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Udruženje kardiologa Bosne i Hercegovine
Udruženje kardiologa HNK/Ž
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INTERNACIONALNI NAUČNI SIMPOZIJUM
„Psihofizički poremećaji i KVB /
Cardiac imaging“

SVJETSKI DANI ZDRAVLJA 2023.

webinar

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- Ivan Knezović, Adis Muslibegović, Samra Međedović, Diana Zelenika, **Voditelj:** Emir Fazlibegović i Emir Veledar

INTERNATIONAL SCIENTIFIC SYMPOSIUM
„Psychophysical disorders and CVD /
Cardiac imaging“

WORLD HEALTH DAY 2023

webinar



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E poster	TEE u SKB Mostar – prikaz slučaja <i>Zrinko Prskalo, Mostar, B&H, ESC</i>

1 Emerging themes in CVD prevention

Dorairaj Prabhakaran, Delhi, India, WHF

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 Is high HDL cholesterol good for you?

Arshed Quyyumi, Atlanta, USA, AHA

High-density lipoprotein (HDL) is one of five major lipoprotein classes that contributes to reverse cholesterol transport that has been one of the main explanations for the classical inverse association between HDL-cholesterol (HDL-C) level and atherosclerotic cardiovascular disease (ASCVD) risk. However, efforts to therapeutically raise HDL-C levels with niacin, fibrates and CETP inhibitors have not resulted in reduction of ASCVD events among individuals on statin therapy. Mendelian randomization studies also suggest that genetically acquired higher HDL-C levels do not reduce risk for myocardial infarction. More recently, carefully conducted epidemiologic studies have indicated a non-linear U-shaped relationship between HDL levels and sub-clinical and clinical CVD. Very high HDL-C (>80 mg/dL in men and >100 mg/dL in women) levels are paradoxically associated with higher all-cause and ASCVD-related mortality. These observations suggest that HDL-C is not a universal protective factor for atherosclerosis.

Arshed Quyyumi, MD



Professor of Medicine

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

Director

Emory Clinical Cardiovascular Institute

Biography

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 The psychosocial stress and CVD

Amit Shah, Atlanta, USA, AHA

Chronic and acute psychological stress are multidimensional and prevalent risk factors for cardiovascular disease. They affect the cardiovascular system through multiple mechanisms, including autonomic, inflammatory, and atherosclerotic pathways. In many cases, their relationship with CVD is increased further by maladaptive coping mechanisms. Depression and posttraumatic stress disorder are two of the most common measures of stress encountered in clinical practice, while novel diagnoses such as mental stress induced ischemia are gaining traction as stress-related cardiac outcomes in research settings. Some of the many possible treatments include biobehavioral, holistic, cognitive behavioral therapy, and neuromodulation. That being said, more work is needed in detecting stress exposures and administering appropriate treatments.

Amit Shah, MD, MSCR is an Assistant Professor of Epidemiology with an adjunct appointment in Medicine (Cardiology) at Emory University. He is also Chief of Preventive Cardiology and Director of Cardiac Rehabilitation at the Atlanta VA Healthcare System.



Dr. Shah completed his undergraduate degree in physics, and certificate in biophysics, at Princeton University, and his medical degree at the University of Pennsylvania in 2006. He completed residency in Social Internal Medicine at Albert Einstein, Montefiore in 2009, and cardiology fellowship at Emory University in the Clinical Investigator Track in 2013, where he also earned a Master of Science in Clinical Research.

Dr. Shah works on several projects in the space of cardiovascular disease prediction and prevention. His work leverages quantitative physiological biomarkers and heart/brain imaging to understand the relationship between the brain and heart. He also works on improving healthcare delivery with innovative tools in the preventive cardiology space, and his team at the VA uses a technology-enabled approach in cardiovascular disease prevention.

Since Dr. Shah joined the Emory faculty in 2013, he has been continuously funded by the American Heart Association, Georgia Research Alliance, Coulter Foundation, and [National Institutes of Health](#). He has won several awards from the American Heart Association for his research, and published over 130 peer-reviewed manuscripts, of which many have been featured in high-impact journals such the *JAMA* and *Circulation*.

4 Hospital Outcomes Among COVID-19 Hospitalizations With Myocarditis from the California State Inpatient Database

Anshul Saxena, Muni Rubens, Venkataraghavan Ramamoorthy, Yanjia Zhang, Md Ashfaq Ahmed, Zhenwei Zhang, Peter McGranaghan. Miami, USA, AHA

Many case reports have indicated that myocarditis could be a prognostic factor for predicting morbidity and mortality among patients with COVID-19. In this study, using a large database we examined the association between myocarditis among COVID-19 hospitalizations and in-hospital mortality and other adverse hospital outcomes. The present study was a retrospective analysis of data collected in the California State Inpatient Database during 2020. All hospitalizations for COVID-19 were included in the analysis and grouped into those with and without myocarditis. The outcomes were in-hospital mortality, cardiac arrest, cardiogenic shock, mechanical ventilation, and acute respiratory distress syndrome. Propensity score matching, followed by conditional logistic regression, was performed to find the association between myocarditis and outcomes. Among 164,417 COVID-19 hospitalizations, 578 (0.4%) were with myocarditis. After propensity score matching, the rate of in-hospital mortality was significantly higher among COVID-19 hospitalizations with myocarditis (30.0% vs 17.5%, $p < 0.001$). Survival analysis with logrank test showed that 30-day survival rates were significantly lower among those with myocarditis (39.5% vs 46.3%, $p < 0.001$). Conditional logistic regression analysis showed that the odds of cardiac arrest (odds ratio [OR] 1.90, 95% confidence interval [CI] 1.16 to 3.14), cardiogenic shock (OR 4.13, 95% CI 2.14 to 7.99), mechanical ventilation (OR 3.30, 95% CI 2.47 to 4.41), and acute respiratory distress syndrome (OR 2.49, 95% CI 1.70 to 3.66) were significantly higher among those with myocarditis. Myocarditis was associated with greater rates of in-hospital mortality and adverse hospital outcomes among patients with COVID-19, and early suspicion is important for prompt diagnosis and management. ©2022Published by Elsevier Inc. (Am J Cardiol 2022;183:109–114)

Anshul Saxena, Ph.D.



Dr. Anshul Saxena is currently working as a Manager of Biostatistics and Predictive Analytics at the Center for Advanced Analytics, Baptist Health South Florida (BHSF). He has both medical and research background, and has combined expertise in predictive analytics, clinical research, epidemiology, and health services research. At BHSF, he manages team which utilize advanced Machine Learning/ AI techniques for clinical outcomes and hospital-operation related projects. He is an expert in biostatistics, artificial intelligence, risk scores used in healthcare, episode-based methodologies, and technologies for identifying gaps in the quality of clinical care. Dr. Saxena has published extensively contributing to both statistical and medical knowledge through several peer-reviewed articles.

5 ! AHA: Association Between Frailty, 30-day Unplanned Readmission and Mortality After Hospitalization for Heart Failure: Results from the Nationwide Readmissions Database

Muni Rubens, Rubens M, Ramamoorthy V, Saxena A, Ruiz-Pelaez JG, Ahmed MA, Zhang Z, McGranaghan P, Chaparro S, Jimenez J , Miami, USA

Objectives: This study examined how frailty in traditional risk-adjusted models could improve the predictability of unplanned 30-day readmission and mortality among heart failure patients.

Methods: This study was a retrospective analysis of Nationwide Readmissions Database data collected during the years 2010-2018. All patients ≥ 65 years who had a principal diagnosis of heart failure were included in the analysis. The Johns Hopkins Adjusted Clinical Groups frailty-defining diagnosis indicator was used to identify frail patients.

Results: There was a total of 819,854 patients admitted for heart failure during the study period. Among them, 63,302 (7.7%) were frail. Among frail patients, 22,382 (35.4%) experienced unplanned readmission within 30 days after index admission, while the same among non-frail patients was 168,797 (22.3%). Regression analyses that looked for the relationship between frailty and 30-day unplanned readmission and mortality among patients admitted for heart failure are shown in Table 3. In the regression analysis, the risk of all-cause 30-day readmission was higher in patients with frailty (OR, 1.18; 95% CI, 1.14-1.22). Similarly, the risk of in-hospital mortality was also higher in patients with frailty (OR, 1.52; 95% CI, 1.40-1.66). In addition, including the frailty score in the risk-adjusted score significantly improved the discrimination of both 30-day readmissions (0.580 to 0.612) as well as mortality (0.840 to 0.883).

Discussion: Inclusion of frailty in comorbidity-based risk-prediction models significantly improved the predictability of unplanned 30-day readmission and in-hospital mortality.

Muni Rubens, PhD



Dr. Muni Rubens is a biostatistician and researcher at Miami Cancer Institute. He has extensive experience in managing datasets, designing studies, formulating analysis plans, and performing sample size and power calculations. In addition, he is also an expert in designing and conducting Phase I, Phase II, and Phase III clinical trials. He is also a consulting biostatistician with expertise in design of data processing systems and inputs and the methods for validating and quality control in clinical trials. He serves as a member of the Clinical Scientific Review Committee at Miami Cancer Institute which ensures that clinical trials are scientifically sound and appropriate study designs and statistical methods are used. He is also involved in several population-based and outcome studies requiring the analysis of many national databases.

6 Artificial Intelligence in Cardiac Surgery Outcome Prediction and Treatment Planning

Peter McGranaghan, Miami, USA, AHA

Introduction: There is a gap between clinical guidelines and practice: adherence to guidelines varies between physicians, leading to suboptimal treatment and thus excess morbidity and mortality. Studies suggest adherence to guidelines improves if more attention is drawn to them, for instance by presenting clinicians with the latest guideline evidence together with individual patient information. Many people with cardiovascular disease suffer from complex lesions, wherein a decision must be made on selecting the best treatment strategy, ideally according to the clinical guidelines (i.e. ACC/AHA/SCAI guidelines for coronary artery revascularization). We set out to develop an AI-augmented clinical decision support platform (CDSP) for use in clinical practice with the ultimate aim of improving patient healthcare for cardiac surgery patients.

Methods: Our data cohort consisted of 330 patients who underwent either PCI or CABG at a cardiac surgery institute. We developed machine learning algorithms using structured clinical data derived from a cardiovascular registry using over 100 variables, and unstructured data of X-ray coronary angiograms. The suggestion for treatment will use a proprietary algorithm known as the Dr Data Address (DDA) which creates a unique numerical classifier for each patient. For instance, a patient with three vessel coronary artery disease, a Syntax Score of 24 and has diabetes will have a CCS of 003.0024.002 and be recommended CABG surgery. The combination of these analyses will be visualized in a user-friendly CDSP.

Results: There were 150 patients who underwent CABG and 180 who underwent PCI. We were able to recommend the proper treatment with over 90% accuracy. The output is a dashboard viewer embedded in the electronic health record which shows the treatment recommendation according to the clinical guidelines, as well as risk analysis of short-term outcomes (bleeding, mortality), risk score calculations (Syntax Score), image analysis of coronary angiograms (stenosis detection, identification of plaque regions).

Conclusion: By using a novel set of technology tools, advanced analytics, and deep expertise to organize complex data, we provide a comprehensive picture of cardiovascular disease patients in a user-friendly CDSP. The novel DDA classifier can sort patients into homogeneous groups with similar prognostic characteristics to facilitate big data analytic approaches, digital twins, machine learning-based predictions, evaluations of population health, identification of variation in treatment decisions, and the enablement of value-based payment models.



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 Komorbiditet duševnih i kardiovaskularnih poremećaja

Dragan Babić Mostar, B&H, IANUBIH

Koncept povezanosti srca i duše uopće nije novost i kroz povijest se pokušava objasniti na različite načine. Da ljutnja, tjeskoba i potištenost mogu ubrzati razvoj srčanih bolesti znanstvenici znaju već duže vrijeme. Novija istraživanja pokazuju da negiranje, potiskivanje neugodnih emocija također vrlo negativno odražava na ljude sa srčanim smetnjama. Komorbiditet tjelesnih i duševnih poremećaja je više pravilo nego iznimka, te je suvremeni trend u liječenju sve češće na načelima integralne i holističke medicine. Duševni poremećaji često idu skupa u komorbiditetu s različitim poremećajima metabolizma i tjelesnim bolestima uključujući i koronarnu bolest.

Proučavanje moguće povezanosti različitih kardioloških i psihijatrijskih poremećaja može značajno pridonijeti boljem i holističkom razumijevanju i uspješnijem liječenju komorbiditetnih poremećaja i bolesti u suvremenoj medicini. Da li su ovi poremećaji dio samog patološkog procesa mentalnih bolesti kroz povećan stres i inflamatorni proces, genetsku vulnerabilnost ili okolišne faktore ili su posljedice liječenja bolesti još uvijek nije do kraja jasno. Prema današnjim spoznajama možemo sa sigurnošću tvrditi da stres u manjeg broja osoba dovodi do pozitivnih učinaka, a kod značajno većeg broja ljudi stres ima negativne konotacije i na psihičko i na tjelesno stanje. Najnovije studije trebala bi potaknuti kardiologe da u liječenju srca i krvnih žila ne zanemare ni psihološke probleme svojih bolesnika. S druge strane potrebno je da psihijatri razmišljaju o mogućim kardiovaskularnim smetnjama i ne pripisuju sve simptome psihičkim te da na vrijeme pacijente upute na kardiološku obradu i liječenje. Rehabilitacijski tretmani kardiovaskularnih bolesnika koji uključuju i psiho socijalne intervencije uspješniji su od onih koji ih ne uključuju. Poboljšanje se ne odnosi samo na psihičko stanje bolesnika nego i na medicinske parametre i prognozu kardiovaskularnih bolesti.

Ključne riječi: komorbiditet, duševni, kardiovaskularni poremećaji

The concept of connection between the heart and the soul is not new at all and throughout history attempts have been made to explain it on different ways. Anger, anxiety and depression can accelerate the development of heart disease scientists have known for a long time. Recent research shows that denial, suppression unpleasant emotions also have a very negative effect on people with heart problems. Comorbidity of physical and mental disorders is more the rule than the exception, and is a modern trend in treatment more and more often based on the principles of integral and holistic medicine. Mental disorders often go together with comorbidity with various metabolic disorders and physical diseases including and coronary disease.

Studying the possible connection between various cardiac and psychiatric disorders can significantly contribute to a better and holistic understanding and more successful treatment of comorbidity disorders and diseases in modern medicine. Whether these disorders are part of the pathological process of mental illness itself through increased stress and inflammatory process, genetic vulnerability or environmental factors, or whether they are the consequences of the treatment of the disease is still not completely clear. According to today's knowledge, we can confidently claim that stress in a smaller number of people leads to positive effects, while in a significantly larger number of people stress has negative connotations both psychologically and physical condition. The latest studies should encourage cardiologists not to neglect the psychological problems of their patients when treating the heart and blood vessels. On the other hand, it is necessary for psychiatrists to think about possible cardiovascular disorders and not attribute all symptoms to psychological ones, and to refer patients to cardiology treatment and treatment in time. Rehabilitation treatments cardiovascular patients that include psychosocial interventions are more successful than those which do not include them. The improvement does not only refer to the patient's psychological condition, but also to medical parameters and prognosis of cardiovascular diseases.

Key words: comorbidity, mental, cardiovascular disorders

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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

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8 Nekompakcijska kardiomiopatija-prikaz slučaja

Diana Zelenika, Mostar, B&H, ESC

Nekompakcijska kardiomiopatija lijeve klijetke rijetka je nasljedna bolest s mogućim brojnim komplikacijama, a prvi put je opisana 1969. godine kao spužvasti miokard obje klijetke, a 1990.godine uveden je ovaj termin u svakodnevnu kliničku praksu. Prema definiciji Američkog kardiološkog društva NLK je nasljedna, genetski uzrokovana kardiomiopatija. Svjetska zdravstvena organizacija (SZO) i Europsko kardiološko društvo (EKD) NLK svrstavaju u „nekvalificiranu“ kardiomiopatiju.

Ova bolest je povezana sa zatajivanjem lijeve klijetke, srčanim aritmijama, embolijskim događajima i iznenadnom srčanom smrću. Nešto češće obolijevaju muškarci. Prvi simptomi bolesti se obično pojavljuju tek u odrasloj dobi, a vrlo rijetko bolest ostaje asimptomatska. Slikovne metode imaju ključnu ulogu u dijagnostici nekompaktne kardiomiopatije lijeve klijetke. U nekim slučajevima možemo imati poteškoća u prikazu trabekulacije miokarda, tada ćemo koristiti magnetnu rezonanciju srca ili CT srca.

Ehokardiografski dijagnostički kriteriji su:

- nalaz trabekulacije lijeve klijetke obično apikalnog i medijalnog dijela inferiorne i lateralne stijenke klijetke,
- odnos nekompaktnog i kompaktnog dijela miokarda je veći od 2,
- nalaz multiplih dubokih intratrabekularnih recesususa koji su povezani sa šupljinom klijetke,
- zadebljanje miokarda u sistoli manje je od 8 mm.

U diferencijalnoj dijagnozi ove kardiomiopatije postoje i neke poteškoće u koje ubrajamo: dilatacijsku kardiomiopatiju; apikalne forme hipertrofijske kardiomiopatije; hipertenzivnu kardiomiopatiju; fibroelastozu endokarda; abnormalne korde i tromb u vršku srca i neka druga rjeđa stanja.

Prema rezultatima švicarske 15-godišnje ehokardiografske kohorte, smrtnost bolesnika iznosila je 35%, dok je 12% bolesnika bilo podvrgnuto transplantaciji srca. Ista je grupa daljnjim praćenjem izračunala da je petogodišnje preživljavanje ovakvih bolesnika 88% .

Najčešći nalaz u bolesnika s NLK jesu nespecifične promjene elektrokardiograma u mirovanju, kao što su: hipertrofija LK, negativni T-valovi, nespecifične promjene ventrikularne repolarizacije, patološka električna os, atrioventrikularne i intraventrikularne smetnje provođenja. Produljeno trajanje PQ-intervalu, QTc-intervalu te poremećaji repolarizacije u inferiornim odvodima pokazali su se kao neovisni čimbenici rizika od lošeg ishoda u bolesnika s NLK.

Oechslin i suradnici zabilježili su elektrokardiografske abnormalnosti u 94% odraslih bolesnika, od kojih su 56% činile intraventrikularne smetnje provođenja. Atrijska fibrilacija nalazi se u 5 – 29%, a ventrikularna tahikardija u 18 – 47% bolesnika s NLK. U oko 18% bolesnika NLK se prvi put prezentira iznenadnom, najvjerojatnije aritmogenom, srčanom smrću.

Sistemske tromboembolijske komplikacije obuhvaćaju: embolije na razini moždanog krvotoka (moždani infarkti, tranzitorne ishemijske atake); arterija u području splahnika (mezenterijski infarkti, infarkti slezene i bubrega) i arterija udova. Nije zanemariv doprinosni učinak drugih čimbenika rizika od tromboembolijskih zbivanja, osobito atrijske fibrilacije uz oštećenu sistoličku funkciju LK. Zanimljivi su rezultati niza istraživanja prema kojima je rizik od tromboembolijskih komplikacija u bolesnika s NLK tek u manjoj mjeri povezan s nekompaktnim miokardom, a dominantno je povezan sa sistoličkom disfunkcijom i postojanjem atrijskih tahiaritmija tijekom kojih se uspostavljaju intrakavitarna područja slabe protočnosti, koja se ehokardiografski prikazuju kao spontani ehokontrast.

Liječenje NLK odnosi se na liječenje progresivnoga srčanog popuštanja, malignih poremećaja ritma i prevenciju tromboembolijskih zbivanja. U tu svrhu koriste se lijekovi iz skupina: ACE ili blokatori receptora angiotenzina II, beta blokatori, diuretici, antikoagulantni lijekovi. Kod bolesnika koji razviju teško srčano popuštanje i maligne oblike aritmija, u srca se ugrađuje automatski kardioverter defibrilator, a kod značajnih smetnji provođenja srčanih impulsa u srce se ugrađuje elektrostimulator. U terminalnoj fazi bolesti, kad unatoč optimalnoj medikamentoznoj terapiji i implantiranim odgovarajućima uređajima, nema poboljšanja srčane funkcije, potrebna je transplantacija srca.

NLK je rijedak, ali za kliničku praksu izuzetno važan klinički entitet, čija je učestalost u stalnom porastu, u prvom redu zahvaljujući spoznajama o njezinu postojanju i većoj dostupnosti metoda slikovnog prikaza. Razlog tome su neujednačenih dijagnostički kriteriji. Zbog nedostatka jasnih smjernica terapijski pristup bolesnicima s NLK najčešće se temelji na osobnim i iskustvenim stajalištima liječnika. Stoga je nužno prospektivno multicentrično kliničko istraživanje koje će rezultirati uzajamnim dijagnostičkim i terapijskim postupcima, time i boljim ishodom bolesnika s NLK.

Dr.sc. Diana Zelenika, dr.med.



A. Osnovni podaci

Rođena: 10.11.1964.god.

Mjesto: Jare, općina Široki Brijeg

Država: Bosna i Hercegovina

Roditelji: Anica i Radoslav Zelenika

Bračno stanje: neudata, majka jednog djeteta.

B. Školovanje

Osnovnu školu i klasičnu gimnaziju završila sam u Mostaru, gdje sam i trajno nastanjena.

Medicinski fakultet Univerziteta u Sarajevu upisala sam 1983.god., a diplomirala 21.04.1989.god.

Pripravnički staž obavila sam u Općoj bolnici u Mostaru, a stručni ispit položila sam 1990.god.

Specijalistički ispit iz Interne medicine položila sam u KB "Sestre Milosrdnice" Zagreb 23.04.1998.god.

Tijekom nastavka specijalističkog plana i programa u navedenoj ustanovi, u kojoj sam boravila četiri godine, 1996.god. upisala sam poslijediplomski studij po nazivom "Ultrazvuk u kliničkoj gastroenterologiji i hepatologiji" uz naknadno položene ispite i zadovoljavanje III bodovne skupine za znanstveni studij.

Tema magistarskog rada pod naslovom "Učinak terapijske paracenteze na ultrazvukom mjereni portalni protok krvi u bolesnika s cirozom jetre" odobrena mi je u Travnju 1999.god.

Subspecijalistički ispit iz kardiologije položila sam u KB "Dubrava" Zagreb 17.06.2005.god. a tijekom boravka od godinu i pol u navedenoj Kliničkoj bolnici u suradnji s kolegama s Odjela gastroenterologije i radiologije provodim istraživanja vezana za temu magistarskog rada. 29.rujna 2006.god. obranila sam magistarski rad na Medicinskom fakultetu Sveučilišta u Zagrebu, i stekla akademski stupanj magistra znanosti iz područja biomedicine i zdravstva, znanstvenog polja: Kliničke medicinske znanosti, znanstvene grane: Interna medicina.

Na sjednici nastavničkog Vijeća Medicinskog fakulteta Sveučilišta u Mostaru 03.ožujka 2007.god. odobrena mi je tema doktorske disertacije pod nazivom "Difuzijski kapacitet pluća i dijasbolička disfunkcija srca u bolesnika s arterijskom hipertenzijom", a obranu prijave iste obavila sam 26.travnja 2007.god. Doktorsku disertaciju obranila sam 22.07.2009.godine pod mentorstvom prof.dr.sc. Jadranka Tocilj dr.med.

C. Napredovanja i položaj u zaposlenju

Po završetku medicinskog fakulteta radila sam u Domu zdravlja Mostar, a od travnja 1992.god. radim u Ratnoj bolnici u Mostaru na Odjelu za unutarnje bolesti te u 81. Domobranskoj Pukovnji. Od 1992.god. sam u trajnom radnom odnosu u KB Mostar- Klinika za unutarnje bolesti. Po položenom specijalističkom ispitu osim rada na Kardiološkom odjelu SKB Mostar, radim i kao asistent na više predmeta kako na Medicinskom fakultetu, tako i na fakultetu zdravstvenih studija u Mostaru.

D. Obavljanje raznih funkcija

Na Općim izborima 01. listopada 2006. godine izabrana sam za zastupnicu u Skupštini Hercegovačko-neretvanskog kantona-županije. Naredne 4 godine ponovni mandat u navedenoj Skupštini, a u periodu od 2014.-2018.godi zastupnica sam u Zastupničkom Domu PS BiH.

POPIS RADOVA I DJELATNOSTI

A. Znanstveni radovi u časopisima

Autor sam i koautor značajnog broja radova, iza mene je 50-100 pozvanih predavanja i vebinara kako na domaćim tako i na međunarodnim skupovima. Mentor sam brojnim diplomskim radovima, autor članaka medicinskih časopisa, dio značajnih projekata, no pojedinačno navođenje istih značilo bi jedino oduzimanje dragocjenog vremena. Naime, zbog političke diskriminacije u periodu od 2010. do 2014.godine u četiri navrata sam aplicirala za mjesto docenta na katedri Interne medicine Medicinskog fakulteta Sveučilišta u Mostaru. Iako sam posjedovala sve potrebne reference, u jednom navratu bila jedini kandidat, nikada nisam ni dobila odgovor na natječaj.

9 Scintigrafska evaluacija funkcionalnosti kolateralnih koronarnih arterija

Ivan Jurić, Mostar, B&H, ESC

Scintigrafsku sliku miokarda perfundiranog dobrim kolateralama često opisujemo kao reverznu redistribuciju (RR) gdje je perfuzijski defekt vidljiv samo na odgođenim scintigramima u mirovanju. Scintigrafska procjena je indirektna procjena protočnosti kolaterala koja pokazuje visoku korelaciju težine perfuzijskog defekta s parametrima kvantitativne procjene kolateralnog protoka. Perfuzijski scintigrami pokazuju stanje prokrvljenosti, ishranjenosti miokarda a cilj svake revaskularizacije je prekid ishemijske miokarda a ne samo prohodnost epikardijalnih arterija. Tako bi perfuzijski scintigrami ishemijske i ožiljavanja govorili u prilog insuficijentih, a scintigrami RR-a funkcionalnih kolaterala.

Iz usporedbe angiografskih i scintigrafskih nalaza nudi nam se odgovor o mehanizmu nastanka već dugi niz godina kontroverznog nalaza RR-a. Naime dobra kolateralizacija sama po sebi je dovoljan razlog ubrzanog washouta kontrasta kod angiografskih, a radiofarmaka (Tl-201 klorid, Tc99m-Sestamibi, Tc99m-Tetrofosmin) kod scintigrafskih metoda što ima za posljedicu pojavu perfuzijskih defekata tek na odgođenim redistribucijskim scintigramima odnosno lažno urednu perfuziju na stress scintigramima.

Uz ove angiografske i scintigrafske pokazatelje ubrzanog washouta iz kolateraliziranog segmenta miokarda može se diskutirati o još jednom scintigrafskom razlogu ubrzanog washouta radiofarmaka (osobito ako se radi o radiofarmaku karakterističnom za dokazivanje vijabilnosti miocita Tl-201 klorid) a to je da se unatoč razvoju kolaterala najčešće radi o djelomice oštećenom miokardu odnosno miokardu s manje vijabilnih miocita, što u konačnici dovodi do skraćivanja puta: krvna žila ↔ intersticij ↔ miocit a posljedično tomu i kraćeg vremena potrebnog za prolaz toga puta.

Ovakva saznanja otvaraju mogućnost jednostavnijeg dijagnosticiranja funkcionalnih kolaterala što bi u nekim slučajevima moglo biti od pomoći kardiološkom timu kod odlučivanja o potrebi invazivnih zahvata. Mogu li se tako dijagnosticirane funkcionalne kolaterale smatrati uspješnim prirodnim premostnicama koje u nekim slučajevima stabilne kronične koronarne bolesti mogu biti alternativa mehaničkim otvaranjima starih lezija?

Ivan Jurić, Mostar, B&H, ESC



Rođen sam 21. srpnja 1959. godine u Mostaru, gdje sam završio osnovnu i srednju školu (Opća Gimnazija). Medicinski fakultet Sveučilišta u Sarajevu upisao sam 1978. godine, a diplomirao 1984. godine. Obvezatni pripravnički staž u trajanju dvije godine obavio sam u ambulanti obiteljske medicine, medicine rada i kućnog liječenja Doma Zdravlja Mostar. Specijalizaciju iz Nuklearne medicine započeo sam 1989. godine u Kliničkoj bolnici Mostar, a specijalistički sam ispit položio u rujnu 1991. godine u Zagrebu /Zavod za Nuklearnu medicinu i zaštitu od zračenja Rebrow/ gdje sam u vremenu 1999 do 2001. godine završio i Stručni poslijediplomski studij, iz područja Nuklearne medicine. Znanstveni poslijediplomski studij "Medicinska skrb i javno zdravstvo", sam upisao 2004. godine na Medicinskom fakultetu Sveučilišta u Mostaru gdje sam i magistrirao 2010. godine iz područja Nuklearne kardiologije. Doktorsku

disertaciju "Scintigrafski nalaz reverzne redistribucije Tl-201 u dijagnostičkom algoritmu bolesnika s koronarnom arterijskom bolesti" obranio 2015. Od 1989. godine radim u Zavodu za Nuklearnu medicinu Sveučilišne kliničke bolnice Mostar. Od 2005. godine radim na Medicinskom fakultetu u Mostaru na Katedri za Radiologiju i nuklearnu medicinu a od 2011. I na Fakultetu Zdravstvenih studija u Mostaru. Od 2021. godine u statusu docenta obnašam funkciju pročelnika Katedre za nuklearnu medicinu Medicinskog fakulteta u Mostaru. Prošao sam poslijediplomsku edukaciju "Tečaj trajnog usavršavanja, European School of Nuclear Medicine (ESNM)" u Opatiji 1999. godine. Objavio sam više znanstvenih članaka u citiranim publikacijama. Aktivno sam sudjelovao na nizu domaćih i međunarodnih stručnih sastanaka i kongresa.

10 Ehokardiografska evaluacija dilatacijske postmiokarditične kardiomiopatije nakon COVID 19 infekcije

Adis Muslibegović, Mostar, B&H, ESC

Tokom trogodišnjeg perioda trajanja pandemije COVID 19 infekcije uočeni su veliki broj pacijenata sa miokarditisom u akutnoj fazi i neposredno nakon nje te u kasnijem periodu razvoja dilatacijske kardiomiopatije. Rad predstavlja retrospektivno prospektivnu studiju čiji je zadatak da evaluira postojeća iskustva te ako je moguće promjeni pristup ovim pacijentima. Naime dosadašnje infekcije i razvoj miokarditisa imale su uglavnom relativno bezazlen tok i minimalne posljedice u odnosu na COVID miokarditis. U radu je predstavljeno 49 pacijenata diferenciranih po dobnim, spolnim karakteristikama, a nakon toga po stepenu dilatacije lijeve komore kroz pojedinačni jednogodišnji, dogodišnji i trogodišnji period te po sistoličkoj, odnosno dijastoličkoj disfunkciji lijeve komore, a nakon toga TDI lateralnog odnosno septalnog dijela mitralnog prstena, globalnog streina do preciznog mjerenja karakteristika viabilnosti fibriznog dijela miokarda u odnosu na viabilni preko TDI, Streina, i Strein rate metoda

Prim. Dr Adis Muslibegović

specijalista interne medicine, subspecijalista kardiolog, ESC, sekretar UK HNK/Ž



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 omogućili 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.

11 Cardiac imaging u INOCA

Emir Fazlibegović, Mostar, B&H, IANUBIH, ESC

Svakodnevno u kat-laboratorijama se susrećemo sa pacijentima koji imaju anginozne tegobe, a nemaju koronarnu opstrukciju na koronarografiji. Danas znamo da te ishemijske tegobe mogu izazvati poremećaji mikrocirkulacije srca. Broj takvih pacijenata je cca 30% i podijeljeni su u pet tipova: mikrovaskularna disfunkcija, koronarni vazospazam, kombinacija disfunkcija i spazam, nekardijalna angina i neopstruktivna koronarna arterijaksa bolest.

Za dijagnostički program INOCA (cardiac imaging) pored standardne koronarografije se određuju RFR (protok koronarki u miru), FFR (frakcionirani rezervni protok), CFR (koronarni rezervni protok), IMR (indeks mikrovaskularne rezistencije), a pomažu i metode kontrastne ehokardiografije, strain ehokardiografije, termodilucije, scintigrafije te primjene adenozina i acetilholina za procjenu vazomocije.

Sve ove metode dijagnostike će pomoći u tretmanu INOCA pacijenata.

Ključne riječi: INOCA, cardiac imaging metode

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

12 ePoster: Gen tehnologija i kardioaskularne bolesti

Samra Međedović. Mostar, B&H, ESC

Gen tehnologija se uveliko koristila da se otkriju specifične uloge gena u bolestima, patofiziologiji i biološkim mehanizmima, i kao alatka za prevenciju bolesti i tretmane. Kako je gen tehnologija napredovala u istraživanju u bionaukama, zadnjih godina naučnici su prepoznali važnost uloge genetskih faktora u bolestima. Nove gen tehnologije kao što su RNAi, koji smanjuje gensku ekspresiju na mRNA nivou (nokdown) i CRISPR, koji potpuno i trajno utišava gen na DNA nivou (nokout), su se počele koristiti kao terapija. Kardiovaskularne bolesti su oduvijek bile fokus kliničkih i bazičnih istraživanja zbog visoke incidencije i visoke stope invaliditeta što ne rezultira u dugoročnom preživljavanju i dobroj kvaliteti života. Neke nasljedne kardiovaskularne bolesti ne odgovaraju dobro na medikament i operativnu terapiju pa naučnici u zadnje vrijeme pokušavaju da razviju genetske tehnike da bi postigli rezultate. Ovi sistemi gen tehnologija se mogu prenijeti preko viralnih vektora, ne-viralnih vektora i odabirom odgovarajućih sistema isporuke za kardiovaskularni sistem. Međutim, korištenje navedenih gen tehnika u ulozi terapije su limitirane zbog nepotpunog razumijevanja kardiovaskularnih bolesti, ograničenja samih gen tehnika, i etičkih pitanja.

PERSONAL INFORMATION

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Sex F | Date of birth 21/03/1972 | Nationality Bosnian/British

WORK EXPERIENCE

December 2017

Associate professor (visiting professor)

Medical Faculty, University of Sarajevo, University campus, 71 000 Sarajevo, B&H, www.unsa.ba

- Associate professor for Biomedicine (visiting professor - Pathology – genetical diseases and molecular diagnosis in pathology); Medical education in English language

Business or sector Higher education and research

October 2016-now

Associate professor and Leader of Health care

University study programme "Health care", "Dzermal Bijedic" University of Mostar, University campus, 88 104 Mostar, B&H, www.unmo.ba

- Associate professor for Biomedicine (Human genetics and Microbiology and immunology), University study programme "Health care"
- Leader of University study programme "Health care"

Business or sector Higher education and research

November 2014-now

Associate professor

Biology department, Faculty of Education, "Dzermal Bijedic" University of Mostar, University campus, 88 104 Mostar, B&H, www.nf.unmo.ba

- Associate professor for Basic biology (Cellular and Molecular biology, Genetics, and Biotechnology), Biology department

Business or sector Higher education and research

May 2007-November 2014 **Assistant professor and Head of Biology department**
 Biology department, Faculty of Education, "Dzemail Bijedic" University of Mostar, University campus, 88 104 Mostar, B&H, www.nf.unmo.ba

- Associate professor for Basic biology (Cellular and Molecular biology, Genetics and Biotechnology), Biology department
- Head of Biology department until December 2012

Business or sector Higher education and research

September 2007-September 2009 **A member of the commission for scientific projects in biomedicine and health**
 Biomedical and health consultancy, Federal Ministry for education and science (FMON), Stjepana Radica 33, 71 000 Sarajevo, B&H, www.fmon.gov.ba

- Advices in high education and improvement in scientific work in Federation of Bosnia and Herzegovina and reform of higher education in B&H
- Member of Scientific commission for projects in biomedicine

Business or sector Ministry and research

February 2006-May 2007 **A clinical scientist-tissue biotechnologist**
 Department of clinical pathology, Institute of clinical pathology and cytology, Clinical Centre University of Sarajevo, Bolnicka 25, 71 000 Sarajevo, B&H, www.kcus.ba

- Clinical researcher in the Pathology department

Business or sector Medicine, biomedicine and research

January 2001-April 2004 **A research assistant**
 Division of Reproduction Health, Endocrinology and Development, School of Biomedical Science, King's College London, New Hunt's House, Guys Campus, London SE1 1UL, UK, www.kcl.ac.uk

- Research assistant on the Division of Reproduction Health

Business or sector Research and biomedicine

EDUCATION AND TRAINING

January 2001-January 2005 **Reproductive biology** PhD
 Division of Reproduction Health, Endocrinology and Development, School of Biomedical Science, King's College London, New Hunt's House, Guys Campus, London SE1 1UL

- Reproductive biology
- Thesis title: *Effect of All on mammal spermatozoa*

October 1997-Jun 2000 **Biotechnology in medicine** BSc
 School of Life Science, University of Westminster, 115 New Cavendish Street, London W1W 6XH

- Biotechnology in medicine
- Thesis title: *Is adrenomedulin source in GIT*