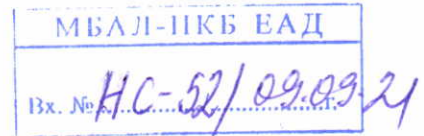


STATEMENT



By Prof. Dr. Nina Gocheva, Clinic of Cardiology, MHAT "NHH", Sofia

Member of the scientific jury for the competition for the academic position of "Associate Professor" in higher education 7 "Health and Sports" professional field 7.1 "Medicine" scientific specialty "Cardiology" for the needs of the Clinic of Cardiology at MHAT "National Heart Hospital" EAD, Sofia, determined by Order of the Director of the NHH № 308/22.07.2021.

For participation in the competition for the academic position of "Associate Professor" at the Clinic of Cardiology at the MHAT "NHH" Sofia were submitted and approved by the commission documents of the candidate Dr. Iliyana Petrova-Stoyanova. The Commission for admission to the competition establishes that the documents are submitted within the specified period and comply with the Academic Staff Development Act and the Regulations for Acquisition of Scientific Degrees and Occupation of Academic Positions of the National Assembly at MHAT "NHH" EAD.

Brief biographical data

Dr. Iliyana Petrova graduated in medicine at the Medical University - Sofia in 2005. After a competition she was appointed as an assistant physician at the Cardiology Clinic in 2006 - NHH, Sofia. She successfully defended her dissertation in 2020. In 2012 she acquired a specialty in cardiology, and in 2013 she acquired a qualification and a certificate for invasive cardiologist. She is a member of the Bulgarian Society of Cardiology and the Bulgarian Society of Invasive Cardiology. Participates as a reviewer for Renal Failure journal.

Dr. Petrova is an active member of a team from NHH and BAS, whose goal was to assess proteomic analysis in patients with heart failure and other cardiovascular diseases. The idea of this project was to define the significance of a particular gene expression for the development of heart failure.

Research activity

- I. Dissertation on the topic: "Study of renal function in patients undergoing invasive angiography examination with a new biomarker - neutrophil gelatinase-associated lipocalin /NGAL/" with an authors's abstract of the dissertation, published and defended in 2020.
 1. Publications related to the topic of the dissertation - a total of 4 full-text - 3 in a peer-reviewed journal "Bulgarian Cardiology" and 1 - in a journal with impact factor "Comptes rendue de l'Academie bulgare dea Sciences" - BAS.

2. Monograph "Contemporary aspects of contrast-induced nephropathy in cardiology". In print. Reviewers: Prof. D. Trendafilova and Prof. B. Deliyska, Arbilis Publishing House, Sofia, 2021, ISBN: 978-619-7063-47-9.

3. In all publications related to the dissertation, Dr. Petrova is the first author.

The presented monograph discusses the problems related to the application of a contrast agent in patients undergoing invasive examination. All known data on the induced effect of contrast medium on renal function are critically evaluated. To date, creatinine levels appear to be considered as a major biomarker for assessing renal function. However, it has been noted that creatinine values in follow-up of patients have limited effect on the timely diagnosis of contrast-induced nephropathy as well as other forms of acute renal impairment. An important element in the presented monograph is the presentation of data from the author's own studies both regarding the role of the known biomarkers for renal damage and from the monitoring of renal function through the use of NGAL. Evidence confirms that plasma NGAL, measured before and after contrast angiography, shows a significant association with the occurrence of subsequent renal dysfunction. A particularly important conclusion, presented on the basis of personal research, is that NGAL can be an indicator of deteriorating survival. The presented monograph presents an interdisciplinary view of the problems of CIN.

- II. Published articles full text in Bulgarian journals and national publications, outside the topic of the dissertation
 - 1. First author in 4 publications (№4,7,8,9 from the general list)
 - 2. Second and subsequent author in 7 publications (№1,2,3,5,6,10,11)
 - 3. Out of the total of 11 published articles - 3 present original own data (№5,10,11), and the remaining 8 - include a review and review of the scientific literature
- III. Published chapters in books and collections
 - 1. First author of all of the listed - №№ 12-17
- IV. Scientific reports and participation in congresses, symposia and scientific forums:
 - 1. Scientific reports and participation in national forums and congresses with published abstracts in Bulgarian
 - Designation from the general list - №18-34
 - All abstracts are published in the journal "Bulgarian Cardiology"
 - 2. Scientific reports and presentation of posters in international congresses in English. From them:
 - A/ Scientific participations with published abstracts in indexed scientific publications with impact factor (IF):

- From the general list - № 42-45 and 49-59. In 6 of them Dr. I. Petrova is the first author, and in 4 - the second author.
- Calculated total IF of all published abstracts - 149.18.
- Calculated individual IF of the author - 20,039.

B/ Scientific participations in international forums, which are not reflected in refereed scientific publications. From them:

- Published abstracts in non-indexed proceedings of congress abstracts (№35,36,37)
- Scientific papers, without published abstracts (№38-41 and №46-48).

- V. In the CMB database, 10 citations by Bulgarian authors were found. There is one citation on the Web of Science and two citations on Google Scholar for publications in English.
- VI. Extracurricular activities - reviewer of the journal "Bulgarian Cardiology", participation in forums of the Academy of Cardiology, organized by "Arbilis" under the leadership of Prof. B. Georgiev with lectures in the field of cardiology.
- VII. Participation in research projects - a joint project with the team of BAS for the study of proteomics in patients with heart failure

Profile of scientific developments

1. The main topic of interest are the publications related to the problems of contrast-induced nephropathy and the defended dissertation on the topic "Study of renal function in patients undergoing invasive angiographic examination with a new biomarker - neutrophil gelatinase associated lipocalin /NGAL/", July 2020.

Related publications discussed in details at all possible aspects of the problem. Most of the scientific developments have a very serious clinical scope - the conditions under which contrast-induced nephropathy (CIN) can occur after angiographic diagnostic or therapeutic examination are presented. The main mechanisms known so far related to changes in renal hemodynamics, vascular tone, direct cellular toxicity of the contrast agent, the various physicochemical characteristics of the contrast agents used in practice are also presented. Through the pathophysiological mechanisms that are assumed to play an important role in the genesis of CIN, the possible models for prevention of the condition are marked.

2. In scientific developments related to problems in invasive cardiology, several areas are marked:
 - a/ Application of intracoronary electrocardiogram during percutaneous coronary interventions.

Dr. Petrova participates in the staff of the Department of Invasive Cardiology at the National Heart Hospital, which is developing an innovative method for the diagnosis of post-procedure myocardial ischemia. The use of this method is expected to lead to the introduction of a new predictor of adverse events during the one-year follow-up of patients who underwent percutaneous treatment of bifurcation lesions. In the course of the study, the results obtained are compared with conventional markers for the presence of myocardial necrosis. The authors postulated that the registration of final local ST-elevation in the intracoronary ECG could be used in practice as an independent predictor of poor outcome.

b / Results of PCI using a specific BIOSS bifurcation stent

The same team of the NHH, in which Dr. Petrova also participates, analyzed the result of the treatment of bifurcation stenoses by implantation of a new dedicated stent. The specificities in its design are tested, the purpose of which is better adaptation to the wall of the treated coronary vessel. The presented data compare the effectiveness of two stent models in patients with high class angina.

c / Interventional treatment of acute pulmonary embolism by catheter fragmentation

The abstracts, reported mainly at international forums by the staff of the invasive department, present the results of interventional treatment of acute pulmonary embolism by topical application of fibrinolytics, rotational thrombofragmentation and catheter thrombaspiration. The methods used show positive short-term results based on the improvement of oxygen saturation, the values of the partial pressure of oxygen, positive dynamics in the echocardiographic indicators for global cardiac function.

d / Results after interventional treatment in patients with multivessel coronary heart disease

The main conclusions from the presented abstracts of the team show that two- and more-stage interventional treatment does not carry a higher risk of poor outcome. Positive results were observed in terms of clinical presentation of patients.

3. Scientific direction - acute coronary syndromes - risk factors, prognosis and interventional treatment

The presented abstracts /№№28,48,49,52/ are a summary of the experience of the Department of Invasive Cardiology and Department of Intensive Cardiology at the NHH in the treatment of patients with acute forms of coronary heart disease. The positive role of interventional treatment to reduce mortality and improve the quality of life of patients has been confirmed. Special attention is paid to patients over 80 years of age, for whom the authors find a much greater benefit from interventional treatment compared to the conservative approach, where mortality is statistically higher.

Another area of research presented in some of the abstracts is the analysis of the significance of the anemic syndrome for the outcome after treatment, especially for patients

of the elderly population, patients with high body mass index and impaired renal function. The data suggest that anemic syndrome in the course of acute myocardial infarction leads to significantly more frequent manifestations of heart failure, regardless of the initial degree of left ventricular dysfunction. Therefore, the association of anemic syndrome with other factors that are predictors of poor outcome is sufficiently justified.

Abstracts №№ 34 and 56 present a study that interprets the importance of blood sugar levels for future complications in patients with myocardial infarction. The concept that poor glycemic control is an independent predictor of a worsened long-term prognosis is confirmed.

4. Direction arterial hypertension and other cardiovascular risk factors

The publications presented are mainly overviews of the issues identified. In one of the publications - article /publication № 3/, as well as in some of the presented abstracts, results from the application of the MMSE (Mini Mental State Examination) test are presented. The concept that poor blood pressure control leads to a significant increase in the index, correlated with manifestations of impaired cognitive abilities, regardless of age, is confirmed.

Abstracts № 21,38,39,40 present results that reflect two major epidemiological studies, one of which is EUROASPIRE III. The results are the result of a collective study led by experts from the European Society of Cardiology, which aims to evaluate the application of the currently known guidelines for the prevention of cardiovascular complications in patients after acute coronary syndrome.

5. Other cardiac topics

a / Topic of scientific analysis on cardiac complications in radiotherapy-treated Hodgkin's disease

b / Clinical case of aortic dissection with formation of aneurysm and rupture of the false lumen

c / Clinical case of complicated acute myocardial infarction with ST-elevation

Scientific contributions of Dr. Iliana Petrova

1. Scientific contributions in the main scientific field of interest related to the role of CIN and determinate the prognosis in patients in whom contrast media has been administrated

a / original scientific contributions - for the first time in Bulgaria a new biomarker for assessment of renal function is introduced - NGAL; NGAL was introduced for the first time in clinical practice; the first pilot study was performed among patients undergoing

routine angiographic examination; the first attempts were made to calibrate and refine the coefficients of variation and standardization of the method; for the first time, systematized scientific data on the role of NGAL are presented, including in the world; for the first time, a detailed approach to assessing renal function based on different stages of renal dysfunction is presented; the possibilities of a new approach for integration of plasma NGAL in the risk stratification of patients through their own scale for assessing the degree of renal impairment are demonstrated; a comparative model is presented on the independent role of each of the two types of biomarkers /functional and structural/; the classical scale for risk evaluation is complete by structural biomarker; for the first time in the Bulgarian medical literature it is proposed to incorporate a nephrological concept for the different forms of acute renal impairment; present for the first time the long-term consequences of CIN on the occurrence of major adverse events and permanent kidney damage; for the first time the structural biomarker NGAL is associated with persistent renal dysfunction after coronary angiography in the Bulgarian patient population;

b / scientific-theoretical contributions - analyzes on the expression of NGAL as a new biomarker for renal impairment and application in critically ill patients; describes the new conceptual framework for the occurrence of acute kidney injury proposed by ADQI; the scientific modern significance in the classification of a standard sample is determined;

c / scientific-applied contributions - the presence of groups with subclinical acute renal impairment is demonstrated, regardless of the degree of baseline renal function in patients undergoing angiographic examination with contrast material; reference limits of plasma NGAL are established according to the stage of chronic kidney disease; indicate the impact of comorbidities and risk factors on NGAL levels; based on own data, results of long-term follow-up of patients after contrast study are published;

d / as a natural continuation and summary of her long-term work, Dr. Petrova created a monograph on "Contemporary aspects of contrast-induced nephropathy in cardiology". The monograph includes and interprets own results from the clinical research related to the dissertation.

2. Scientific contributions in the field of invasive cardiology, presented mainly in a team of authors

a / scientific-theoretical contributions - development of new approaches for optimization of the results related to interventions on bifurcation lesions; search for an alternative approach to the diagnosis of periproximal myocardial ischemia; introduction of a new generation of drug-eluting stent;

b/ scientific-practical contributions - approval of the method of catheter thrombofragmentation for treatment of high-risk patients with pulmonary embolism; participation in the development of an algorithm for interventional treatment of acute forms of PE;

3. Scientific contributions in the field of acute coronary syndrome

a / scientific-confirmatory nature - the application of invasive methods of treatment of acute myocardial infarction leads to a significant reduction in mortality; the presence of anemic syndrome and unsatisfactory control of glycated hemoglobin should be considered as risk factors for poor outcome; it is confirmed that heart failure is an independent risk factor for the occurrence of in-hospital complications, invasive treatment is of greater benefit to patients over 80 years of age;

4. Scientific contributions in the field of arterial hypertension

a / scientific-theoretical and applied character – the degree of control of arterial pressure has a direct impact on the changes in the cognitive functions performance afterwards; Reaffirms the important role of home blood pressure control in achieving better drug response;

Teaching activity

Dr. Iliyana Petrova has a study load of over 250 hours per year as a lecturer in cardiology and students.

Assessment according to the minimum requirements for scientific, teaching and other activities

Based on the submitted documents and scientific papers, Dr. I. Petrova satisfies the requirements for acquiring the academic position of "Associate Professor".

The facts presented above of the career scientific and practical development of Dr. Iliyana Petrova, as well as her teaching load, are sufficient and meet both the legal requirements for acquiring the academic position of "Associate Professor" in the field of cardiology and the requirements of the Scientific advice board to the National Heart Hospital.

08.09.2021

Prof. Nina Gotcheva - Member of the scientific jury