

STATEMENT

by Prof. Ivaylo Rilkov Daskalov, M.D., PhD

Head of Clinic of Cardiology. MHAT-Sofia. Military Medical Academy

on the doctoral thesis for obtaining the educational and scientific degree Doctor of Philosophy

Professional field: 7.1 Medicine

Doctoral program: Cardiology

Author of the thesis: Dolina Gencheva Gencheva, M.D.

Form of doctoral study: independent

Department: First Department of Internal diseases, section of Cardiology, Medical University - Plovdiv

Title: „Assessment of changes in cardiac structure and function in pregnant women with preeclampsia and gestational hypertension”

Scientific advisors:

Prof. Fedya Nikolov, M.D., PhD, Head of Clinic of Cardiology at UMHAT “Sveti Georgi” Plovdiv and Head of First Department of Internal Diseases at Medical University - Plovdiv

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Overview of the procedure and the PhD candidate

Dolina Gencheva Gencheva, M.D. has presented a complete set of materials on paper and electronic medium in accordance with the requirements of Article 70 (1) of the I. Section, for the acquisition of educational and scientific degree doctor of philosophy at Medical University - Plovdiv; The PhD student has presented three publications, four participations in scientific forums and one participation in a scientific project, all related to the subject of the dissertation thesis.

I have no remarks on the documents submitted to me for the statement. Dr. Gencheva graduated with an excellent academic record the English Language high school in Plovdiv (2008) and the Master’s program in Medicine, also with an excellent academic record and was given the award “Golden Hippocrates” by the Medical University - Plovdiv (2014). She acquired a specialty in Cardiology in 2019.

Relevance of the topic:

The relevance of the topic examined in the dissertation work stems from the fact that, according to WHO data, hypertension is the most common complication of pregnancy in the modern

world. Two of the main forms of hypertension during pregnancy are gestational hypertension and preeclampsia. The dissertation work aims to give an answer, whether the presence of preeclampsia and gestational hypertension affects some echocardiographic parameters and biomarkers, and to what extent. The hypothesis is that if this is indeed the case, those indicators could be used for screening and diagnosis during pregnancy and for the prediction of cardiovascular risk in the longer term. Based on the results, recommendations could be made for a stricter control of individual cardiovascular risk factors, and conclusions can be drawn about the population of women at risk. When analyzing the studied parameters, risk groups with the greatest deviations could be identified, and those groups would be the subject of multi-disciplinary medical care in the obstetric and gynecology and cardiology practices.

Characteristics and evaluation of the dissertation thesis and contributions

The presented thesis is properly structured, the sections are well balanced, logically consistent and structurally in accordance with the requirements of the law of Academic staff development of the Republic of Bulgaria and the Regulations. It contains 197 standard pages, 66 tables, 24 figures, and 3 supplements. The bibliography includes 278 titles.

The literature review provides a thorough analysis of the clinical and laboratory findings in gestational hypertension, preeclampsia and in normal pregnancy. Special attention is paid to the already existing novel highly informative methods for heart investigation, as well as some highly sensitive laboratory methods. The PhD candidate summarizes all written in a uniform hypothesis for an instrumental-laboratory precise diagnostic work-up and screening with the possibility of long-term prognostic evaluation of the studied population.

The aim of the study is correctly and accurately formulated and corresponds to the topic of the dissertation thesis. The objectives are four in number and they fully correspond to the set aim.

The clinical materials and methods are accurately selected for the aim and the objectives. The study included 123 pregnant women assigned to three groups: with gestational hypertension (36: 29.3%), with preeclampsia (37: 30.1%) and a control group (50: 40.7%). A questionnaire method was utilized with the collection of anthropometric and anamnestic data relevant to the pregnancy, the diagnosis of preeclampsia/gestational hypertension, the presence of accompanying diseases, risk factors and family history for cardiovascular disease. Laboratory analysis was conducted on all participants including routine laboratory tests and the determination of specific biomarkers, as well as anamnesis, physical status, ECG and a thorough echocardiographic examination that included speckle-tracking-based global longitudinal strain of the left and right ventricles. The statistical methods used are modern and allow for a precise analysis. The fact that the data are processed with two fundamentally different and independent statistical programs (SPSS and MedCalc) makes a

very good impression. This shows a high professional attitude to the statistical analysis of the results.

In the chapter "Results" the data from the study are presented, illustrated with rich tables and graphic material. The results are in line with the tasks assigned.

In the chapter "Discussion", the PhD student discusses the obtained results and compares them with those of other authors. The ability to make a critical comparative analysis of the results is noticeable.

Eight conclusions are established which, in addition to summarizing the results, are also in full compliance with the set aim and objectives.

The dissertation thesis ends with the formulation of seven contributions. From them I would like to highlight those of an original scientific and theoretical nature. Such are the identification of echocardiographic parameters and specific biomarkers that distinguish the groups with gestational hypertension and preeclampsia from the controls, and can be applied in clinical practice. Some typical associations were established between the echocardiographic parameters and the biomarkers in gestational hypertension, preeclampsia and in normotensive women.

The following contributions of a predominantly applied nature can be noted: the generation of the database "Pregnant women with gestational hypertension/preeclampsia", the confirmation of the advantage of the global longitudinal strain based on speckle tracking, as more sensitive for changes in the systolic function of both chambers and the hypothesis of a model of prediction of cardiovascular risk in such populations, based on echocardiographic and biomarker studies.

Publications related to the dissertation thesis

Dr. Gencheva has presented three publications on the topic of the dissertation – two in Bulgarian scientific journals and one in an international journal. In the three publications, the PhD candidate is the first author. She has four participations in national scientific forums, presenting materials from the dissertation thesis. Dr. Gencheva was the chief investigator in a scientific project on the subject of the dissertation work.

In conclusion, I can say that the dissertation presented to me fully meets the criteria for in-depth scientific analysis on the subject, of fundamental, scientific and practical importance. I have no critical notes or recommendations to the study carried out and the materials submitted for the preparation of the statement.

Author's summary

The author's summary is written according to the generally accepted requirements and is presented on 60 standard pages. It summarises accurately the structure of scientific work. The aim and tasks are clearly and specifically set. The results are presented with a sufficient number of figures and tables. The author's summary contains the most important analyses, conclusions and contributions based on the main results.

CONCLUSION

The dissertation thesis contains scientific, scientific and applied and applied results, which represent an original contribution to science and meet the requirements of the Law on Development of Academic Staff in the Republic of Bulgaria, the Regulations for Implementation of the Law and the Regulations of Medical University - Plovdiv. The presented materials and dissertation results **are fully in line** with the specific requirements adopted in connection with the Regulations of the Medical University – Plovdiv for the application of the Law on Development of Academic Staff in the Republic of Bulgaria.

The dissertation thesis shows that the PhD candidate Dr. Dolina Gencheva Gencheva **possesses in-depth theoretical knowledge and professional skills in the scientific specialty cardiology, demonstrating qualities and skills for independent scientific research.**

Based on the above-written, I confidently give my positive assessment of the study as represented by the reviewed thesis, the author's summary, obtained results and contributions, and I propose to the honorable scientific jury to award the educational and scientific degree Doctor of Philosophy to Dr. Dolina Gencheva Gencheva in the Doctoral Program in Cardiology.

29.07. 2021 г.

Author of the statement: 

Prof. Ivaylo Rilkov Daskalov, M.D., PhD