reduce that risk
- Policymakers can contribute by developing innovative solutions that consider unique cultural and social contexts of the populations being served
- This study raises awareness of socioeconomic factors role in hypertension and obesity and guiding future research. Healthcare professionals can improve patient care and reduce the burden of hypertension and obesity with evidence-based interventions

Biography

Dr. Riya Kayarkar is a recent graduate of the University of Perpetual Help System, DALTA in the Philippines, where she earned her Doctor of Medicine degree in 2021. Currently, she is in the process of preparing for Residency Training in the United States. She has a keen interest in Cardiology and hopes to pursue a career in Internal Medicine. She is also developing a growing interest in research and hopes to contribute to the advancement of medical knowledge in the future. Dr. Kayarkar is passionate about providing quality healthcare and is excited about the opportunities that lie ahead in her medical journey.

Dr Nikita Goyal
Cardiomersion, Mohali, Punjab, India
Guide author - Dr Deepak Puri, Cardiomersion, Mohail, Punjab, India

Cardio oncology: Understanding, detecting, monitoring and treating the cardiovascular diseases during and after the cancer treatment

Cancer and cardiovascular diseases are the leading cause of death in US1, 2. With the recent advances in cancer therapies there is significant reduction in cancer related mortality of patients. These effective treatment options have decreased the cancer related mortality; however, they significantly increase the risk of short and long term co-morbidities, precisely the cardiovascular complications impairing the quality of life of the cancer survivors along with an increase in the mortality rate. It is also worth mentioning that these two conditions also share combined risk factors which further strengthen their co-association. A new disciplinary approach "cardio oncology" has thus evolved to address the cardiovascular needs of cancer patients and manage these patients through a multidisciplinary approach. Certain studies have been carried out in the past determining the cardiotoxicity of chemotherapeutic agents, risk of cardiac patients developing cancerous diseases or significance of lifestyle changes in the cancer patients. The source of this review paper is from the JACC: cardio oncology, pubmed searches using key words like: cardio oncology, cardiotoxic chemotherapy, cardiac risk factors, cardiac monitoring, cancer patients with cardiac comorbidities.

Audience Take Away Notes

- Elaborates on the cancer management options with significant cardiotoxicity and alternatives to combat the risk factors while treating cancer patients
- Doctors can use this information while treating the cancer patients by recognizing and significantly reducing the cardiovascular comorbidities hence improving the patients quality of life
- This research can be used by cardiologist and oncologist to elaborate on the extent of association and finding out alternatives to these cardiotoxic treatment lines
- It is designed to promote an integrated approach between oncologist and cardiologist in managing the cancer patients effectively even before they show symptomatic cardiovascular diseases thus preventing the permanent damage to the heart and vessels. This will add on to the advanced treatment guidelines of cancer improving their design
- With the help of this review journal we aim to screen the cancer patients who are at higher risk of developing the cardiac comorbidities as some structural damages through therapy can be reversed if picked up earlier during the treatment. It points our
- attention towards the significant cardiac co morbidities of cancer patients which have increased the 5 year mortality

Biography

Dr. Nikita Goyal, an MBBS graduate from Punjab Institute of Medical Sciences, Jalandhar, India. She has a keen interest in surgical branches and holds experience as a medical officer in gynecology. She also worked as a Resident Medical officer in oncology department in Max Super Speciality Hospital, Mohali, India. She published 2 paediatric journals in Indian journal of paediatrics and the sage publications.

Aditi Parulkar
Parulkar Hospitals, Bhopal, Madhya Pradesh, India

Artificial Intelligence in Cardiology

Artificial intelligence (AI) has emerged as a revolution showcasing tremendous potential in a myriad of fields. This presentation aims to describe the expanding influence of AI in Cardiology and its impact on enhancing the accuracy and efficiency of clinical decision-making. AI tools like machine learning and deep learning can analyze large datasets of patient information to predict patterns that augment detection, risk stratification, and optimal treatment strategies for cardiovascular diseases.

Machine learning(ML) based products have shown remarkable promise in recent years. A Mayo Clinic study on an ML model analyzed data from over 60,000 ECGs to train an AI neural network model to detect Atrial fibrillation for population-wide screening. ML products have been approved by the FDA for use in ECG interpretation (PhysIQ, Shenzen Carewell), Atrial Fibrillation detection (AppleWatch, Alive Cor Heart Monitor), and Echocardiography measurements (Echo MD AutoEF, Echo Go Core).

Wearable devices enable continuous monitoring and real-time alerts to healthcare providers. A 2016 study describes how AI neural networks can automatically score coronary artery calcium in cardiac CT angiography.

In addition to diagnostic tools, AI-based algorithms offer predictive insights by assessing clinical data from Electronic health records. These are being utilized in predicting cardiovascular risk based on medical records from primary care, predicting readmission of patients with heart failure and long-and short-term mortality after ACS. AI's impact also extends to help optimize treatment strategies by personalizing treatment plans, refining medication regimens, and predicting outcomes while identifying the most suitable candidates for interventions - improving procedural success rates and patient outcomes. Virtual assistants and chatbots can offer personalized guidance during follow-up, increasing patient engagement and satisfaction.

Healthcare expenditures can be lowered while improving access and efficacy by leveraging AI. While the integration of AI in medicine presents an immense range of possibilities, new threats arise. It is essential for clinician researchers, scientists, and policymakers to collectively address the unexplainable nature of decision-making, ethical considerations, regulations, and data privacy to implement AI tools effectively in clinical practice.

In conclusion, this presentation is a stepping stone to exploring the promise of the AI revolution in transforming healthcare while highlighting the need for further research, collaboration, and implementation to unlock its full potential.

Audience Take Away Notes

- This presentation introduces Artificial Intelligence and how it can be used in cardiovascular medicine.
- It lists FDA approved tools on Atrial Fibrillation detection, ECG interpretation and other aids
- It emphasizes how machine learning tools can be used to increase efficiency in evidence based medicine and enhance clinical practice.

- It also reflects on limitations of AI and how these unmet needs can be fulfilled with upcoming research going forward.

Biography

Dr. Nikita Goyal, an MBBS graduate from Punjab Institute of Medical Sciences, Jalandhar, India. She has a keen interest in surgical branches and holds experience as a medical officer in gynecology. She also worked as a Resident Medical officer in oncology department in Max Super Speciality Hospital, Mohali, India. She published 2 paediatric journals in Indian journal of paediatrics and the sage publications.

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