

STATEMENT

on a Dissertation for the award of the Academic and Educational degree of “Doctor”

by Prof. Dr. Katerina Dimitrova Vitlianova, MD, PhD, DSc – Sofia University “St. Kliment Ohridski,” Faculty of Medicine, Department of “Internal Medicine, Pharmacology and Clinical Pharmacology, Pediatrics, Epidemiology, Infectious and Skin Diseases”

This review complies with the requirements for preparing reviews for the award of the educational and scientific degree of “Doctor.” The documents were submitted electronically within the legally prescribed deadline. The set of materials submitted by the candidate on electronic media for the preparation of the review, as well as the dissertation and abstract in hard copy, comply with the requirements of the Law on Scientific Research and Academic Degrees (ZRASRB) and the Regulations on the Conditions and Procedures for the Awarding of Academic Degrees and the Holding of Academic Positions at the “Prof. Dr. Paraskev Stoyanov” in Varna.

I. Defense Procedure

The Statement was prepared according to Order No. R-109-204/ June 3, 2026, issued by the Rector of Medical University of Varna, in accordance with a decision of the Department Council of the Department of Internal Medicine at “Professor Dr. Paraskev Stoyanov” Medical University—Varna, in accordance with Art. 62, 63 and 66 of the Regulations on the Development of Academic Staff at MU – Varna and Article 29 of the Regulations for the Implementation of the Law on the Development of Academic Staff in the Republic of Bulgaria, in connection with Report No. R-109-312/ July 20, 2021, by Assoc. Prof. Dr. Atanas Angelov, M.D., Head of the Department of Internal Medicine at MU-Varna, by decision of the Faculty Council of the Faculty of Medicine. I have been appointed to prepare a statement on the dissertation by Dr. Tsvetan Hristov Zhelev on the topic “Concomitant Carotid Pathology in Invasive Cardiac Diagnostics,” supervised by Prof. Svetoslav Zhivkov Georgiev, MD, for the award of the educational and scientific degree of “Doctor” under the doctoral program “Cardiology” in the field of higher education 7.3 Health Care and Sports, professional area 7.1 Medicine.

II. Brief Biographical Data

Dr. Tsvetan Zhelev graduated from the “Prof. Dr. Paraskev Stoyanov” Medical University in Varna in 2007. Since November 2007, he has been working and specializing in general and interventional cardiology at the Second Cardiology Clinic of the “St. Marina” University Hospital in Varna. From February 2008 to October 2008, he completed a cardiology fellowship at Hadassah Hospital in Israel. In December 2014, he earned his specialty in cardiology, and since August 2015, he has been certified in the field of interventional cardiology. Since 2017, he has been an assistant professor of cardiology in the Department of Internal Medicine. Dr. Zhelev has completed training in Ultrasound Vascular Diagnostics and Echocardiography at both the fundamental and expert levels. He is a member of the Bulgarian Society of Cardiology and the Bulgarian Society of Invasive Cardiology. His areas of interest include conventional and, in particular, interventional cardiology. He possesses in-depth knowledge and skills in the field of cardiology and the interventional diagnosis and treatment of cardiovascular diseases.

III. Structure of the Dissertation

The dissertation consists of 119 pages: introduction (1 page), literature review (49 pages), purpose and objectives (1 page), materials and methods (13 pages), results and discussion (34 pages), conclusions (1 page), and contributions (1 page). The author demonstrates a good

knowledge of contemporary literature and draws on a significant number of sources, including recent international publications. The list of references includes 201 titles, of which 7 are by Bulgarian authors and 194 by foreign authors. The study is illustrated with 11 tables and 21 figures. The study was conducted at the Second Cardiology Clinic of the "Sveta Marina" University Hospital in Varna from 2016 to 2019. The patient enrollment process began following approval by the Research Ethics Committee of the Medical University of Varna.

IV. Relevance and Significance of the Topic

Atherosclerosis is a systemic process affecting various vascular regions, with ischemic heart disease and cerebrovascular disease being the most common clinical manifestations. Current literature indicates that carotid and coronary atherosclerosis rarely occur in isolation but are more often manifestations of a generalized atherosclerotic process.

The presence of combined vascular pathology is associated with an increased risk of myocardial infarction, ischemic stroke, higher perioperative morbidity, and a poorer prognosis. Nevertheless, carotid pathology often remains underestimated in patients referred for invasive cardiology diagnosis.

Early identification of patients with multifocal atherosclerosis is crucial for risk stratification, therapeutic management, and the prevention of future vascular events.

V. Scope of the Dissertation

The aim of the study is to analyze the relationship between carotid and coronary atherosclerosis, the influence of major risk factors on the severity of vascular involvement, and the diagnostic value of various methods for assessing carotid pathology.

The dissertation employs modern clinical, instrumental (invasive and noninvasive), and statistical methods. The effort to adopt an interdisciplinary approach is particularly noteworthy, as evidenced by the inclusion of data on risk factors and the results of carotid ultrasound, digital subtraction angiography, and selective coronary angiography.

The study included 299 high-risk patients with a history of ischemic heart disease and cerebrovascular symptoms, as determined based on medical history and/or available medical records. The study design is primarily prospective; for a subset of patients meeting the inclusion criteria, it is retrospective. Inclusion and exclusion criteria for the study have been defined.

The statistical analysis is aimed at testing the hypothesis of a correlation between the severity of coronary artery disease and carotid stenosis and includes a correlation analysis, a multiple logistic regression model to determine the severity of CAS (carotid artery stenosis), while controlling for the severity of coronary artery disease, gender, age, smoking, diabetes, hypertension, hyperlipidemia, chronic kidney disease, and history of stroke.

In summarizing the results, Dr. Tsvetan Zhelev draws the following important conclusions:

- Carotid and coronary atherosclerosis represent interrelated manifestations of a generalized atherosclerotic process.
- Age, male gender, diabetes mellitus, and severe hypertension are associated with more severe carotid pathology.
- Combined vascular pathology is common in patients referred for invasive cardiological diagnosis.
- There is a significant correlation between the severity of carotid and coronary pathology.
- Combining noninvasive and invasive methods improves diagnostic accuracy.
- More active screening of high-risk patients may improve the early detection of multifocal atherosclerosis.

Through an in-depth study of carotid atherosclerosis and its association with coronary artery disease, this paper emphasizes the need for early diagnosis of patients with carotid pathology who are referred for invasive diagnostic procedures, and proposes an alternative diagnostic algorithm. The algorithm outlines the diagnostic and clinical approach for identifying

concomitant carotid atherosclerosis in patients evaluated for ischemic heart disease. It presents an assessment of the severity of carotid stenosis through ultrasound and angiographic examination of the carotid arteries, as well as the side effects and advantages associated with invasive testing.

The dissertation presents confirmatory contributions and four specific, well-formulated original contributions: The risk profile of patients with a high probability of carotid and coronary stenotic pathology has been determined. A practical diagnostic algorithm for the diagnosis of carotid atherosclerosis has been developed. A statistically significant gradient relationship has been established between the severity of arterial hypertension, assessed by the number of antihypertensive medications required, and the degree of atherosclerotic involvement of the carotid arteries: the probabilities of the presence of significant stenosis(es) in the carotid region (63.7%), of atherosclerotic changes in the carotid basin (90.6%), and of the absence of atherosclerotic changes in the carotid arteries (<10%) in patients with severe hypertension and at least two additional risk factors (presence of diabetes mellitus and/or hyper-LDL-cholesterolemia ≥ 2.6 mmol/L and/or serum creatinine ≥ 97 –115 mol/L).

VI. Publications and Research Activity.

In accordance with legal requirements, Dr. Tsvetan Zhelev has two full-text publications in Bulgarian journals based on his dissertation, and in both publications, Dr. Zhelev is the sole author.

In conclusion, Dr. Zhelev's dissertation fully meets the requirements for the award of the Academic and Educational degree of "Doctor" in terms of both structure and content. All of this gives me grounds to vote in favor and to recommend that the members of the Academic Jury at the "Prof. Dr. Paraskev Stoyanov" Medical University in Varna also vote in favor of awarding the academic and scientific degree of "Doctor" to Dr. Tsvetan Hristov Zhelev.

Date: 22 JUN 2026

Signature:

prof. F

Заличено на основание чл. 5,
§1, б. „В“ от Регламент (ЕС)
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