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Chairperson of the scientific jury According to the Ordinance 68/28.2.2020 Of the Executive Director of NHH

OFFICIAL STATEMENT

By Prof. Dr Boryana Delyiska, DSc Clinic of Nephrology, UMHAT "Queen Joanna-ISUL" Department of Nephrology, Medical University of Sofia On Dissertation thesis for the educational and scientific degree PhD

By

Dr Iliyana Hristova Petrova-Stoyanova

Topic: "Study of renal function in patients undergoing invasive angiographic examination with a new biomarker – neutrophil gelatinase-associated lipocalin (NGAL)"

Field of Higher education" 7. Healthcare and sports 7.1. Medicine Doctoral program "Cardiology" of the National Heart Hospital (NHH) Supervised by: Prof. Dr Nina Gotcheva Prof. Dr Boris Bogov

Based on ordinance number 68/28.02.2020 of the Executive Director of NHH I am appointed member of the scientific jury in a procedure for evaluation of a dissertation thesis for the PhD degree of Dr Iliyana Hristova Petrova-Stoyanova, doctoral student.

The dissertation was approved for public defense after assessment in the primary scientific department on 10.02.2020. The PhD student is appointed assistant professor at "Cardiology" Clinic of the National Heart Hospital (NHH).

There are reported in the relevant chapters demographic data, risk profile, cardio-vascular and other accompanying medical conditions; results from echocardiography, pharmacological treatment; characteristics of the invasive angiography, dynamics in serum creatinine, GFR and plasma NGAL. There was monitored in patients the intra-group and inter-group dynamics of the parameters. The influence of other clinical conditions on the values of NGAL was estimated, especially of ischemic heart disease and heart failure.

The discussion on the results reported on different tasks is delivered in a comprehensive way. It is divided into discussion of the results in patients with baseline preserved renal function; the data in group with baseline moderate form of chronic kidney disease; accompanying cardio-vascular disorders and levels of NGAL as well as a discussion on the risk evaluation scales in patients with contrast angiography.

The PhD student has formulated 11 inferences from her results which include:

- Plasma NGAL is the first biomarker to change significantly in CIN in patients with preserved baseline kidney function dynamics of the biomarker are most indicative in the interval of the first 4 hours while in patients with CKD the dynamics are most indicative between 4th and 12th hour after angiography.
- CKD influenced the kinetic performance of biomarkers and their elevation is registered later in time but NGAL is still earlier biomarker than creatinine.
- The role of NGAL as an early marker is confirmed by ROC analysis

In conclusion Dr. Petrova recognizes that the inclusion of NGAL in the diagnostic panel after coronary arteriography provides insight into the proper definition of different forms of AKI, there is no consistent relationship between the biomarker and the type of coronary disease; in heart failure the levels of NGAL are significantly elevated and the inclusion of NGAL in a risk assessment scale for renal dysfunction differentiates more groups and allows more robust evaluation of the risk in comparison with the classical evaluation based on serum creatinine. The contributions of the thesis are 11 and divided into theoretical-methodological and applied. The most important are highlighted as:

- 1. There are reported for first time in Bulgaria data on a new biomarker for AKI in invasive cardiology
- 2. NGAL is confirmed to be an early detection biomarker for CIN
- There are identified the possibilities for novel approach to inclusion of NGAL in the risk stratification of the patients

- There is presented a comparative model on the role of both structural and functional types of biomarkers in the assessment of renal function and the respective level of risk during contrast angiography.
- 5. There are reported the influence of accompanying medical conditions and risk factors over the levels of the biomarker, and the classical risk evaluation scale for development of CIN is complemented with due comparison against the structural biomarker.

There are delivered 8 publications relevant to the dissertation thesis, one of those is in impacted journal; 2 chapters in textbooks, abstracts from 8 presentations in scientific meetings, some of those published in outstanding international journals.

In respect to the above I assume that the dissertation thesis of Dr Iliyana Hristova Petrova-Stoyanova meets all requirements for a PhD degree according to the national legislation and the applied regulation at NHH and propose to the honorable members of the jury to support this application.

Prof. Dr Boryana Delyiska, DSC

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