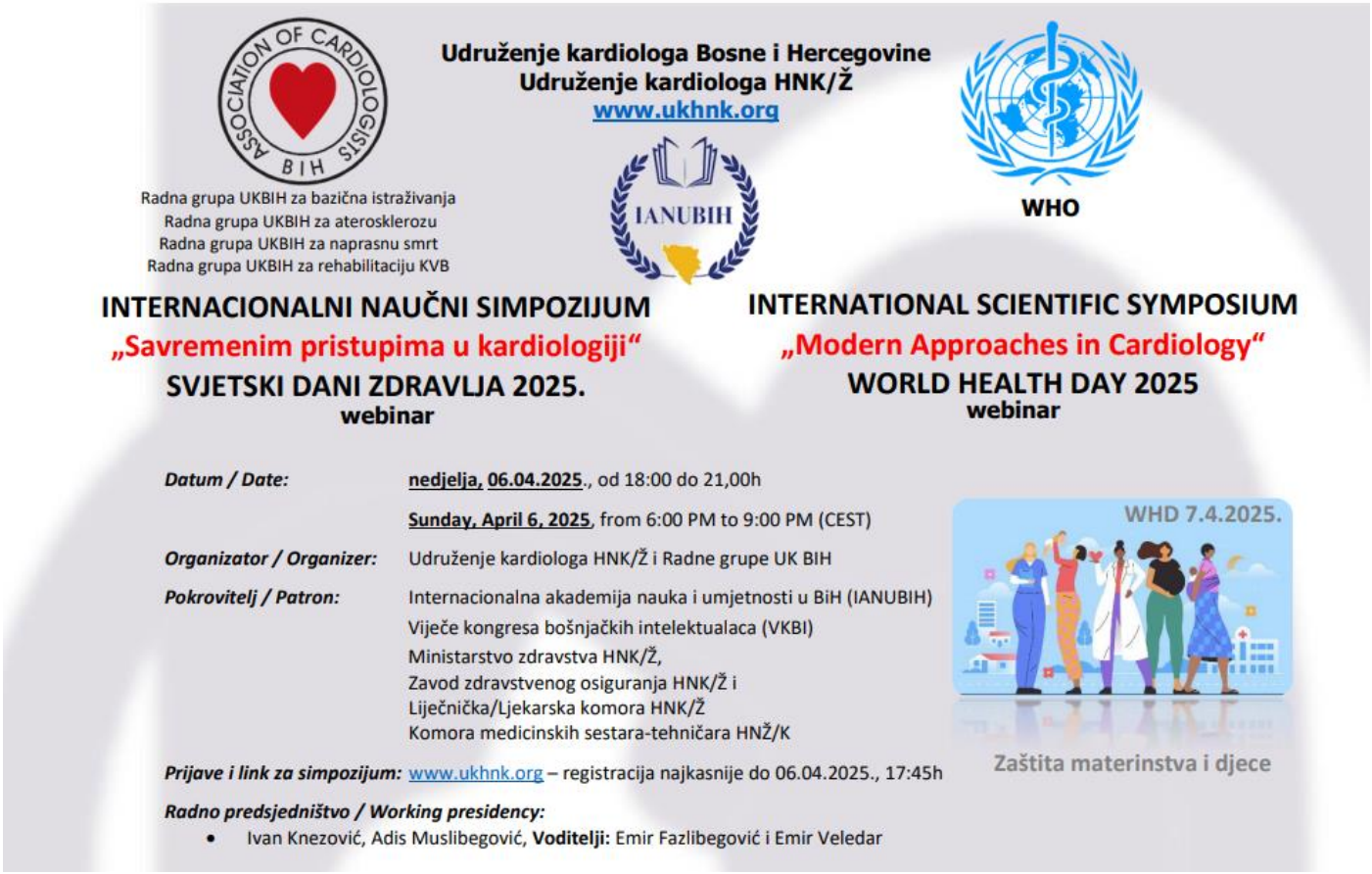


Knjiga apstrakata

Sadržaj

1 Emerging themes in CVD prevention

Dorairaj Prabhakaran,

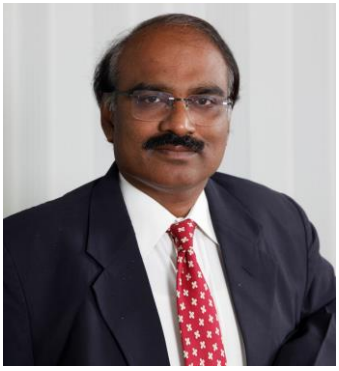
M.D., DM (Cardiology), MSc, FRCP, FNASc, FNA, DSc (Honoris Causa)
Executive Director, Centre for Chronic Disease Control (CCDC)
Distinguished Professor - Public Health Foundation of India (PHFI)
Professor, Department of Epidemiology
London School of Hygiene and Tropical Medicine, UK
Adjunct Professor, Rollins School of Public Health, Emory University, U.S.A

Cardiovascular diseases (CVD) are the leading cause of death and disability in many low and middle-income countries and Bosnia-Herzegovina is no exception. Clinicians tackling CVD are adept at identifying and managing its risk factors, managing acute events such as acute coronary syndromes and secondary prevention.

While we do this diligently and successfully there are several other reasons for poor outcomes. These include the huge role of social determinants such as air pollution, the differing thresholds at which risk factors out based on ethnicity, the role of emerging infections and the influence of co-morbidity in determining adverse outcomes in individuals with CVD. The health system and access to health systems also play a major role in determining the final outcome.

We now have several innovative solutions that can address these challenges. These include task shifting and task sharing paired with affordable technology to improve quality of care, improving compliance through polypill, innovations in behaviour change and the role of implementation science. Low cost technology and community engagement can play a major role in an effects to combat CVD. Some of these innovations with specific examples from India will be discussed.

***Professor Dorairaj Prabhakaran**, educated at Bangalore Medical College (MBBS), the All India Institute of Medical Sciences (MD: Internal Medicine and DM: Cardiology) and McMaster University Canada MSc: Health Research Methodology), is an eminent cardiologist, epidemiologist and academician of global repute. He moved beyond the conventional world of clinical cardiology to advance science in the prevention of heart diseases and diabetes in India so that his work could benefit millions of people in this country. He is currently Distinguished Professor at the Public Health Foundation of India (PHFI). At PHFI, he was instrumental in establishing two centres of excellence at PHFI (the Centre for Chronic Conditions and Injuries and the Centre for Digital Health) and helped build the Centre for Environmental Health. Before joining PHFI, he built the Centre for Chronic Disease Control, which is now considered the leading research agency for chronic diseases in India and developing countries. It is recognised as a WHO collaborating centre for the Southeast Asia region. He is also the founding Director of the Centre for Control of Chronic Conditions at PHFI, a joint initiative of four leading institutions (Public Health Foundation of India, London School of Hygiene and Tropical Medicine, All India Institute of Medical Sciences, New Delhi, and Emory University). He holds professorships at PHFI, London School of Hygiene & Tropical Medicine (LSHTM) and Emory University, Atlanta, USA. In addition, he is a Visiting Scientist at the Harvard School of Public Health and an International Fellow at the Population Research Institute, McMaster University.*



Prof. Prabhakaran has, by far, more than 600 publications in scientific journals such as the New England Journal of Medicine, The Lancet, Circulation, British Medical Journal, Nature, JAMA, etc. and has an H-Index of 104. He has been listed as the topmost researcher in Medicine in India in terms of publications for the years 2009-2014 by Scopus and Department of Science & Technology, Government of India and recently listed among the top 2% of World's researchers by the Stanford University with a very high ranking in Medicine and Cardiology. Recognising his contribution to Indian Science, he was elected as a fellow of the Indian National Science Academy, the highest science academy of India. He has won several awards and accolades, including the Quality Champion by the Quality Council of India. He was conferred the Doctor of Science (Honoris Causa) by the University of Glasgow recently.

His exceptional contributions spanning Science, Medicine and Public Health has catapulted the field of Preventive Cardiology in India and the Low and Middle-income countries.

2 Controversies surrounding use of colchicine in coronary artery disease

Arshed A. Quyyumi MD

Professor of Medicine, Division of Cardiology
Emory University School of Medicine
Director, Emory Clinical Cardiovascular Research Institute
Bruce Logue Chair for Cardiovascular Research

The pivotal role of inflammation in the initiation, progression, and acute destabilization of atherosclerosis is well recognized. Anti-inflammatory therapy is emerging as a promising approach for management of coronary artery disease (CAD). Colchicine is the most extensively studied agent in this context. Nineteen clinical trials have been conducted with colchicine in patients with CAD to date with mixed results. Based on the positive results of the large-scale low-dose colchicine trial in secondary prevention of cardiovascular disease (LoDoCo2) and colchicine cardiovascular outcomes trial (COLCOT) trials, colchicine was recommended for secondary prevention in patients with previous myocardial infarction (MI).

However, the recent Colchicine and Spironolactone in Patients with Myocardial Infarction/SYNERGY Stent (CLEAR SYNERGY) (OASIS 9) trial in patients with acute ST-segment elevation MI who received either colchicine or placebo as soon as possible after percutaneous coronary intervention, found no improvement in outcomes with colchicine. These differences suggest that colchicine may be less effective in the acute and sub-acute STEMI settings, potentially due to the higher inflammatory response immediately post-MI. The lower dose of 0.5mg in this setting may have been inadequate, as subgroup analysis suggested that those receiving the 0.5 mg twice daily dose may have had benefitted. The role played by other concomitant therapies including DAPT in the CLEAR SYNERGY trial may also have contributed, as the anti-platelet effects of colchicine may also be contributing to its potential benefit. Finally, the Covid outbreak that disrupted follow-up in large clinical trials may have also contributed to the overall negative findings, as those enrolled prior to the Covid pandemic had a 22% reduction in MACE.

Arshed Quyyumi, MD

Professor of Medicine

Division of Cardiology, Department of Medicine, Emory University School of Medicine

Director

Emory Clinical Cardiovascular Institute

Dr. Quyyumi is currently a tenured Professor of Medicine in the Division of Cardiology at Emory University School of Medicine and Co-Director at Emory Clinical Cardiovascular Research Institute. He is Board certified in Internal Medicine and Cardiology, and is a Fellow of the Royal College of Medicine.

He graduated from Guy's Hospital medical school in London, and after accomplishing part of his medicine and cardiology training in London, he completed his fellowship training at Massachusetts general Hospital, Harvard University in Boston and at the National Institutes of Health (NIH), Bethesda, Maryland. He was a Senior Investigator and director of the cardiac catheterization laboratory at the Cardiology Branch of the National Institutes of Health for several years before arriving at Emory.

His research focus over the last quarter century has been on clinical and translational research in vascular biology, progenitor cells and angiogenesis, biomarkers and cardiovascular genomics. He has performed seminal studies investigating mechanisms of myocardial ischemia including silent ischemia in the past. His current studies include comprehensive assessment of vascular endothelial function and arterial stiffness and thickness in patients with arteriosclerosis and its risk factors. Other studies investigate the role of genetic and environmental risks on

vascular disease, and particularly in relation to health disparities. He is also conducting clinical trials with bone marrow derived stem cells and progenitors in cardiovascular disease. He has published over 250 manuscripts in peer-reviewed journals.

Publications

View publications on PubMed

3 Shared Pathways and Risk: Impact of Oxidized Lipids on Heart–Brain Vascular Integrity

Mahdi Garelnabi, PhD, MSc., FAHA*

University of Massachusetts, Lowell, MA, USA

Oxidized lipids represent a critical intersection between cardiovascular and neurovascular pathology, acting as a mutual threat to the structural and functional integrity of blood vessels in both the heart and brain. These bioactive lipid species, primarily generated through the oxidative modification of low-density lipoproteins (oxLDL), cholesterol, fatty acids and phospholipids under conditions of metabolic stress, orchestrate a complex cascade of inflammatory, apoptotic, and endothelial-disruptive events. Their accumulation is a hallmark of chronic diseases characterized by vascular dysfunction, such as atherosclerosis and ischemic stroke, and increasingly recognized in neurodegenerative conditions linked to compromised blood-brain barrier (BBB) integrity.

At the vascular level, oxidized lipids impair endothelial cell function by downregulating nitric oxide (NO) production through endothelial nitric oxide synthase (eNOS) uncoupling, and by upregulating adhesion molecules (e.g., VCAM-1, ICAM-1) via NF-κB activation. The engagement of pattern recognition receptors such as LOX-1 (lectin-like oxidized LDL receptor-1), CD36, and Toll-like receptors (TLRs), particularly TLR4, leads to pro-inflammatory cytokine release (e.g., TNF-α, IL-1β), reactive oxygen species (ROS) production, and enhanced monocyte recruitment. These events compromise vascular permeability and initiate endothelial-to-mesenchymal transition (EndoMT), contributing to intimal thickening and plaque formation in arteries, while simultaneously weakening the tight junctions of the BBB in cerebral vessels.

In the heart, these mechanisms culminate in endothelial dysfunction, foam cell formation, and plaque rupture, promoting myocardial infarction and heart failure. In the brain, oxidized lipids trigger pericyte loss, astrocyte activation, and microglial priming key events in BBB disruption, cerebral small vessel disease, and progression of vascular cognitive impairment. Moreover, oxidized phospholipids interfere with lipid raft function and membrane signaling, amplifying neuronal vulnerability and potentially linking vascular injury to neurodegeneration.

In summary, oxidized lipids serve as a common pathological thread weaving together cardiovascular and cerebrovascular disease. Their capacity to destabilize vascular integrity via conserved molecular pathways presents an opportunity for integrated therapeutic strategies targeting oxidative lipid metabolism to preserve both heart and brain health.

Mahdi Garelnabi, PhD, MSc, FAHA

Associate Professor of Biochemistry
Department of Biomedical and Nutritional Sciences
University of Massachusetts Lowell, 01854, USA

Education and Training

2001 Ph.D. Clinical Biochemistry, Delhi University.
1994 M.Sc. Clinical Biochemistry, University of Bombay.
1987 B.Sc. Biology, University of Khartoum.

Positions and Employment

2015-	*Associate Professor, Department of Biomedical & Nutritional Science, UMass Lowell*
2009-2015	*Assistant Professor, Department of Clinical Lab & Nutritional Science, UMass Lowell*
2008-2009	*Senior Clinical Scientist, Siemens Healthcare Diagnostics Inc, DE*
2006-2008	*Research Scientist, the Ohio State University, Columbus, OH*
2001-2006	*Postdoc Fellow, Department of OBGYN, and Cardiology, Emory University, Atlanta, GA*

Other Positions

2022-	*NIH study section member, Integrative Vascular Biology and Hematology Review Branch*
2021-	*Associate Editor, Atherosclerosis and Vascular Medicine, Frontiers in Cardiovascular Medicine*
2021-	*Chair, Diversity, Inclusion and Equity Committee, NAVBO,*
2020-	*Member of the Advisory Panel, The Massachusetts Life Sciences Center, Accelerating Coronavirus Testing Solutions (A.C.T.S.)*
2020-	*Member of the NIH Rapid Acceleration of Diagnostics (RADx) review panel*
2016-2019	*Chair, Diversity committee for the ATVB council of the American Heart Association*
2016-	*Member, Senior Awards Committee, Society for Redox Biology and Medicine,*
2016	*Chair, Organizing Committee, NEAACC Conference.*
2014-2015	*Chair, American Association for Clinical Chemistry (Northeast Section)*
2013-	*Program Chair, American Association for Clinical Chemistry (Northeast Section)*
2013-	*Member of the Leadership Committee, American Heart Association (ATVB)*
2012-	*Member of the Massachusetts American Heart Association, My Heart My Life committee*

Professional Memberships

2015-	*Society for Redox Biology and Medicine (SFRBM)*
2014-	*International Society of Antioxidants in Nutrition and Health (ISANH)*
2014-	*National Lipids Association*
2013	*The American Society for Biochemistry and Molecular Biology (ASBMB)*
2012	*The European Atherosclerosis Society*
2011-2014	*Sigma Xi Society*
2010-	*Greater Boston Mass Spectrometry Discussion Group (GBMSDG)*
2005-	*North American Vascular Biology Organization*
2004-	*The American Heart Association*
2004-	*The American Association for Clinical Chemistry*
1998	*Life Member of the Indian Society of Hematology and Transfusion Medicine*
1996	*Life Member of the Association of Clinical Biochemists of India*

Awards and Honors

2017	*Service Award, Northeast Section, American Association for Clinical Chemistry*
2016	*The CL&NS Teaching Excellence Award for the 2015-2016*
2015	*Innovations in Teaching: Interdisciplinary Teaching, University of Massachusetts*
2014	*Fellow of the American Heart Association (FAHA)*
2005	*Junior Investigator Travel Award, North America Vascular Biology Organization*
2000	*Senior Research Fellowship Award, University Grants Commission, India*
1998	*Junior Research Fellowship Award, University Grants Commission, India*

4 Title: A Practice of Extracting Ejection Fraction Value from Medical Note

Yanjia Zhang, PhD; Venkataraghavan Ramamoorthy MD PhD; Anshul Saxena, BDS, PhD; Sonal Yadav MS; Md Ashfaq Ahmed, PhD; Zhenwei Zhang, PhD; Sandra Chaparro, MD, FACC FAHA FHFSA

Background: Ejection Fraction (EF) is a key parameter in assessing heart function, which measures the percentage of blood the left ventricle pumps out with each contraction. EF is typically evaluated using imaging techniques such as echocardiography or magnetic resonance imaging (MRI), which are separate systems from many electronic health record (EHR). Meanwhile, it has multiple ways to be calculated. All of these are challenges for clinicians to enter the EF into a EHR as structured data. With unstructured EF data, it complicates secondary data analysis.

Purpose: Our goal is to develop an efficient and cost-effective method to extract EF data from free-text notes using simple natural language processing (NLP) techniques.

Methods: Python functions from natural language processing (NLP), including tokenization, pattern recognition, keyword detection, and numerical data extraction, were utilized to process the free-text notes. Given the variability in how EF is represented within the text, multiple steps were designed to address different patterns corresponding to various formats of EF sentences. The process involved identifying sentences containing relevant keywords, verifying the proximity of EF values to these keywords, extracting the numerical values associated with EF, and ensuring the accuracy of the extracted data by cross-checking and correcting any abnormal values. The overall approach aimed to systematically locate EF-related sentences, validate the extracted information, and present the findings in a structured and reliable manner.

Results: A total of 21,679 records were extracted from the data warehouse, containing both entries with and without ejection fraction (EF) values within the free-text notes. Out of these records, 16,539 (76.3%) successfully had their EF values extracted using NLP techniques. The extracted EF values included both single values and ranges. The extraction process accounted for these variations and ensured the accurate identification of EF values across different sentence structures.

Discussion: From this practice, the primary challenge lies in identifying the appropriate patterns to accommodate the diverse formats in which EF is represented. A second challenge is extracting the EF value when it is mentioned in a separate sentence, particularly when the keywords are not immediately adjacent to the EF value or when the EF follows another numerical measurement. Another challenge arises from the text used to describe patients' conditions, such as phrases like "EF in normal range" or "EF within normal limits". Addressing these challenges requires creating flexible and robust NLP patterns that can accurately capture EF data across different contexts and sentence structures.

***Yanjia Zhang**, earned a PhD in Statistics from the University of South Florida in 2021.Then, Yanjia undertook a postdoctoral fellowship at Boston University's School of Public Health, where her research focused on advancing public health analytics, especially using machine learning in detection of disease outbreaks, as well as the application for public health surveillance systems. In 2023, Yanjia joined Baptist Health South Florida as a biostatistician. Her research specializes in developing innovative methodologies and artificial intelligence applications for predictive modeling and diagnostic classification, particularly in the areas of cancer and cardiology. These applications aim to enhance the understanding of diseases, support reliable treatment decisions, and improve patient care.*

5 Identifying Novel Determinants of Death and Readmission Post-Stroke Using Explainable Machine Learning Algorithms

Emir Veledar, Lili Zhou, Hannah Gardener, Carolina M. Gutierrez, Scott C. Brown, Farya Fakoori, Karlon H. Johnson, Gillian Gordon Perue, Negar Asdaghi, Jose G. Romano, Tatjana Rundek

Background

Identifying new determinants of death and hospital readmission can help inform target patient populations at high risk for poor transitions of care. Explainable machine learning (XML) algorithms are valuable tools to determine novel modifiable predictors in complex datasets. The goal of this study was to identify risk factors for death and readmission within 90 days post-stroke, focusing on novel non-clinical factors, including social determinants of health (SDOH), neighborhood characteristics, and post-stroke health behaviors. To achieve this goal, we explored the results of 11 distinct XML models, to identify predictors that were common and strong across models.

Methods

The study population included 1300 stroke survivors in the Transitions of Care Stroke Disparities Study (TCSD-S), a prospective cohort of patients from 10 comprehensive stroke centers who participated in the Florida Stroke Registry in 2018-2023 (mean age=63.8 (13.9), 56% male, 22% Hispanic, 23% Non-Hispanic Black,51% Non-Hispanic White; 92% ischemic stroke). 90-Day death and readmission (N=192) were obtained from patient interviews and review of medical records. Data on 65 potential risk factors were obtained from Get With The Guidelines-Stroke (demographics, clinical characteristics, medical history, acute care), as well as publicly available neighborhood characteristics (SES, race/ethnicity, business density), and patient interviews at discharge (SES, living arrangement, social support) and 30 days post-stroke (health behaviors). We used 11 distinct XML models to identify the top 12 predictors of death or readmission in each model, resulting in 38 out of 65 distinct predictors across models. Predictors were ranked based on strength of association and consistency across models using feature agreement.

Table 1 Model Fits for Algorithms with 10-fold cross-validation (Yes: 192 vs No: 1035)

Algorithms	c-Statistic	Squared-error Loss	Logistic Loss	Misclassification Rate
Logistic Regression	0.615	0.144	0.533	0.181
Forward Selection	0.616	0.134	0.531	0.160
LASSO	0.655	**0.126**	**0.414**	0.158
Ridge	**0.660**	**0.126**	0.427	0.157
Principal Component Regression	0.595	0.130	0.434	**0.156**
Elastic Net	0.651	**0.126**	**0.414**	0.159
K-Nearest Neighbor	0.612	0.131	0.507	0.157
Support Vector Machine	0.622	0.145	0.557	0.157
Random Forest	0.642	0.128	0.423	0.158
Gradient Boosting	0.607	0.146	0.555	0.173
XGBoost	0.619	0.143	0.536	0.174

Results

Table 1 shows model fit statistics across all XML models with best values in bold. Out of 38 identified predictors, 20 are non-clinical variables. Table 2 shows their rank order. The identified variables reflect the importance of SDH, environmental factors, and behavioral modifications, beyond traditional clinical predictors of death/readmission.

Conclusion

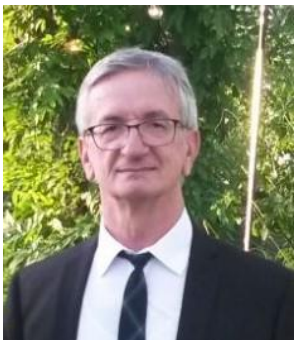
XML methods emphasized the importance of non-clinical factors, including SDOH, environmental factors, and behavioral modifications, in transitions of stroke care and stroke outcomes. This illustration of the ability of XML models to find novel and nonobvious predictors may increase the trust in results produced by XML.

Table 2 Non-Clinical Variable Name and Importance among 38 Predictors

Type of insurance (3)	Adherence to ATOC* (4)
Crowding** in neighborhood (10)	%White in neighborhood (13)
Difficulty paying for medical care (15)	Median house income in neighborhood (17)
Rehab count in neighborhood (19)	Total housing population in neighborhood (20)
%Bachelors or higher in neighborhood (21)	Housing density*** in neighborhood (24)
Social support**** (26)	%Below poverty in neighborhood (27)
%Black in neighborhood (28)	%High school or higher in neighborhood (29)
%Hispanic in neighborhood (30)	%Unemployment in neighborhood (31)
Alcohol business density in neighborhood (32)	Prior employment status (34)
Gym business density in neighborhood (35)	Restaurant business density in neighborhood (36)

*ATOC: Adequate Transition of Care, the measure of patient achievement of at least 75% of recommended healthy behaviors and activities (diet modification, weekly exercise, follow-up medical appointment attendance, medication adherence, therapy use, and toxic habit cessation) within 30 days post-stroke hospitalization
**Crowding: Total housing population in neighborhood / (Count housing units in neighborhood * Median rooms in neighborhood)
***Housing density: Total housing population owner in neighborhood / Total housing population in neighborhood
****Social support: Number of persons that patient feels close to

PROF. DR. Emir Veledar



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6 Derivation and Validation of a Machine Learning Digital Twin Matching Model for Risk Assessment of Cardiovascular Interventions

Peter McGranaghan, Nils Hinrichs, Anshul Saxena, Sharat Kothakapu, Muni Rubens, Emir Veledar, Alaa Abd El Al, Alexander Meyer

Background

Cardiovascular disease (CVD) remains the leading global cause of mortality. Clinical decision-making for interventions such as percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG) relies on risk scores like EuroSCORE, STS, and Syntax Score, but substantial variation exists in treatment selection. We developed a novel machine learning-based digital twin model that matches patients to their most similar historical counterparts per treatment type to optimize decision-making.

Methods

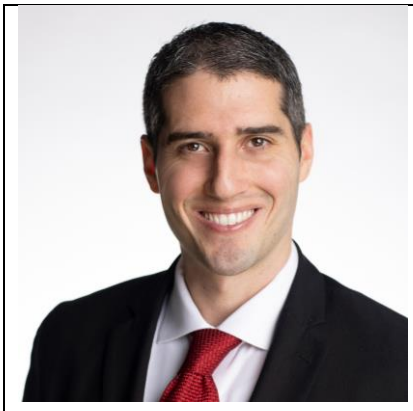
We derived the model using PCI and CABG cases from the DukeCath registry and validated it on the German Heart Center (DHZC) dataset. The National Surgery Quality Improvement Program (NSQIP) dataset was used for sensitivity analysis, incorporating transcatheter aortic valve replacement (TAVR) and surgical aortic valve replacement (SAVR). Predictor variables included demographics, labs, medical history, and medications (DukeCath *n*=30, DHZC *n*=42, NSQIP *n*=41). The outcome was defined as 30-day stroke, MI, or all-cause death for the DukeCath; 30-day stroke, MI, all-cause death, or ICU admission due to surgery complications for the DHZC, and major intra- or post-operative complications (sepsis, acute renal failure, pulmonary embolism, ventilation within 48 hours, unplanned intubation, myocardial infarction, cardiac arrest requiring CPR, stroke/CVA, all-cause mortality) for NSQIP data. Machine learning models (ridge regression, lasso, random forest, gradient boosting) were built to calculate risk probabilities. Synthetic data was generated via variational autoencoders (VAE) to increase the size of the validation data set for matching. Similarity of the synthetic data vs real data was assessed by evaluating column shapes and column pair trends. Test data were matched to the pooled real and synthetic validation sets using principal component analysis and Mahalanobis distance. Each test set patient was assigned a PCI, CABG, SAVR, or TAVR risk probability – risk the probabilities and survival time were taken from the matched patient. The procedure with the lower risk probability was assigned to each patient as the predicted procedure type. For comparison of predicted vs actual risk, Kaplan-Meier survival analysis plotted actual vs. predicted survival times.

Results

Among *n*=22,080 DukeCath patients (*n*=10,195 PCI; *n*=11,885 CABG), 6% experienced adverse outcomes. In DHZC (*n*=1,928; *n*=209 PCI; *n*=1,723 CABG), 19% experienced outcomes. NSQIP (*n*=4,861; *n*=1,221 SAVR; *n*=3,640 TAVR) had a 14% adverse event rate. The model achieved AUCs of 0.74 (DukeCath), 0.84 (DHZC), and 0.71 (NSQIP). Synthetic data showed over 90% similarity compared to real data and similar AUCs as the real data. Mean standardized mean differences for matching were 0.072, 0.09, and 0.062, respectively. Predicted survival exceeded actual survival by 5% (DukeCath), 12% (DHZC), and 5% (NSQIP).

Conclusion

Our machine learning-based digital twin matching system enables personalized ‘what-if’ risk assessment by linking patients to similar historical cases. Validated across three independent cohorts, this model demonstrated strong predictive performance and survival benefits for PCI, CABG, SAVR, and TAVR procedure types. Its integration with synthetic data further enhances robustness of matching, supporting its potential for widespread clinical application in cardiovascular intervention decision-making.



***Peter McGranaghan MS, PhD**: He has experience in data warehousing, data extraction and data science methods using medical and clinical data. He received his Ph.D in Biotechnology from the Charité Universitätsmedizin, Cardiovascular Clinical Research Unit, Berlin, Germany. His research includes the development of predictive algorithms using digital and molecular biomarkers from electronic health records and registry data for outcome prediction of cardiovascular disease patients. He currently works as a medical data scientist at the German Heart Center at the Charité where he is leading the development of an AI-augmented clinical decision support system for the cardiothoracic surgery department's Heart Team.*

7 ODNOS LIJEČNIK - BOLESNIK

Dragan Babić,

Sveučilište u Mostaru, 88000 Mostar, Bosna i Hercegovina

Uspješna komunikacija između liječnika i bolesnika od iznimnog je značaja za sami tijek kao i ishod bolesti. Komunikacija je iznimno važan faktor u liječenju jer bolestan čovjek proživljava brojne emocije na svjesnom i nesvjesnom planu. Naročito je važna dinamika bolesnika s njegovim liječnikom. Svako liječenje počinje razgovorom. Prije bilo kakvog medicinskog postupka liječnik uzima anamnezu bolesnika; osim somatskih simptoma upravo pri inicijalnom susretu liječnik ima priliku čuti promišljanja, strahove, želje, životne navike i perspektive pacijenta, što omogućuje priliku da se bolesnik sagleda kao individua sa svojim psihofizičkim osobinama koje ga razlikuju od svakog drugog pacijenta.

Kako bi se uočila i uvažila emocionalna strana bolesti, liječnici trebaju uspostaviti komunikaciju s bolesnikom koja osim spominjanja fizičkih simptoma obuhvaća i razgovor o psihičkim tegobama, socijalnim i obiteljskim uvjetima i promjena na poslovnom planu koji potencijalno prate bolest i stvaraju tjeskobu kod bolesnika. Liječnik i ostalo zdravstveno osoblje ima veliku ulogu u aktivaciji bolesnika pri liječenju, njegovi savjeti i naputci su ono što se od pacijenta očekuje da primijenjuje samostalno. Bolja informiranost i angažman liječnika oko pacijenata dovodi i do boljeg suočavanja s bolešću i aktivnijeg pristupa samozbrinjavanju bolesti, što na kraju daje i bolju prognozu bolesnicima. U posthospitalnom liječenju od pacijenta se traži pridržavanje uputa i disciplinirana briga za svoje zdravlje o čemu ovisi i ishod bolesti, što dodatno naglašava značaj uspostavljanja adekvatnog odnosa i povjerenja između bolesnika i medicinskog tima.

Ključne riječi: odnos, liječnik, bolesnik

Prof. dr. sc. Dragan Babić, dr. med.

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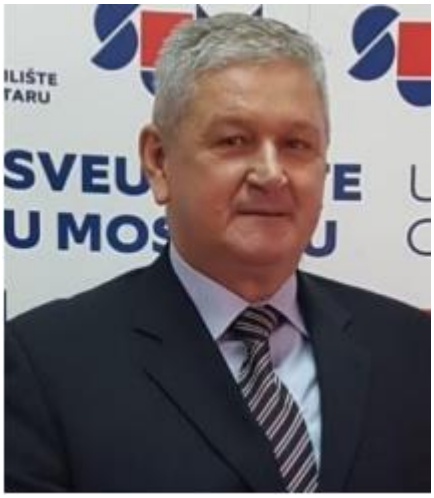

Specijalist neuropsihijatar, subspecijalist socijalne psihijatrije, stalno zaposlen na Klinici za psihijatriju Sveučilišne kliničke bolnice Mostar, aktualno kao voditelj Odjela za kronične psihoze. Sveučilišni profesor na Medicinskom, Zdravstvenom, Filozofskom i Pravnom fakultetu Sveučilišta u Mostaru gdje obnaša funkciju pročelnika više katedri iz oblasti psihijatrije i psihologije. Prodekan za znanosti i međunarodnu suradnju (2013.-2021.) i glavni urednik elektroničnog časopisa Zdravstveni glasnik Fakulteta zdravstvenih studija od 2014.g. Glavni urednik časopisa Radovi, Hrvatskog društva za znanost i umjetnost BiH od 2021. Gost urednik Suplementa časopisa Psychiatria Danubina 2017. i 2020.g. Školovao se na Sveučilištu u Tuzli i Mostaru, a programe izobrazbe prošao je i u Republici Hrvatskoj, Sloveniji i Italiji. Jedan je od plodnijih znanstvenika na Sveučilištu u Mostaru. Sudjelovao je u pisanju 17 knjiga, 5 kao autor i 12 kao koautor, a bio i recenzent više knjiga. Izlagao je na brojnim znanstvenim konferencijama, simpozijima i kongresima u domovini i inozemstvu. Do sada je autor i koautor preko 200 stručnih i znanstvenih radova objavljenih u domaćim i stranim časopisima. Do sada u Google Scholaru ima 1452 citata. H index:17; i10 index:38. (15.3.2023.) Voditelj više projekta za koji je dobio potporu Federalnog ministarstva za znanost kao i sudionik u više međunarodnih projekata. Mentor je 14 doktorskih disertacija, preko 80 magistarskih radova i oko 300 završnih radova. Aktualno je predsjednik je Udruge psihijatara BiH, a istu funkciju je obnašao u periodu 2013-2014. godine. Predsjednik Organizacionog odbora međunarodnog simpozija Mostarska psihijatrijska subota od

2003. do 2023. godine, te predsjednik organizacionog odbora za Bosnu i Hercegovinu 23. Psihijatrijskog kongresa podunavskih zemalja koji je održan u Mostaru 2008. godine. Završio brojne edukacije iz oblasti psihijatrije: psihotraumatologija, ovisnosti, suicidalnost, grupna psihoanaliza. Član je Hrvatske akademije za znanost i umjetnost i član Internacionalne akademije nauka i umjetnosti u BiH. Dobitnik Plakete Sveučilišta u Mostaru za izniman doprinos razvoju Sveučilišta kroz istaknuti rad na znanstvenom, nastavnom i stručnom polju, 2018, 2019. i 2020. Rođen je u Živinicama 10.6.1958. godine, oženjen, živi u Mostaru sa suprugom, ima dvoje djece i dva unuka. U tijeku proteklog rata od 1992.g. do 1994.g. aktivno uključen u obranu Bosne i Hercegovine. Nositelj Srebrne plakete Crvenog križa Federacije Bosne i Hercegovine zbog darivanja 50 doza krvi.

8 Stanje KVB u 2025.-AHA 2025 ažuriranje

Emir Fazlibegović, Emir Veledar

Uprkos evidentnom smanjenju smrti zbog KVB od 1950.-2021. za 72% , KVB ostaju i dalje ubica broj 1 u svijetu.Globalna stopa smrtnosti od KVB u svijetu je 235,2 na 100 hiljada, dok je u SAD nešto veća i iznosi 224,3 na 100 hiljada stanovnika. Zapažena je prerana smrtnost od KVB u siromašnim zemljama. Postoji rastuća prevalencija gojaznosti, hipertenzije i dijabetesa. Tako u 2020.g. je u SAD bilo 108 miliona gojaznih,a 122 miliona sa hipertenzijom. Do 2050. će u SAD biti preko 180 miliona gojaznih i hipertoničara, a preko 50 miliona sa dijabetesom. Postoje rasne i etničke razlike u SAD. Tako je stopa smrtnosti crnaca duplo veća od bjelaca, dok hispanjolci imaju najveću stopu gojaznosti. Zagađenost zraka je dodatni riziko faktor koji se probija naprijed i premašuje dijabetes i pušenje zajedno. Zajedno sa ovim faktorima rizika, troškovi zdravstvene zaštite vezani za KVB iznose 417,9 milijardi dolara u 2020-2021., dok su indirektni troškovi zbog gubitka produktivnosti značajni. Do 2050.g. ovi troškovi će se utrostručiti i iznositi cca 5% američkog BDP.
Stanje u Bosni i Hercegovini pokazuje kontinuirani trend opadanja smrtnosti od KVB od 1985.-2022. Vodeći uzroci smrti su ishemijske bolesti srca i moždani udar, a glavni faktori rizika su hipertenzija, visok LDL holesterol i zagađenje.
Zaključak: potrebne su ciljani projekti intervencije i liječenja kao i promjena politike u zdravstvu i bolji pristup liječenju.
The State of CVD in 2025 - AHA 2025 Update
Emir Fazlibegović, Emir Veledar

Despite the evident decrease in CVD deaths from 1950 to 2021 by 72%, CVD remains the number 1 killer in the world. The global CVD mortality rate in the world is 235.2 per 100 thousand, while in the USA it is slightly higher and is 224.3 per 100 thousand inhabitants. Premature mortality from CVD has been observed in poor countries. There is a growing prevalence of obesity, hypertension and diabetes. Thus, in 2020, there were 108 million obese people in the USA, and 122 million with hypertension. By 2050, there will be over 180 million obese and hypertensive people in the USA, and over 50 million with diabetes. There are racial and ethnic differences in the USA. Thus, the mortality rate of blacks is twice that of whites, while Hispanics have the highest obesity rates. Air pollution is an additional risk factor that is gaining ground and exceeds diabetes and smoking combined. Together with these risk factors, healthcare costs related to CVD amount to $417.9 billion in 2020-2021, while indirect costs due to lost productivity are significant. By 2050, these costs will triple and amount to approximately 5% of US GDP.
The situation in Bosnia and Herzegovina shows a continuous downward trend in CVD mortality from 1985-2022. The leading causes of death are ischemic heart disease and stroke, and the main risk factors are hypertension, high LDL cholesterol and pollution.
Conclusion: targeted intervention and treatment projects are needed, as well as changes in health policy and better access to treatment.

Emir Fazlibegović
primarijus, dr medicine, specijalist interne medicine, subspecijalista iz kardiologije, ESC, FESC, dopisni član BHAAAS, redovni član IANUBIH, koordinator regionalnog ogranka IANUBIH - Mostar

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Rođen u Mostaru, 28.04.1953.g., 1967. završio osnovnu školu, 1971.g.završio gimnaziju u Mostaru, a 25.11.1976.g. diplomirao na Medicinskom fakultetu u Beogradu i stekao zvanje doktora medicine.24.04.1978.g. položio stručni državni ispit za zvanje ljekara, a 1978/79.g. završio Sanitetsku oficirsku školu (SOŠ) Vojno medicinske akademije (VMA), a 19.03.1987.g. magistrirao na Medicinskom fakultetu u Beogradu iz oblasti kardiologije.

26.03.1987.g. stekao naziv specijaliste iz interne medicine na Medicinskom fakultetu u Beogradu. Nakon završene specijalizacije interne medicine i magisterijuma iz kardiologije te edukacije iz ehokardiografije radio: od 1987. kao kardiolog u koronarnoj i postkoronarnoj jedinici, kardiološkoj ambulanti, ergometrijskom kabinetu; 1987.g. osnovao ehokardiografski i holterkardiografski kabinet, a 1991.-1995.g. proveo rat u Ratnoj bolnici u Mostaru, a potom u KB Mostar te SKB Mostar; 07.04.2001. mu je dodijeljena titula PRIMARIJUSA Od 2002.g.,a nakon edukacije u Sarajevu i Splitu vrši implantacije pace-makera srca na Internoj klinici u Mostaru te vodi pace-maker kabinet. Radio je i bio rukovodilac projekta Univerzitetsko područje Mostar (od 1987.-1992.). Učestvovao u projektu "Zdravlje za sve do 2000.g." Instituta za socijalnu medicinu Medicinskog fakulteta UMC Sarajevo i bio Rukovodilac i direktor Škole Crvenog krsta Bosne i Hercegovine do 1992.2002.g. na Evropskom kongresu kardiologa u Berlinu je promovisan u Fellow of ESC (FESC),a organizator, stalni predavač i ispitivač na Školi ultrazvuka srca u Tuzli od 2003.-2012. 2005.g.je dobio diplomu evropskog kardiologa, a 21.09.2006. na Medicinskom fakultetu u Sarajevu je odbranio doktorsku disertaciju i stekao naučni stepen doktora medicinskih nauka te 05.04.2007.je izabran za nastavnika u zvanju docenta na Nastavničkom fakultetu Univerziteta „Džemal Bijedić“ u Mostaru za užu naučnu oblast Medicina sporta, a 04.11.2015. ponovno reizabran, te 29.09.2016. izabran za docenta za užu naučnu oblast Interna medicina na univerzitetskom studiju „Zdravstvena njega“ na Univerzitetu „Džemal Bijedić“ u Mostaru. Objavio 144 rada kao prvi autor te 167 radova kao koautor te objavio 17 knjiga monografija kao prvi, a 23 kao koautor. Dobitnik više društvenih priznanja i nagrada za humanitarni i društveni rad, a među njima Plaketa i Zlatni znak priznanja Crvenog krsta Jugoslavije i Crvenog krsta Bosne i Hercegovine, Plaketa MDD Merhamet, Plaketa VKBI, Srebrena i Zlatna medalja Udruženja kardiologa Bosne i Hercegovine i više drugih priznanja. Dopisni je član Bosansko Hercegovačko Američke akademije nauka i umjetnosti (BHAAAS) od 2013., a Internacionalne akademije nauka i umjetnosti u Bosni i Hercegovini (IANUBIH) od 2021.te redovni član IANUBIH od 2022. i koordinator Regionalnog ogranka IANUBIH Mostar. Član je Vijeća kongresa bošnjačkih intelektualaca (VKBI) od njegovog osnivanja 1994..te podpredsjednik Regionalnog odbora VKBI Mostar

9 Stratification of Cardiovascular Disease Risk in Women Using SCORE and SCORE2 Algorithms in a High-Risk Population

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Introduction: Cardiovascular diseases (CVD) are the leading cause of death and premature mortality in women in Bosnia and Herzegovina (BiH) and globally. The number of women who die from circulatory diseases is higher than in men, and in 2023, they accounted for 49.1% of deaths in women, compared to 43.41% of deaths in men in Federation of BiH. Assessing cardiovascular risk is crucial in reducing the occurrence of adverse cardiovascular events. The European Society of Cardiology introduced the new SCORE2 algorithm in 2021, with significant changes compared to the previous SCORE model.

The aim of this study is to determine whether there is a difference in cardiovascular risk stratification in women using SCORE2 compared to SCORE in the same population of women.

Methods: The cross-sectional study included women aged 40-69 years without previous known Atherosclerotic Cardiovascular Disease, Diabetes, Chronic Kidney Disease or Familial Hypercholesterolemia as a part of a preventive program from 21 Family Medicine Teams of Health Center of Sarajevo Canton, Bosnia and Herzegovina. Based on the estimated cardiovascular risk profile using the SCORE and SCORE2 models, patients were stratified into 4 categories—low, moderate, high, and very high risk—according to SCORE, and into 3 categories—low to moderate, high, and very high risk—according to the SCORE2 model.

Results: Out of a total of 720 women included in the study, 219 (30.4%) were smokers, the mean value of age was 54.95±7.31 years, systolic blood pressure was 129.34±15.51 mmHg, and body mass index was 26.6±8.81 (kg/m2). The mean value of total cholesterol was 6.05±1.29 mmol/L, low-density lipoprotein (LDL) was 3.74±1.15 mmol/L, high-density lipoprotein (HDL) was 1,5±0,56 mmol/L, triglycerides was 1.83±1.07mmol/, and non-HDL was 4.55±1.28mmol/L. Using the SCORE algorithm, 481 (66,8%) of the participants were classified as low to moderate risk, 176 (24,4%) as high risk, and 63 (8,8%) as very high risk. After applying SCORE2, 364 (50.6%) were classified as low to moderate risk, 226 (31.4%) as high risk, and 130 (18.1%) as very high risk. There is a significant difference in the stratification of patients using the SCORE and SCORE2 algorithms (chi-square [4, n=720] =110.528, p<0.001 (Table 1).

Conclusions: Our results suggest that by using SCORE2, a larger proportion of the female population will be classified as having high or very high cardiovascular risk, which could contribute to better cardiovascular risk reclassification in women and, in turn, enable the intensification of cardiovascular disease prevention measures in primary healthcare.

Table 1 Distribution of cardiovascular risk categories of individuals 40-69 years of age using SCORE and SCORE2

	Risk categories	SCORE2			
		Low-to-moderate	High	Very high risk	Total
SCORE	Low-to-moderate	306 (42.5%)	110 (15.3%)	65 (9.0%)	481 (66.8%)
	High	54 (7.5%)	80 (11.1%)	42 (5.8%)	176 (24.4%)
	Very high risk	4 (1.1%)	36 (5.0%)	23 (3.2%)	63 (8.8%)
	Total	364 (50.5%)	226 (31.4%)	130 (18.1%)	720 (100.0%)
	χ^2 [4, n=720] = 110,518, p<0,001				

SCORE, Systematic Coronary Risk Evaluation

Stratifikacija kardiovaskularnog rizika kod žena primjenom SCORE i SCORE2 algoritma u populaciji sa visokim rizikom

Uvod: Kardiovaskularne bolesti (KVB) su vodeći uzrok umiranja i prerane smrti kod žena u Bosni i Hercegovini (BiH) i širom svijeta. Udio cirkulatornih bolesti kao uzroka smrti je veći kod žena u odnosu na muškarce, i u 2023 godini su bile uzrok 49,1% smrti kod žena, odnosno, 43,41% smrti kod muškaraca u Federaciji BiH. Procjena kardiovaskularnog rizika je ključna u smanjenju pojave neželjenih kardiovaskularnih događaja. Europsko kardiološko društvo je u 2021. godini predstavilo novi algoritam SCORE2, sa značajnim promjenama u odnosu na predhodni SCORE.

Cilj studije je prikazati postoji li razlika u stratifikaciji rizika od kardiovaskularnih bolesti kod žena primjenom SCORE2, u odnosu na SCORE u istoj populaciji žena.

Metode: Sprovedena je presječna studija, u koju su uključene žene dobi od 40-69 godina bez predhodne poznate aterosklerotske kardiovaskularne bolesti, dijabetesa, hronične bolesti bubrega i hiperholesteremije u sklopu preventivnog programa 21 tima porodične medicine Dom zdravlja Kantona Sarajevo. Na osnovu procijenjenog profila kardiovaskularnog rizika primjenom SCORE i SCORE2, pacijenti su stratificirani u 4 kategorije – nizak, umjeren, visok i vrlo visok rizik - prema SCORE i u 3 kategorije - nizak do umjeren, visok i vrlo visok rizik - prema SCORE2 modelu.

Rezultati: Od ukupno 720 žena uključenih u istraživanje, prosječne dobi 54,95±7,31 godina, njih 219 (30,4%) je konzumiralo cigarete, prosječnog sistolnog krvnog pritiska 129,34±15,51 mmHg, prosječnog indeksa tjelesne težine 26,6±8,81 (kg/m2). Prosječna vrijednosti ukupnog holesterola je bila 6,05±1,29 mmol/L, lipoproteina niske gustoće (LDL) 3,74±1,15 mmol/L, lipoproteina visoke gustoće (HDL) 1,5±0,56 mmol/L, triglicerida 1,83±1,07mmol/L, non-HDL 4,55±1,28mmol/L. Primjenom SCORE algoritma 481 (66,8%) ispitanica je klasifikovano kao nizak do umjeren rizik, 176 (24,4%) ispitanica je klasifikovano kao visoki rizik, a 63 (8,8%) ispitanica kao veoma visok rizik. Nakon primjene SCORE2, 364 (50,6%) je klasifikovano kao nizak do umjeren rizik, 226 (31,4%) kao visok rizik, a 130

(18,1%) kao veoma visok rizik. Postoji značajna razlika u SCORE i SCORE2 stratifikaciji pacijenata, (hi-kvadrat [4, n=720] =110,528, p<0,0000 (Tabela 1). .

Zaključci: Naši rezultati sugeriraju da će sa primjenom SCORE2 veći udio populacije žena biti klasifikovan sa visokim ili vrlo visokim kardiovaskularnim rizikom i može doprinijeti boljoj reklasifikaciji kardiovaskularnog rizika kod žena i u nastavku omogućiti intenziviranje mjera prevencije KVB u primarnoj zdravstvenoj zaštiti.

Tabela 1 Distribucija kategorija kardiovaskularnog rizika žena dobi od 40-69 godina primjenom SCORE i SCORE2 algoritma.

	Kategorija rizika	**SCORE2**			
		Nizak do umjeren	**Visok**	**Veoma visok**	**Ukupno**
SCORE	Nizak do umjeren	306 (42,5%)	110 (15,3%)	65 (9,0%)	481 (66.8%)
	Visok	54 (7,5%)	80 (11,1%)	42 (5,8%)	176 (24,4%)
	Veoma visok	4 (1,1%)	36 (5,0%)	23 (3,2%)	63 (8,8%)
	Ukupno	364 (50,5%)	226 (31,4%)	130 (18,1%)	720 (100,0%)
	χ^2 [4, n=720] = 110,518, p<0,001				

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Associate professor Enisa Ademović, MD, MSc, PhD (F) is medical epidemiologist, serving as Head of the Department of Epidemiology and Biostatistics at Faculty of Medicine (FoM), University of Sarajevo (UNSA), from 2019-2023. All her degrees were obtained from FoM UnSa: MSc - communicable disease epidemiology and screening, 2013, and PhD –epidemiology of cardiovascular diseases, screening and the application of biostatistical methods in predictive models, 2018. Her research areas have been applied epidemiology of communicable and mass chronic disease, biostatistics, predictive models, regression models, screening, design study of infectouns and mass chronih diseases. With international background in the field of infectious disease epidemiology serving as EPIS European Legionnaires´ Disease Surveillance Network (ELDSNet) for Bosnia and Herzegovina from 2016-2024. Dr Ademović participated in several international training among them Professional retrening at Autonomus University of Barcelona, Epidemiology Unit of the Animal health and Anatomy and she completed five moduls of The Mediterranean Program for Intervention Epidemiology Training (MediPIET). She participated in international projects funded by UNDP-GF, Tempus, 2 projects The Federal Ministry of Education and Science and one cantonal ministry of education and science, and also she was a project manager for the University of Sarajevo of the Horizon 2020 project Uncover - Unraveling Data for Rapid Evidence-based Response to COVID-19. She is Member of the Management Board Cost Actions "The Mediterranean Cancer Screening and Early Board of Directors CA18208 - Novel Tools for test Evaluation and Disease Prevalence Estimation (Harmony) Cost CA21153. Dr Ademović was member of Crisis Staff of the Federal Ministry of Health and recipient of the Ministry of Health of the Federation of BiH award for outstanding contribution to the response to the COVID-19 pandemic. She also recipient of the “Paul Dudley White International Scholar Award” for a presented paper at the AHA EPI/Lifestyle Scientific Session 2019, Houston, USA. Dr Ademović is an author / co-author nineteen scientific papers published in peer-reviewed scientific journals as well as more than ten congress papers and 5 faculty textbooks.

10 TELEHEART - Role of hs -TnI for CV risk assessement

Goran Krstačić

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Cardiovascular diseases [CVD] are the leading cause of morbidity and mortality in developed countries, including Croatia. Besides disabilities and premature mortality as a significant public health problem, CVDs represent a large economic burden due to treatment costs and reduced productivity due to absenteeism. The main risk factors for CVDs are preventable – early detection and control. Inhabitants of rural, distant areas and island in Croatia do not have easy access to specialist cardiology services in hospitals.

The problem in the health care system in Croatia is the lack of health personnel, which affects the provision of health care to patients and thus the long waiting lists for diagnostic tests. The lack of specialists is particularly significant in rural areas and islands. In such areas, the population is predominantly elderly, there is a small number of young people who would facilitate care for the elderly. In rural areas, the distance to hospitals is long, which is necessary additional financial costs to patients. As a result, telecardiology enables simpler and faster diagnostics, reduces costs for the patient and the healthcare system, improves prevention and timely treatment of the patient. Since 2019, the Polyclinic for the Prevention of Cardiovascular Diseases and Rehabilitation "Srčana" has been included in the network of telemedicine centers and participates in the EU e-Training project „TELECORDIS" organized by the telemedicine service at the Croatian Institute of Emergency Medicine. From 2019 to today, Polyclinic "Srčana" started with only 3 centers, and today, has 23 telemedicine centers from rural areas of Croatia and is the leading institution in terms of the number of telemedicine centers in Croatia. Telecardiology services include analysis and reading of 12- channel ECG, Holter ECG and Holter BP findings, spirometry and cardiology consultations with GP according to the needs and urgency of the findings. Since the beginning of the use of telecardiology services in the Polyclinic, over 7000 findings have been made, of which more than 23% of patients were referred for further cardiology treatment. The purpose of the investment is to increase the availability of specialist cardiology services on primary care level to the population in rural and island areas by using telemedicine. 40 telemedicine access centers on primary care level equipped with medical and IT equipment for ECG holter monitors, blood-pressure holter monitors, spirometry and 12-channel ECG services – service provided by a medical technician 4 telemedicine specialist centers on secondary/terciary care level equipped with IT equipment and softwares for specialistic reading of patient's medical findings on distance – service provided by cardiology and pulmology specialists. Outcomes are: 1. Patient's medical findings read by specialist returned via telemedicine to primary care level Increasing availability of specialist medical services in local outpatient centers; 2. Enabling monitoring of patients' conditions through digitization of cardiology and pulmology services; 3. Providing patients with quick and accurate dyagnosis for timely treatment; 4. Improving efficiency of medical specialists; 5. Reducing waiting lists for specialist services; 6. Reducing costs of services; and 7. Avoiding patients' unnecessary travels towards clinical centers and exposure to possible further risks. So finally, we established project ***TeleHeart*** which means, *Telecordis* + Woman ann Heart experiences and results (mostly based on lab data *hs-TnI)* + telecardiology consultation (patient, GP and cardiologist by telemedicine)

Direction of travel: the patient in focus (center).

.

Akademik GORAN KRSTAČIĆ, FESC, FEHRA

Zagreb

redoviti profesor, Fakultet za dentalnu medicinu i zdravstvo Sveučilišta J.J. Strossmayer u Osijeku, specijalist interne medicine, uža specijalizacija iz kardiologije, primarijus

Goran Krstačić rođen je 1962. u Sarajevu, Bosna i Hercegovina. Diplomirao je na Medicinskom fakultetu Univerziteta u Beogradu 1987., magistrirao 1992. na Medicinskom fakultetu u Rijeci, doktorirao 2002. na Medicinskom fakultetu u Zagrebu, naslov disertacije „Ispitivanje nelinearne dinamike kratkih vremenskih serija kod bolesnika sa stabilnom anginom pektoris". Radi u Poliklinici za prevenciju kardiovaskularnih bolesti i rehabilitaciju Srčana u Zagrebu, obnaša funkciju ravnatelja od 2014. Redoviti je profesor na Fakultetu za dentalnu medicinu i zdravstvo Osijek, izvanredni profesor na Medicinskom fakultetu u Osijeku, znanstveni savjetnik u trajnom zvanju na Medicinskom fakultetu u Zagrebu i profesor stručne škole u trajnom zvanju na Zdravstvenom veleučilištu u Zagrebu. Završio je školovanje „Menadžer u zdravstvu" 2015. diplomiravši sa završnim radom „Organizacija ambulantne kardiovaskularne rehabilitacije u Poliklinici Srčana" i „Leadership and Management in Cardiovascular Medicine" 2016. u Beču, u organizaciji Europskog kardiološkog društva i Europske agencije za srce iz Brussels-a. Priznat mu je naziv primarijus 2006. Redovni je član Internacionalne akademija nauka i umjetnosti Bosne i Hercegovine. Član je Odbora za kardiovaskularne bolesti Razreda za medicinske znanosti i Znanstvenog vijeća za antropologijska istraživanja Hrvatske akademije znanosti i umjetnosti. Član je Savjeta za zdravlje grada Zagreba od 2017. Na Europskom kardiološkom kongresu 2005 g. primio je diplomu Europskog kardiologa, 2006. godine izabran je za Fellow-a Europskog kardiološkog društva (FESC), a 2017. za Fellow-a Europske udruge za srčani ritam (FEHRA). Do sada je objavio više od 150 znanstvenih i stručnih radova. Urednik je 3 sveučilišna udžbenika, Neurokardiologija 2018., Kardioneurologija 2022. i Bolesti srca i krvnih žila 2024. , te koautor i autor šest sveučilišnih udžbenika i 2 sveučilišna priručnika. Istakao se u organizaciji međunarodnih kongresa i simpozija iz oblasti kardiologije, ateroskleroze, digitalnog zdravlja. Sudjelovao je u 10 znanstvenih i stručnih projekata u Republici Hrvatskoj i inozemstvu. Član je uređivačkog odbora desetak znanstvenih časopisa iz Europe i SAD.

11 MAFLD multisustavni izazov

Milenko Bevanda

Masna bolest jetre povezana s metaboličkom disfunkcijom (MAFLD)"definicija predložena 2020 godine a odnosi se na bolest masne jetre povezanu sa sustavnom metaboličkom disregulacijom. Pokretači metaboličkog rizika, prema kriterijima MAFLD-a, su dijabetes melitus tipa 2 i prekomjerna tjelesna težina.Oba ova čimbenika rizika klasično su uključena u taloženje masnoće u jetri, a uočeno je da su povezani s povećanjem progresije bolesti i jetrenih i ekstrahepatičkih komplikacija. Treći disregulacijski put je manje poznat, ali je dio operativne definicije metaboličkog sindroma. Za dijagnozu MAFLD-a kod ljudi s normalnom tjelesnom težinom, pojedinac mora imati dva od sedam čimbenika rizika za postavljanje dijagnoze. Čimbenici rizika uključuju opseg struka, krvni tlak, trigliceride u plazmi, lipoprotein visoke gustoće u plazmi-kolesterol, predijabetes, procjenu rezultata inzulinske rezistencije na modelu homeostaze i C-reaktivni protein visoke osjetljivosti u plazmi. Kombinacija steatoze jetre s jednom od ove tri metaboličke stratifikacije rizika rezultira dijagnozom MAFLD.U slučaju steatoze, metaboličke disfunkcije i većeg unosa alkohola (20-50 odnosno 30-60 g/dan kod žena i muškaraca), može se postaviti dijagnoza "MASLD i povećani unos alkohola (MetALD)". Za još veću konzumaciju alkohola preporučuje se dijagnoza ALD-a. Konačno, u slučaju SLD-a bez metaboličke disfunkcije ili specifične etiologije, dijagnosticira se kriptogeni SLD.

MAFLD pogađa više od trećine globalne populacije s procijenjenom globalnom prevalencijom MAFLD-a od 50,7%, posebno u odraslih s prekomjernom težinom i pretilošću, s višom prevalencijom u muškaraca nego žena (59,0% *naspram* 47,5%). Predviđa se da će globalna prevalencija MAFLD-a dosegnuti 55,4% do 2040 u Kini, te da će se ovaj trend povećanja prevalencije MAFLD-a također pojaviti u Sjevernoj Americi i Australiji. Studije predviđaju da će se broj osoba s MAFLD-om u SAD-u povećati za 21% s 83,1 milijuna u 2015. na 100,9 milijuna u 2030., dosežući očekivanu prevalenciju od 33,5% u 2030.

MAFLD tumori (HCC) značajno su se povećavali tijekom vremena (3,6% u 2002. – 2003. *naspram* 28,9% u 2018. – 2019.), dok se nova prevalencija virusa hepatitisa C (HCV) i virusa hepatitisa B (HBV) smanjila. MAFLD definicija naglašava dvosmjerne odnose između bolesti masne jetre i dijabetesa, kardiovaskularnih bolesti ili njihovih čimbenika rizika.

MAFLD ima značajno veće izglede u svim komponentama metaboličkog sindroma (hipertenzija, dislipidemija dijabetes, pretilost), posebno u dijabetesu (OR = 5,73, 95% CI: 5,10-6,45) i središnjoj pretilosti (OR = 17,05, 95% CI: 15,32-18,97), u usporedbi s ne-MAFLD skupinom. Pacijent s MAFLD-om također je imao značajno veći 10-godišnji KVB rizik od infarkta miokarda i moždanog udara, a Framingham kardiovaskularni rezultat skupine NAFLD bio je niži od onog u skupini MAFLD (OR = 3,2, 95% CI: 2,8–3,6 *naspram* OR = 3,7, 95% CI: 3,4–4,1).

Identificirano je više potencijalnih mehanizama za vezu između MAFLD i kardiovaskularnog rizika, a jedan model je predložio dva puta: jedan u kojem se kardiovaskularni događaji javljaju putem tradicionalnih čimbenika rizika, a drugi kroz izravniju vezu, uključujući sustavnu upalu, promijenjeni metabolizam lipida, oksidativni stres, protrombotičko stanje i endotelnu disfunkciju, koji vjerojatno doprinose na složen i međusobno povezan način.

MAFLD, ateroskleroze i KVB također može biti izraz jetre kao središta biomarkera proizvodnje upale, koji se izlučuju kao odgovor na indukciju endotelne disfunkcije i na ozbiljnost oštećenja jetre. Nekroupalni stadij bolesti jetre može dovesti do aterogene dislipidemije, do povećane jetrene proizvodnje CRP-a, fibrinogena, inhibitora aktivatora plazminogena-1 i drugih proteina akutne faze, posredovano interleukinom 6 (IL-6) i faktorom nekroze tumora-α (TNF-α). Ovi medijatori mogu povezati MAFLD s povećanim rizikom od KVB i ateroskleroze. Pokazalo se da su povećane razine ovih upalnih citokina, koji su poznati kao čimbenici rizika za KVB, povećane u bolesnika s MAFLD, uglavnom u onih s MASH, i s fibrozom, što sugerira da upala jetre igra ključnu ulogu u patogenezi KVB

Bolesnici s MAFLD-om pokazali su veću vjerojatnost razvoja HCC-a, kolorektalnog karcinoma u muškaraca i raka dojke u žena.

Pokazala se superiornost MAFLD-a nad NAFLD-om u identificiranju pacijenata s kolorektalnim adenomom.Promijenjeni mikrobiom također bi mogao posredovati u razvoju zloćudnih bolesti povezanih s MAFLD.

Nekoliko adipokina uključenih u jetreni metabolizam, upalu i fibrogenezu također može uključiti razvoj ekstrahepatičnih zloćudnih bolesti, kao što su adiponektin, leptin i rezistin.

Prisutnost MAFLD također je povezana, iako s nekim proturječnim rezultatima, s drugim ekstrahepatičkim komorbiditetima, kao što su kronična bubrežna bolest (KBB), psorijaza, upalne bolesti crijeva (IBD), plućne bolesti itd.

Prevalencija MAFLD-a u bolesnika s IBD-om (32%) bila je statistički značajno viša nego u općoj populaciji (25,2%; $p < 0,001$).

T2D i MASLD predstavljaju preklapajuće globalne zdravstvene hitne situacije povezane s rastućim stopama globalne pretilosti i metaboličkog sindroma. T2DM doživjet će MASLD (70%), a isto tako, osobe s MASLD-om imaju povećan rizik za razvoj T2DM-a. Ova dva poremećaja mogu djelovati sinergistički, dijelom zbog

povećane lipotoksičnosti i upale unutar jetre, među ostalim uzrocima. Međutim, patofiziološki mehanizmi kojima se to događa nisu jasni, kao ni kako poboljšanje jednog poremećaja može ublažiti drugi.

Prilikom odabira liječenja za T2D u bolesnika s MASLD-om, savjetuje se odabir liječenja s dokazanom dodatnom dobrobiti u MASLD-u (pioglitazon, agonisti GLP1 receptora i SGLT2i). Konačno, ključna je bliska suradnja s hepatolozima i rano upućivanje bolesnika s uznapredovalom fibrozom ili cirozom.

I MAFLD i aterosklerotične KVB rastući su javnozdravstveni problemi. Iako se MAFLD tradicionalno tumači kao bolest jetre s visokim rizikom od komplikacija povezanih s jetrom, trenutno znamo da je MAFLD čimbenik rizika za aterosklerotsku kardiovaskularnu bolest, koja je glavni uzrok smrti u bolesnika s MAFLD-om. Višestruki mehanizmi koji povezuju MAFLD i KVB uključuju upalu, oksidativni stres, inzulinsku rezistenciju, ektopičnu distribuciju masnog tkiva, dislipidemiju, endotelnu disfunkciju i adiponektin, među ostalima. Ovi čimbenici ne samo da uzrokuju MAFLD, već i ubrzavaju napredovanje ateroskleroze i razvoj KVB. Klinička implikacija je da su bolesnici s MAFLD-om pod povećanim rizikom od KVB-a i treba ih smatrati kandidatima ne samo za agresivno liječenje njihove bolesti jetre, već i za pažljivo praćenje i potencijalno liječenje temeljnih čimbenika rizika od KVB-a, s obzirom na to da će mnogi bolesnici s MAFLD-om imati ozbiljne KVB događaje i umrijeti prije razvoja uznapredovale bolesti jetre. Povećan rizik KVB kod MAFLD je do 40%.

MAFLD multisystem challenge

Metabolic Dysfunction-Associated Fatty Liver Disease (MAFLD)" definition proposed in 2020 and refers to fatty liver disease associated with systemic metabolic dysregulation. The metabolic risk drivers, according to the MAFLD criteria, are type 2 diabetes mellitus and excess body weight. Both of these risk factors are classically involved in the deposition of fat in the liver, and have been observed to be associated with increased disease progression and hepatic and extrahepatic complications. A third dysregulatory pathway is less well known, but is part of the operational definition of metabolic syndrome. For the diagnosis of MAFLD in people with normal body weight, an individual must have two of seven risk factors for diagnosis. Risk factors include waist circumference, blood pressure, plasma triglycerides, plasma high-density lipoprotein-cholesterol, prediabetes, homeostasis model assessment of insulin resistance results, and plasma high-sensitivity C-reactive protein. The combination of hepatic steatosis with one of these three metabolic risk stratification results in the diagnosis of MAFLD. In the case of steatosis, metabolic dysfunction and higher alcohol intake (20-50 and 30-60 g/day in women and men, respectively), the diagnosis of “MASLD and increased alcohol intake (MetALD)” can be made. For even higher alcohol consumption, the diagnosis of ALD is recommended. Finally, in the case of SLD without metabolic dysfunction or specific etiology, cryptogenic SLD is diagnosed.

MAFLD affects more than a third of the global population with an estimated global prevalence of MAFLD of 50.7%, especially in overweight and obese adults, with a higher prevalence in men than women (59.0% vs. 47.5%). The global prevalence of MAFLD is predicted to reach 55.4% by 2040 in China, and this trend of increasing prevalence of MAFLD will also occur in North America and Australia. Studies predict that the number of people with MAFLD in the United States will increase by 21% from 83.1 million in 2015 to 100.9 million in 2030, reaching an expected prevalence of 33.5% in 2030.

MAFLD tumors (HCC) have increased significantly over time (3.6% in 2002–2003 vs. 28.9% in 2018–2019), while new prevalence of hepatitis C virus (HCV) and hepatitis B virus (HBV) has decreased. The MAFLD definition emphasizes the bidirectional relationships between fatty liver disease and diabetes, cardiovascular disease, or their risk factors.

MAFLD had significantly higher odds of all components of the metabolic syndrome (hypertension, dyslipidemia, diabetes, obesity), especially diabetes (OR = 5.73, 95% CI: 5.10-6.45) and central obesity (OR

= 17.05, 95% CI: 15.32-18.97), compared with the non-MAFLD group. MAFLD patients also had significantly higher 10-year CVD risk of myocardial infarction and stroke, and the Framingham cardiovascular score of the NAFLD group was lower than that of the MAFLD group (OR = 3.2, 95% CI: 2.8–3.6 vs. OR = 3.7, 95% CI: 3.4–4.1).

Multiple potential mechanisms for the link between MAFLD and cardiovascular risk have been identified, and one model has proposed two pathways: one in which cardiovascular events occur through traditional risk factors, and the other through a more direct link, including systemic inflammation, altered lipid metabolism, oxidative stress, a prothrombotic state, and endothelial dysfunction, which likely contribute in a complex and interconnected manner.

MAFLD, atherosclerosis and CVD can also be an expression of the liver as a center of inflammation production biomarkers, which are secreted in response to the induction of endothelial dysfunction and to the severity of liver damage. The necroinflammatory stage of liver disease can lead to atherogenic dyslipidemia, increased hepatic production of CRP, fibrinogen, plasminogen activator inhibitor-1 and other acute phase proteins, mediated by interleukin 6 (IL-6) and tumor necrosis factor-α (TNF-α). These mediators may link MAFLD with an increased risk of CVD and atherosclerosis. Elevated levels of these inflammatory cytokines, which are known risk factors for CVD, have been shown to be increased in patients with MAFLD, mainly in those with MASH, and with fibrosis, suggesting that liver inflammation plays a key role in the pathogenesis of CVD.

Patients with MAFLD showed a higher probability of developing HCC, colorectal cancer in men and breast cancer in women.

MAFLD has been shown to be superior to NAFLD in identifying patients with colorectal adenoma. Altered microbiome may also mediate the development of MAFLD-associated malignancies.Several adipokines involved in hepatic metabolism, inflammation, and fibrogenesis may also be involved in the development of extrahepatic malignancies, such as adiponectin, leptin, and resistin.

The presence of MAFLD has also been associated, albeit with some conflicting results, with other extrahepatic comorbidities, such as chronic kidney disease (CKD), psoriasis, inflammatory bowel disease (IBD), lung disease, etc.The prevalence of MAFLD in patients with IBD (32%) was statistically significantly higher than in the general population (25.2%; $p < 0.001$).T2D and MASLD represent overlapping global health emergencies associated with increasing rates of global obesity and metabolic syndrome. T2DM will experience MASLD (70%), and similarly, individuals with MASLD are at increased risk for developing T2DM. These two disorders may act synergistically, in part due to increased lipotoxicity and inflammation within the liver, among other causes. However, the pathophysiological mechanisms by which this occurs are unclear, as is how improving one disorder may alleviate the other.When selecting a treatment for T2D in patients with MASLD, it is advisable to select a treatment with proven additional benefit in MASLD (pioglitazone, GLP1 receptor agonists, and SGLT2i). Finally, close collaboration with hepatologists and early referral of patients with advanced fibrosis or cirrhosis are essential.

Both MAFLD and atherosclerotic CVD are growing public health problems. Although MAFLD has traditionally been interpreted as a liver disease with a high risk of liver-related complications, we now know that MAFLD is a risk factor for atherosclerotic cardiovascular disease, which is the leading cause of death in patients with MAFLD. Multiple mechanisms linking MAFLD and CVD include inflammation, oxidative stress, insulin resistance, ectopic distribution of adipose tissue, dyslipidemia, endothelial dysfunction, and adiponectin, among others. These factors not only cause MAFLD, but also accelerate the progression of atherosclerosis and the development of CVD. The clinical implication is that patients with MAFLD are at increased risk for CVD and should be considered candidates not only for aggressive treatment of their liver

disease, but also for careful monitoring and potential treatment of underlying CVD risk factors, given that many patients with MAFLD will have serious CVD events and die before developing advanced liver disease. The increased risk of CVD in MAFLD is up to 40%.

MILENKO BEVANDA, redoviti profesor, Medicinski fakultet Sveučilišta u Mostar, specijalist interne medicine, subspecijalist gastroenterolog i hepatolog, primarijus. Rođen je 1958. godine u Mostarskom Cernu, Čitluk, Bosna i Hercegovina. Diplomirao na Medicinskom fakultetu Univerziteta u Sarajevu, magistrirao 2004 u Zagrebu. Naslov teme «Endosonografija, manometrija i EMG u evaluaciji morfologije i funkcije analnih sfinktera u bolesnika s kroničnom konstipacijom». Doktorirao 2006 godine u Mostaru. Naslov disertacije „Učinak hipertermičke kemoimunoterapije na karcinomatozu peritoneuma u miševa“. Radi na Medicinskom Fakultetu Sveučilišta u Mostaru i u Sveučilišnoj kliničkoj bolnici Mostar. Obavljao dužnost dekana Medicinskog Fakulteta Sveučilišta u Mostaru od 2013 do 1.10.2021 godine.Voditelj je Kliničkog odjela za Gastroenterologiju Sveučilišne kliničke bolnice u Mostaru i pročelnik Katedre za internu medicinu Medicinskog fakulteta Sveučilišta u Mostaru.Voditelj je i doktorskog studija Biomedicina i zdravstvo na Medicinskom fakultetu, kao i glavni urednik znanstvenog časopisa Medicina Academica Mostariensia.Područje znanstvenog interesa: bolesti jetre, upalne bolesti crijeva i tumori debelog crijeva.Član je nekoliko ekspertnih grupa na razini BiH iz oblasti gastroenterohepatologije. Voditelj više od dvadeset znanstvenih projekata,kao i tri Interreg IPA Projekta prekogranične suradnje Hrvatska- Bosna i Hecegovina-Crna Gora. U pet doktorata bio mentor doktorandima, mentor na dva magisterija i više diplomskih radova. Publicirao je veći broj znanstvenih i stručnih radova od toga preko 40 u CC časopisima.
Recenzirao više znastvenih radova u raznim časopisima, kao i nekoliko stručnih knjiga. Koautor i autor pet stručnih knjiga. Istakao se u organizaciji međunarodnih Kongresa i simpozija iz oblasti gastroenterologije, hepatologije i pretilosti. Gostujući je profesor na Medicinskom fakultetu u Splitu.
Suradni je član Akademije medicinskih znanosti Hrvatske od 2018, kao i IANUBiH od svibnja 2021 godine. Prorektor za Biomedicinu od 4.10.2021 godine. / Tel.:+387 63 397 333; e-mail: milenko.bevanda@mef.sum.ba

12 A FALSE POSITIVE FINDING OF STRESS ECHOCARDIOGRAPHY - IMPLICATION FOR CLINICAL PRACTICE

Edin Begić

Stress echocardiography has a sensitivity of 72%–85% and a specificity of 80%–95%. In patients with false-positive stress echocardiographic results, no significant difference in overall mortality rates was observed between those with and without 50% luminal narrowing on coronary angiography after an average follow-up of 2.4 years. The absence of stenotic plaque on traditional angiography means that false-positive results could be due to microvascular abnormalities, the coronary slow-flow phenomenon, vasomotor changes, endothelial dysfunction, small-vessel coronary disease, or left ventricular hypertrophy. False-positive results in dobutamine stress echocardiograms more commonly involved the inferobasal, posterior-basal, and mid-posterior left ventricular segments (some studies report

that the apical segments are more frequently involved). Patients with left bundle branch block or those who have undergone surgical revascularization are more likely to have a higher rate of false-positive stress echocardiographic findings. Additionally, an excessive rise in blood pressure during exercise testing has been associated with a higher likelihood of false-positive stress tests. An increased risk of major cardiac events is observed in these patients compared to those with negative stress echocardiography results.

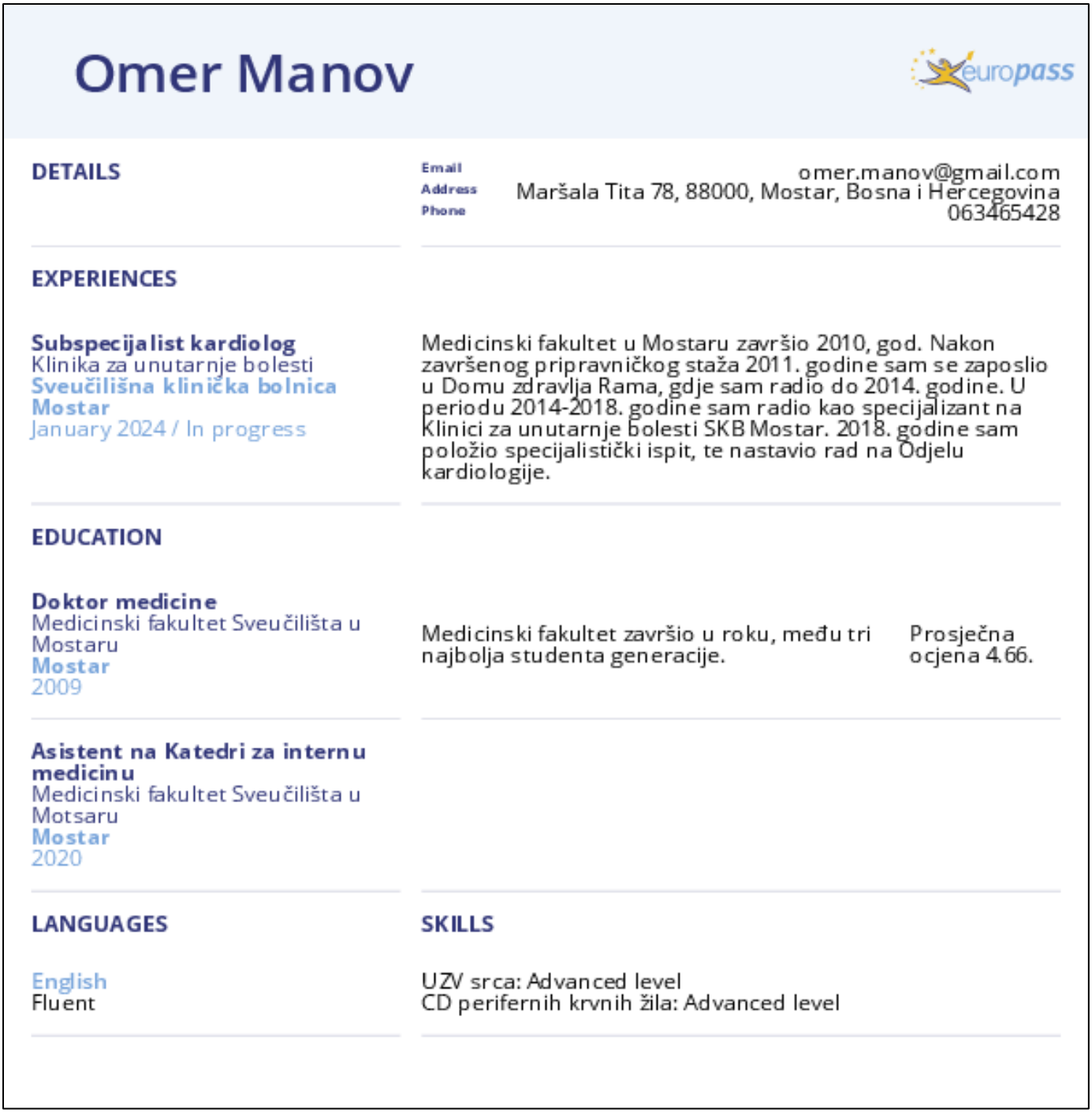
Keywords. Echocardiography, Stress, Coronary Artery Disease.

Prof. Edin Begic, *MD, MA, PhD is a cardiologist with interests in cardiovascular imaging, studying the impact of venous thromboembolism parameters on atherothrombosis and the development of acute coronary syndrome, as well as investigating the pathogenesis and biomarkers of heart failure.*

13 Srčana slabost sa očuvanom EFLV

Omer Manov

Srčana slabost sa očuvanom sistolnom funkcijom (EF>50%, eng. HFpEF) predstavlja vrlo heterogen sindrom koji se definira prisustvom simptoma i/ili znakova srčanog popuštanja uzrokovanih strukturnim/funkcionalnim poremećajima i najmanje jednim od: povišeni natriuretski peptidi ili objektivni znakovi plućne ili sistemske kongestije. HFpEF ima jednako loše preživljenje kao i HFrEF, uz jasnu tendenciju porasta incidencije i prevalnecije. S obzirom da su SGLT2i trenutno u smjernicama jedina skupina lijekova za liječenje pacijenta sa HFpEF koji imaju Ia preporuku, terapiju treba prilagoditi različitoj patofiziologiji i liječiti različite fenotipove same bolesti. Na kraju se postavlja pitanje održivosti samog koncepta srčane slabosti sa očuavnom sistolnom funkcijom, jer samo postojanje više fenotipova zahtijevaju različit dijagnostički i terapijski pristup.



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14 Ehokardiografska evaluacija dilatacijske postmiokarditične kardiomiopatije nakon COVID 19 infekciji

Adis Muslibegović

Rad predstavalja retrospektivnu prospektivnu studiju na pacijentima koji su preživjeli COVID-19 infekciju u jednom ili više navrata pri čemu se primjeti veći broj pacijenata koji nemaju dosadašnje predisponirajuće faktore za nastanak dilatacijske kardiomiopatije, osim prebolovane COVID infekcije.Kako vrijeme odmiče tako se pojavljuje sve veći broj pacijenata mlađe životne dobi sa

dijagnozom dilatacijske kardiomiopatije.Evaluirajući takve pacijente standardnom ehokardiografskom tehnikom koristeći i TDI strain rate mišljenja smo da postoji uzročno posljedični faktor u nastanku i razvoju dilatacijske kardiomiopatije u kojoj se često ne vide znaci klasičnog kardiomiokarditisa. Zato prospektivni efekat treba da prikaže u kasnjem radu broj i vrstu vakcina koju su pacijenti dobili te vrijeme od vremena davanja vakacine odnosno prebolovane bolesti do pojave simptoma dilatacijske karidiomiopatije.

Ključne riječi:dilatacijska kardiomiopatija,COVID-19 infekcija,strain rate TDI doppler

Prim. Dr Adis Muslibegović

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Rođen 1965. U Mostaru. Završio Medicinski i Stomatološki fakultet u Sarajevu kao i specijalizaciju iz interne medicine. Dugogodišnji rad na kardiologiji KB "Dr Safet Mujić" Mostar kao i edukacija iz ehokardiografije u Mostaru, Tuzli, Sarajevu i Italiji su mu omogučili promociju u subspecijalistu kardiologa te titulu evropskog kardiologa 2008.kao i zvanje primarijusa Federalnog ministarstva zdravstva.

Bio je na edukaciji u 8 svjetskih i evropskih kardioloških centara iz raznih područja kardiologije, te gradi već prepoznatljivi brend ehokardiološke dijagnostike o novim tehnikama u širem regionu potvrđen kroz gotovo 45.000 učinjenih pregleda, a cijeli segment kardiologije uređuje i vodi ukorak sa ostalim velikim centrima.

Dr Adis Muslibegović autor je više od stotinu stručnih i naučnih radova objavljenih u medicinskim časopisima, svjetskim i evropskim internacionalnim kongresima, stručnim kardiološkim sastancima, te je duži niz godina aktivan član Predsjedništva kardiologa BiH i Evropskog kardiološkog udruženja. Sekretar je Udruženja kardiologa HNK od 2021.

Dobitnik je više nagrada brojnih stručnih udruženja kao i Srebrene i Zlatne medalje Udruženja kardiologa Bosne i Hercegovine za doprinos razvoju Udruženja.

Prvi zbornik radova objavio je 2007. godine.

Dr Adis Muslibegović radi kao šef jedinice intenzivne njege Internog odjela KB "Dr Safet Mujić" u Mostaru i voditelj je Odjela internističkih disciplina KB "Dr Safet Mujić" Mostar.

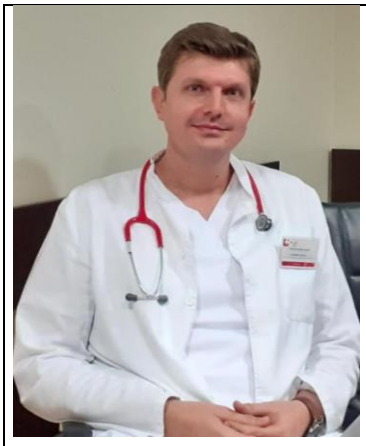
15 Fetalna ehokardiografija u Sveučilišnoj kliničkoj bolnici Mostar

Vladimir Jegdić

Uvod: Fetalna ehokardiografija je ultrazvučni pregled koji ima za cilj rano otkrivanje urođenih srčanih bolesti ploda. Važnost ovog pregleda dokazuje činjenica da se u najčešće prirođene anomalije ploda ubrajaju anomalije srca i velikih krvnih žila.

Fetalna ehokardiografija se radi između 18-24. tjedna trudnoće te pruža vrlo detaljnu procjenu svih srčanih struktura.
Incidencija prirođenih srčanih grešaka u populaciji je 8 do 9 na 1000 živorođene djece. Gotovo 50% zahvaćenih fetusa ima pridružene ekstrakardijalne ili kromosomske anomalije.
Indikacije za fetalnu ehokardiografiju dijelimo na majčine (pozitivna obiteljska anamneza, dijabetes majke, lijekovi u ranoj trudnoći, infekcije u ranoj trudnoći, alkoholizam majke, sistemska bolest majke), te stanja od strane fetusa (odstupanja u količini plodove vode, hidrops, aritmije, ekstrakardijalne anomalije, kromosomske aberacije).

Rezultati: U Sveučilišnoj kliničkoj bolnici Mostar prva fetalna ehokardiografija je učinjena u siječnju 2021 godine i od tada je pregledano više od 400 trudnica.
Otkriveno je 28 patoloških nalaza. Četvero djece je umrlo „in utero“. Šest trudnica su upućeno na porod u kardiokirurškom centru.
Kod devetero djece prirođena srčana greška je otkrivena u sklopu sindroma (Down sy, Edwards sy, Potter sy, di George sy).
Velika većina trudnica je došla na pregled zbog sumnje na srčanu grešku od strane ginekologa.
Prema protokolu potrebno je učiniti i UZV pregled djeteta nakon rođena te u SKB Mostar imamo dvoje djece koja po porodu imaju otvoren duktus arteriosus koji će zahtijevati perkutano zatvaranje.
Zaključak: Fetalna ehokardiografija je relativno nova metoda koja uz brz, jednostavan, bezbolan i jeftin način može otkriti postojanje srčane greške ploda. Spoznaja da dijete ima srčanu anomaliju dragocjena je za ginekologa, neonatologa, kardiologa, kardiokirurga kao i za same roditelje. Omogućava pažljivo praćenje trudnoće, planiranje samog poroda, kao i liječenje djeteta. Osim toga mogu se intrauterino liječiti aritmije fetusa a u rijetkim svjetskim centrima i intrauterini interventni kardiološki zahvati.



Prim. mr. sc. , dr. med., specijalist je pedijatrije i subspecijalist dječje kardiologije
Studij medicine završio na Sveučilištu u Mostaru 2007 god.
Prvo radno mjesto u hitnoj pomoći Doma zdravlja Čapljina
Sa specijalizacijom iz pedijatrije započeo 2009 god. Za vrijeme specijalizacije bio na edukaciji u Hrvatskoj i Kini. Spedijalistički ispit položio 2013 g nakon čega radim u jedinici intenzivnog liječenja djece i novorođenčadi. Subspecijalistički staž obavljao u Zagrebu te 2016 postao subspecijalist dječje kardiologije.
Prošao razne edukacije uz rad u Sloveniji.
U Bosnu i Hercegovinu uveo fetalnu ehokardiografiju, omogućivši rano otkrivanje srčanih mana kod fetusa što je omogućilo pravovremeno zbrinjavanje i upućivanje trudnica u odgovarajuće medicinske centre.
Pozvani predavač na više domaćih i inozemnih stručnih skupova.
Dugo godina viši asistent na katedri za pedijatriju Medicinskog fakulteta Sveučilišta u Mostaru a 2018 dobio i dekanovu nagradu za najboljeg kliničkog asistenta.
Magistarski rad obranio 2012 g. Trenutno na zadnjoj godini doktorskog studija.
Autor 10ak znanstvenih članaka a i koautor sam u knizi Hitna stanja u pedijatriji.
Uz to i stalni član u edukaciji liječnika za napredno održavanje života djece te stalni član edukatora na tečaju fetalne ehokardiografije u Republici Hrvatskoj.