

REVIEW

of the dissertation entitled

"Concomitant Carotid Pathology in Patients Undergoing Invasive Cardiac Diagnostics"

submitted for public defence before the Scientific Jury for the award of the Educational and Scientific Degree **Doctor**

Field of Higher Education: **7. Health Care and Sports**

Professional Field: **7.1. Medicine**

Scientific Specialty: **Cardiology**

Author of the Dissertation:

Dr Tsvetan Hristov Zhelev, full-time doctoral student in the Doctoral Programme **Cardiology**, Professional Field **7.1. Medicine**, Medical University "Prof. Dr Paraskev Stoyanov" – Varna, enrolled by Rector's Order No. R-109-441/16.07.2018.

Reviewer:

Prof. Zhaneta Georgieva Tyaneva, MD, PhD, Medical University of Varna, member of the Scientific Jury appointed by Rector's Order No. R-109-204/03.06.2026.

Biographical Information

Dr Tsvetan Zhelev graduated from the Medical University "Prof. Dr Paraskev Stoyanov" – Varna in 2007. In the same year, he was appointed as a resident physician at the Second Department of Cardiology, Division of Invasive Cardiology, St Marina University Hospital, Varna.

In 2008, he completed postgraduate training in Cardiology at a hospital in Israel. He obtained his specialty in Cardiology in 2014 and his specialty in Invasive Cardiology in 2015.

Since 2017, he has served as an Assistant Professor in the Department of Internal Medicine at the Medical University of Varna. Since 2018, he has been enrolled as a full-time doctoral student in the same department, pursuing the Doctoral Programme in Cardiology with the dissertation entitled **"Concomitant Carotid Pathology in Patients Undergoing Invasive Cardiac Diagnostics."**

Dr Zhelev has completed specialised postgraduate training in Doppler ultrasonography, echocardiography (fundamental and advanced levels), transthoracic echocardiography, transoesophageal echocardiography, and stress echocardiography. In 2020, he obtained a Master's degree in Health Management.

Research Activity

The dissertation entitled **"Concomitant Carotid Pathology in Patients Undergoing Invasive Cardiac Diagnostics"** addresses an important and highly relevant topic, focusing on

several contemporary issues related to coronary angiography. The study highlights the importance of evaluating pathological changes in the carotid circulation and their correlation with coronary artery disease.

Structure of the Dissertation

The dissertation comprises 118 pages and is illustrated with 11 tables and 21 figures.

The bibliography includes 201 references, of which 194 are publications by international authors.

The study was conducted at the Second Department of Cardiology, St Marina University Hospital, Varna.

The doctoral candidate has authored two full-text scientific publications related to the dissertation topic, serving as the first author in all of them.

The dissertation has considerable clinical significance owing to the frequent coexistence of coronary and carotid atherosclerosis and the resulting increased risk of cardiovascular and cerebrovascular events.

The literature review demonstrates a thorough knowledge of the available scientific evidence and an in-depth analysis of the published literature.

The aim of the study is clearly defined: to investigate the relationship between the severity of cardiovascular disease and the severity of carotid atherosclerosis and to optimise the diagnostic and therapeutic approach in patients with coronary artery disease.

The investigation included 299 patients undergoing invasive coronary diagnostics.

A comprehensive diagnostic approach was employed, incorporating duplex ultrasonography, carotid angiography, and digital subtraction angiography (DSA).

The research objectives are clearly formulated and appropriately designed to achieve the stated aim. They include the analysis of cardiovascular risk profiles in patients with cardiovascular and cerebrovascular atherosclerosis, assessment of the exposure-dependent relationship between cardiovascular risk factors in groups with varying degrees of cardiovascular and cerebrovascular atherosclerosis, and evaluation of the correlation between cardiovascular and cerebrovascular pathology.

Statistical Methods

The statistical analysis was performed using contemporary statistical methodology and processed with the IBM SPSS statistical software package (SPSS Inc., Chicago, Illinois, USA), Version 19.0.

The results obtained and the conclusions drawn are convincing, scientifically sound, and constitute valuable original contributions. The discussion provides a well-balanced interpretation of the findings, establishing a clear relationship between the author's own results and the evidence presented in the literature review.

The study demonstrates a significant association between the severity of coronary artery disease and the extent of carotid involvement. Independent clinical factors associated with significant carotid atherosclerosis were identified, including advanced age, male sex, diabetes mellitus, and severe arterial hypertension. Furthermore, the author proposes a practical diagnostic algorithm for identifying patients who would benefit from additional carotid evaluation.

The conclusions are logically derived from the results of the study.

The scientific and practical contributions are clearly formulated, directly supported by the findings, and are of considerable importance for optimising the diagnostic approach in patients with multifocal atherosclerosis. Of particular significance is the comparative analysis between duplex ultrasonography and angiographic imaging techniques, together with the evaluation of the diagnostic and prognostic benefits of performing carotid angiography during invasive coronary diagnostics.

I fully agree with the conclusions reached by the author and with the statement of the scientific and practical contributions presented in the dissertation.

Conclusion

The dissertation submitted by **Dr Tsvetan Zhelev** addresses a highly relevant topic in contemporary cardiology. It successfully combines a comprehensive review of the current scientific literature with original clinical research and well-supported conclusions.

The dissertation, together with the accompanying scientific publications, fulfils the scientometric and academic requirements for the award of the Educational and Scientific Degree **Doctor**, in accordance with the Academic Staff Development Act of the Republic of Bulgaria and the Regulations of the Medical University of Varna.

I give my positive recommendation for awarding **Dr Tsvetan Hristov Zhelev** the Educational and Scientific Degree **Doctor**.

22 June 2026

Review

Заличено на основание чл. 5,
§1, б. „В“ от Регламент (ЕС)
2016/679

Prof.

MD, PhD