

**ATTENTION  
TO THE MEMBERS OF THE SCIENTIFIC JURY  
AT "ACIBADEM CITY CLINIC UMHAT TOKUDA" SOFIA,  
DETERMINED BY ORDER N 15-05-99/09.10.2023**

**OPINION**

By Assoc. Prof. Dr. Valeri Ljubenov Gelev, PhD  
Head of Cardiology Clinic,  
Acibadem City Clinic Tokuda UMHAT EAD

of dissertation paper for acquisition of educational and scientific degree "PhD"  
in the field of higher education 7. Healthcare and sport, professional direction 7.1. Medicine,  
doctoral programme „Angiology“.

**Author:** *Dr Polyana Todorova Antova*

**Form of doctoral studies:** Independent preparation

**Scientific unit:** Clinic of Angiology,

**Topic:** "Peripheral arterial disease of the lower extremities in women - risk profile, clinical presentation, outcome of the disease"

**Research supervisor:** Prof. Dr. Milena Staneva, Ph.D.

**1. General presentation of the procedure and the doctoral student**

The dissertation was discussed and proposed for defense by the extended Scientific Collegium of the Clinic of Angiology at Acibadem City Clinic UMHAT Tokuda EAD. At a meeting of the Scientific Council of Acibadem City Clinic UMHAT Tokuda EAD (Minutes 47/01.06.2023) and by order № 15-05-99/09.10.2023 of the Executive Director and the Procurator of the hospital, I was appointed an internal member of the Scientific jury in connection with the dissertation of dr Polyana Antova. I am determined to present an Opinion. There are no omissions in the documentation attached by Dr. Antova, the requirements of LDASRB, RILDASRB and the Rules for the terms and procedure for acquisition of scientific degrees and holding of academic positions in Acibadem City Clinic UMHAT Tokuda EAD are met. No plagiarism was detected from the Metadata StrikePlagiarism.com report provided.

I declare that I have no conflict of interest with the author of the dissertation.

Dr. Polyana Antova was born in 1986. He graduated Medicine from the Medical University of Sofia in 2011. Since 2012 until 2016 is a specialist in angiology at the Clinic of Cardiology and Angiology, then at the Clinic of Vascular Surgery and Angiology of the Tokuda Hospital Sofia, and since 2016 - an angiologist. Since 2017, she has been working in the Angiology Clinic at "Acibadem City Clinic UMHAT Tokuda". Dr. Antova acquired a specialty in "Angiology" in June 2016 at Medical University Sofia and a Certificate in HSW "Ultrasound Vascular Diagnostics" from Medical University Sofia - 2016. She has specializations in Angiology at home and abroad.

**2. Relevance of the topic**

Cardiovascular disease (CVD) is a leading cause of morbidity and mortality worldwide. One of the main clinical forms is peripheral arterial disease of the limbs (PAD). Some studies have shown that even after diagnosis of PAD patients, sex-related differences in treatment and disease outcome are present. The topic is relevant from a practical point of view.

### **3. Knowing the problem**

The doctoral student knows the state of the problem and creatively evaluates the literary material.

### **4. Research methodology**

The chosen research methodology allows achieving the set goal and obtaining an adequate answer to the tasks solved in the dissertation.

### **5. Characteristics and evaluation of the dissertation and contributions**

Dr Antova's, dissertation is written on 147 standard pages and is illustrated with 22 figures and 48 tables. It is structured correctly and includes the following sections: Abbreviations and symbols used - 3 pages; Introduction - 2 pages; Literature review - 28 pages; Purpose and tasks - 1 page; Material and methods - 7 pages; Own results - 62 pages; Discussion and Inferences - 23 pages, Conclusions and recommendations - 3 pages; Bibliography - 18 pages; Contributions - 2 pages. The bibliography contains 218 literature sources, of which 5 in Cyrillic and 213 in Latin

*In the introduction* the problem is well formulated and the purpose of the dissertation is substantiated.

The *literature review* is well structured in accordance with the developed topic. It is competently written and shows a good knowledge of the problem under consideration in its various aspects. The importance of risk factors for the development of atherosclerosis, the clinical manifestations of peripheral arterial disease (PAD) of the extremities, as well as some gender-related features of the presentation are discussed. It is known that published studies on PAD include fewer women than men.

*The aim* of the dissertation work is well formulated in accordance with the topic of the dissertation and the presented literature review. The present work aims to determine the risk profile, features in the course and outcome of the disease in patients with peripheral arterial disease of the limbs, WITH A REVIEW determining the influence of the female gender and developing a personalized algorithm for diagnosis, treatment and follow-up in the female gender. The set tasks, a total of 7, are completely sufficient and are fully implemented in the dissertation work.

In the "*Materials and methods*" section, 200 patients with PAD - 100 women and 100 men over the age of 18, who were examined by an angiologist for the period 2017 - 2022, are described in detail. The subjects were aged from 38 to 92 years, average age 68 years  $\pm 10$ . For the period 2018 - 2020, the study is retrospective, based on an electronic database, then in the period - 2020-2022, the collection of patient follow-up data continues prospectively. The methodology describes in detail the risk factors, methods of research, therapy and follow-up in patients with PAD, comparing the features of the course in men and women. The statistical processing of the data used appropriate methods and specialized statistical package SPSS (Statistical Package for the Social Sciences) version 16.0, which guarantees the reliability of the obtained results.

*Results and Discussion:* The results presented are convincing and clear. The importance of risk factors, methods of diagnosis and conducted treatment - conservative, endovascular, hybrid and/or operative in both sexes - were analyzed. Numerous qualitative and quantitative indicators related to the type of treatment and clinical course were tracked in detail when comparing men and women.

**Conclusions and contributions:** Based on the obtained results, Dr. Antova logically draws 8 conclusions that correspond to the tasks set. The most important of which are that women with PAD are older than men with PAD and are less likely to have a history of the disease when it is reported. Women with PAD more often have accompanying arthropathy, neuropathy and carotid pathology. They more often take analgesics and less often anticoagulants compared to men. Women with PAD are more often at a more advanced stage of the disease at initial diagnosis and have not experienced previous vascular interventions. In them, revascularization treatment was performed less frequently. They are less likely to appear at follow-up examinations compared to men. Based on the findings, recommendations were developed for women with PAB. The contributions are 6 original - 1 of a theoretical and 5 of an applied nature.

**6. The abstract reflects** what is written in the dissertation. In accordance with the academic requirements, the contributions are presented in it and a list of the publications in connection with the dissertation is attached.

**7. Assessment of the publications and personal contribution of the doctoral student**

The PhD student has submitted 2 publications in national journals and 2 scientific communications at national scientific forums, one of which has been published in a journal with IF. In 1 publication, Dr. Antova is first author and independent author in 1 publication and 2 communications. This scientific activity is sufficient to show that the doctoral student is consistent in his scientific activity and exceeds the national minimum requirements for the educational and scientific degree "PhD".

## CONCLUSION

The dissertation contains scientific-theoretical and scientific-applied results that represent an original contribution to science, expanding our knowledge in the field of multifocal atherosclerosis and angiology. It is written in a strictly scientific style. The dissertation paper and the presented materials meet all the requirements of **complies to all requirements** of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), the Rules for Implementation of the LDASRB and the Rules of Acibadem City Clinic Tokuda UMHAT EAD for implementation of the LDASRB

Dr. Polya Todorova Antova is a doctor - clinician, specialist in angiology with 11 years of work experience. The dissertation paper shows that the doctoral student has in-depth theoretical knowledge and professional skills in the scientific specialty "Angology", demonstrating qualities and skills for independent conduct of scientific research.

**In view of the above I give my *positive assessment* and recommend in full confidence to the members of the scientific jury to grant positive evaluation to the dissertation paper "Peripheral arterial disease of the lower extremities in women - risk profile, clinical presentation, outcome of the disease" and to award dr Polya Todorova Antova, "PhD" educational degree in the field of Higher Education 7. Healthcare and sports, professional field 7.1. Medicine, doctoral program "Angiology".**

02.11.2023  
Sofia

Opinion elaborated by:

Assoc. prof. Dr Valeri Gelev, PhD

