



REVIEW

by Prof. Atanas Kundurdjiev, MD, PhD

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Member of the Scientific Jury

Order № 308 / 22.07.2021

of the Executive Director of MHAT "NHH" EAD

as announced in state newspaper no. 45 / 28.05.2021 competition for the academic position "Associate Professor" in the field of higher education 7. Health and Sports; professional field 7.1 medicine; specialty cardiology

Subject: the candidacy of Dr. Iliyana Hristova Petrova-Stoyanova, MD for the academic position "Associate Professor"

One candidate, Dr. Iliyana Hristova Petrova-Stoyanova, MD, appeared at the announced competition, fulfilling all the requirements of the announced competition according to the Regulations for application of law for development of the academic staff of the Republic of Bulgaria and the Regulations for development of the academic staff of MU - Sofia, namely:

1. Scientific degree "Doctor of Medicine";
2. Recognized specialty in cardiology since 2013;
3. Recognized licence in invasive cardiology since 2013;
4. Teaching activity since 2006;
5. Outlined profile of the scientific activity in the sense of a code - 03.01.47 (cardiology), professional field 7.1. medicine;
6. Sufficient number of scientific publications:
 - 6.1. Dissertation work for acquiring educational and scientific degree "Doctor" – 2020;
 - 6.2. An independent monograph published – 2021;
 - 6.3. Published articles full text in Bulgarian journals and national publications, outside the topic of the dissertation - 11. Of these, the

first author in 4 publications and the second and subsequent author in 7;

6.4. Published chapters in books and monographic collections in Bulgarian – 6;

6.5. Scientific reports and participations in national forums and congresses, with published abstracts in Bulgarian – 17;

6.6. Scientific reports and presentation of posters in international congresses in English - 25. From them:

6.6.1. Scientific participations with published abstracts in indexed scientific publications with impact factor - 15; total impact factor (IF) - 149.18 and individual impact factor - 20.039.

6.7. Attached number of citations - 11. Of them citations or reviews in scientific journals, referenced and indexed in world-famous databases with scientific information or in monographs and collective volumes (according to Google scholar) - 2.

These data fully meet the scientometric indicators of the Regulations for the development of the academic staff of the Medical University - Sofia and Dr. Petrova fully covers the requirements for participation in the announced competition.

Research and related contributions

The presented materials show the broad orientation of the candidate in cardiac sciences. Most of Dr. Petrova's scientific output is related to invasive cardiology and related contrast-induced nephropathy.

Dr. Petrova's interests are focused on various areas in cardiology related to preventive medicine, diagnostic and therapeutic approaches to various diseases, but a special place is occupied by a current interdisciplinary field - contrast-induced nephropathy (CIN). Her dissertation is also dedicated to her - "Study of renal function in patients undergoing invasive angiographic examination with a new biomarker - Neutrophil Gelatinase Associated Lipocaline (NGAL)". The monographic work "Contemporary aspects of contrast-induced nephropathy in cardiology" is also on this topic. It offers its own analysis on a number of literature sources and reflects the latest trends related to the change in terminology and definitions in the literature. A comprehensive overview of the role, evidence and applicability of the new structural biomarkers is proposed,

but through the prism of invasive cardiology and angiographic studies and all known preventive regimens are presented in an up-to-date and circumstantial manner.

For the first time in Bulgaria a new biomarker for assessment of renal function has been introduced in clinical practice - Neutrophil Gelatinase Associated Lipocaline (NGAL). Given that the first laboratory kits for NGAL were developed only for experimental conditions, the introduction of its use in everyday clinical practice has a high scientific and applied contribution and confirms the reliability of measurement in real patients. (№ 6,7,8, 16, 17, 41,47).

For the first time, data from a functional and structural biomarker (creatinine and NGAL) are incorporated into the new classification framework for acute renal impairment, but for the needs of everyday clinical practice in invasive cardiology. The ability of these procedures to identify and track more initial kidney damage makes NGAL the "kidney troponin."

At first look, the complex distribution of groups and subgroups is in fact a very original and innovative approach that overcomes some of the weaknesses of other studies, namely dealing with inhomogeneous groups and making it difficult to classify some intermediate cases. The results of the groups with "baseline normal NGAL and small variance of biomarkers" and "baseline high NGAL with small variance of biomarkers" formed from all patients who do not develop CIN, brings clarity on a kind of "gray area" and this is essential for practice.

An important scientific and applied contribution is the proposed own scale for assessment of renal damage in the light of the modern classification. A new approach for the integration of plasma NGAL in the risk stratification of patients is demonstrated and a comparative model reflecting the independent role of structural and functional biomarkers in conducting contrast angiographic examination is presented.

Of great practical importance are the developments on subclinical forms of acute renal impairment, regardless of the degree of baseline renal function. Different reference limits of plasma NGAL are also established according to the stage of chronic kidney disease. The influence of concomitant diseases and risk factors is also taken into account, supplementing the classical scale for risk assessment of CIN. For the first time, groups of patients with baseline elevated NGAL values were also studied. In general, there are few studies in the literature

examining patients with CKD and they do not describe the condition of subclinical AKI. These studies mark the beginning of an important problem that will need further research.

An important conclusion is that the simultaneous comparison between these two approaches - static values baseline and dynamic changes subsequently, leads to the creation of a number of possible combinations between the two biomarkers, which respectively reflect different clinical conditions. The detailed analysis that is done on these conditions is very innovative and brings clarity to a still poorly studied area.

In the field of invasive cardiology, Dr. Petrova actively participates in the team engaged in the introduction into clinical practice of innovative interventional approaches aimed at the treatment of complex bifurcation lesions (№22,23,42,25,43). It has been shown that myocardial ischemia during coronary interventions, whether transient or clinically evident, may have an impact on the long-term outcomes of the revascularisation approach. It is introduced and approved in the clinical practice of a new generation of drug-eluting stent (BIOSS), which is specially developed for the treatment of bifurcation lesions. An alternative approach to the detection of periprocedural myocardial ischemia in the treatment of bifurcation lesions is proposed by applying an intracoronary electrocardiogram (ECG) and electro-mapping of all vessels within the scope of coronary intervention (№22,23,42). The easy practical applicability of intracoronary ECG in the course of percutaneous interventions and the clinical safety of this method are demonstrated.

It has been shown that the registered ST-elevation in the intracoronary ECG at the end of percutaneous intervention is an independent predictor of major adverse events and in-stent restenosis in the target vessel within the next 12 months, and that the use of BIOSS bifurcation stent in clinical practice gives good results with reduction of periprocedural myonecrosis and incidence of in-stent restenosis (№22,23,25,42,43).

Additional contributions in the field of invasive cardiology are the active participation of Dr. Petrova in the preparation of NHH's own registers for monitoring patients after percutaneous coronary interventions, reporting of early and late results, the effect of staging in multivessel coronary heart disease or interventional treatment of patients with operative coronary revascularization (№5,18,19). The analysis of our own clinical data contributes significantly to improving the quality of work in the catheterization laboratory.

Another important area of scientific development in invasive cardiology is the application of interventional techniques in the diagnostic and therapeutic approach to acute pulmonary thromboembolism (PE) in accordance with modern leading European guidelines. She is part of the team that develops and approves its own algorithm for interventional treatment of acute forms of PE, which becomes part of the clinical practice in the hospital.

Another area in which Dr. Petrova has research interests is related to the risk profile of patients hospitalized with acute myocardial infarction with ST-elevation (STEMI) and acute myocardial infarction without ST-elevation (NSTEMI). The occurred in-hospital complications, the applied therapeutic approach and its impact on the prognosis are analyzed in detail and in depth (abstracts №28,29,30,48,49,51,52,53 [STEMI cohort] and abstracts №32,58,33,57,34,56 [cohort with NSTEMI]).

The author's contributions in the field of preventive cardiology are related to scientifically based analyzes on the main risk factors for cardiovascular diseases and presentation of own data.

Of interest are the developments presenting own data from the analysis of patients with suboptimally controlled blood pressure and the deterioration of the MMSE (Mini Mental State Examination) cognitive test (№35,36). Dr. Petrova expands her research interests in other areas related to therapeutic approach in conduction disorders (publications № 1,2 and abstract №31), specific cardiac complications in Hodgkin's disease (publication №4) and the presentation of rare clinical cases (publications № 10,11).

Teaching activity

The teaching experience of Dr. Iliana Petrova is from 2006 when after a competition she was appointed assistant professor of cardiology at the National Hospital.

The teaching load is 250 hours per year for the last five years, which meets the conditions of the Regulations for the development of the academic staff of MU-Sofia

Dr. Petrova is a welcome speaker at a number of scientific forums and conferences, giving a presentation in almost the entire spectrum of cardiology.

Medical-diagnostic activity

Dr. Iliyana Petrova is an established and proven cardiologist with 15 years of experience, received recognition from her patients and the medical community and with a well-deserved authority among her colleagues. She knows the basic modern methods of diagnosis and treatment in cardiology and successfully applies them in practice.

Participation in research projects

A project on the topic: "Changes in the human plasma / serum proteome in patients with heart failure" was successfully implemented in the period 2010-2012 together with the Institute of Molecular Biology - BAS (IMB-BAS), Central Laboratory for Therapeutic Drug Monitoring and Clinical Pharmacology (CLTDMCF) - "Alexandrovska Hospital" and National Heart Hospital.

Memberships in scientific societies and organizations

Dr. Iliyana Petrova actively participates in a number of national and international scientific organizations:

- Society of Cardiologists in Bulgaria (2007 - present)
Active participation in the presentation of the activities of the Bulgarian Society of Cardiology and establishing contacts with other European associations during the European Congresses of Cardiology (Vienna - 2007; Munich 2008)
- Secretary of the Working Group on Acute Coronary Syndrome at Society of Cardiologists in Bulgaria (2010-2012)
- Society of Interventional Cardiology (2009 - present)
- European Society of Cardiology (2010-now)
- European Association of Percutaneous Cardiovascular Interventions (EAPCI) - (2011-now)
- Association for Acute CardioVascular Care (ACVC) - (2017-now)

Conclusion:

Based on the review and analysis of the research, teaching and medical-diagnostic activities, I have every reason to propose to the Scientific Jury to elect Dr. Iliyana Hristova Petrova-Stoyanova, PhD of the academic position "Associate Professor" in professional direction "medicine" in the scientific specialty "cardiology".

15. 09.2021

Reviewer:

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