

## POSITION

From Assoc. Prof. Dr. Stefan Vasiliev Kisyov, MD,  
Medical University "Prof. Dr. Paraskev Stoyanov" Varna  
Department of Obstetrics and Gynecology

## REGARDING

Acquisition of the academic degree "Doctor" by Dr. Tsvetomir Evgeniev Kachovski, field of higher education: 7. Healthcare and Sports, professional field 7.1 Medicine and scientific specialty "Obstetrics and Gynecology"

Topic of the doctoral thesis: "Correlation between ultrasound diagnosis and immunohistochemistry in early and late abortions"

Academic Advisors: Prof. Dr. Emil Kovachev, D.Sc.

Prof. Dr. Anton Tonchev, D.Sc.

### **Biographical Data of the Candidate:**

Dr. Tsvetomir Evgeniev Kachovski graduated in 2014 from the Medical University of Pleven with a degree in Medicine. From 2014 to 2020, he worked at the Central City Hospital for Medical and Obstetric Aid – Varna, branch Dolni Chiflik, and specialized in Obstetrics and Gynecology at the University Hospital "Prof. Dr. D. Stamatov" in Varna. From July 10, 2016, to January 20, 2020, he held the position of an honorary assistant at the Department of Obstetrics and Gynecology at the Medical University of Varna. In 2020, he obtained a specialization in Obstetrics and Gynecology. Since 2020, he has been a regular assistant at the Department of Obstetrics and Gynecology at the Medical University of Varna. Currently, he is also a specialist doctor at the University Hospital "Prof. Dr. D. Stamatov" in Varna, working in the gynecology department. Over the years, he has attended courses both in

Bulgaria and abroad in the field of obstetric care, ultrasound diagnostics, hysteroscopic surgery, and colposcopy.

The **doctoral thesis** on the topic "Correlation between ultrasound diagnosis and immunohistochemistry in early and late abortions" is written in correct Bulgarian language and a clear scientific style. It consists of a total of 161 standard pages, accompanied by 62 tables and 36 figures. The thesis is divided into 14 chapters, including: Introduction (2 pages), Literature Review (41 pages), Aim and Objectives (1 page), Materials and Methods (20 pages), Results (40 pages), Discussion of Results (10 pages), Conclusion (3 pages), Summary (1 page), Contributions (1 page), Appendices (4 pages), and more. The bibliography contains references to 305 sources, with 32 in Cyrillic and 273 in Latin script.

### **Relevance of the Problem**

The research problem explored in the doctoral thesis of Dr. Tsvetomir Kachovski - early and late spontaneous abortions - is extremely relevant, considering the data indicating a high increase in preterm births and spontaneous abortions in our country.

In our country, during the period 2019-2022, a total of 78,207 abortions were performed, out of which 23,561 were spontaneous abortions and 54,634 were therapeutic abortions. In recent years, a significant number of researchers have highlighted impaired implantation and abnormal placental development as factors contributing to unsuccessful pregnancies. Through Doppler velocimetry of uterine vessels and the determination of decidual NK cells, Dr. Kachovski investigates the causes of spontaneous abortions and the role of the trophoblast in reproductive failures.

**The literature review** clearly demonstrates that the researcher has thoroughly studied a substantial number of literature sources - 305 authors. Of these, 273 are in Latin script, and 32 are in Cyrillic. A large portion of the studied publications are from the last 10 years, indicating the project's relevance and employment of contemporary research methods. The review presents a detailed description of the research subject - spontaneous abortions - and the research methods employed, including ultrasound examination, Doppler velocimetry, and immunohistochemistry. It holds significant informational value, is logically

structured, and serves as a solid foundation for the development of the doctoral thesis. The review provides comprehensive descriptions of the anatomy of uterine arteries, which are subjects of Doppler examination, and the placenta, which is subjected to immunohistochemical staining. The literature review presents correlations discovered thus far between ultrasound diagnosis and immunohistochemistry in early and late abortions.

The purpose of the doctoral thesis is to discover a correlation between Doppler velocimetry of uterine arteries and the amount of dNK (decidual NK) cells and the proliferative marker Ki-67, examined in placental tissue material through immunohistochemical analysis, in early and late spontaneous abortions and elective abortions. The defined tasks are clear and well-formulated, aligned with the stated objective. There are a total of 7 main tasks.

In the "**Materials and Methods**" section, the inclusion and exclusion criteria of the participants in the scientific study are accurately specified. The execution of the project was approved by the Ethics Committee for Scientific Research at MU-Varna, No. 78 dated October 25, 2018, and funded by the "Science Fund," Project No. 19008. The doctoral thesis is based on a study conducted at the University Hospital "Prof. Dr. Dimitar Stamatov" Ltd., Varna, in the "Gynecology Department" from October 2018 to January 2023. All materials presented by the author are original, including sonographic images and electron microscope images.

For the completion of the doctoral thesis, Dr. Kachovski utilized a comprehensive set of clinical data - anamnestic, clinical, imaging, pathoanatomical, and immunohistochemical - as well as statistical analyses, including correlation and regression analyses.

The author presents the discussion of the results in 4 subsections. These subsections are logically organized and present the obtained results in a sequential manner. To enhance clarity, the results are summarized in tables and graphs. The discussion section clearly and accurately highlights the connections between Dr. Kachovski's research findings and those of various publications by different authors, considering demographic characteristics, immunohistochemistry, and Doppler examination in relation to abortions.

**Notes and Recommendations** The presented "Screening for the Prediction of Subsequent Pregnancy" is highly innovative and can be applied in the daily practice of every obstetrician-gynecologist. The results of the correlation and

regression analysis conducted in the doctoral thesis have led to the presentation of 11 conclusions.

As contributions with an original character to the doctoral thesis, 3 have been highlighted, along with three more with a confirmatory nature.

### **Conclusion**

The presented doctoral thesis by Dr. Tsvetomir Evgeniev Kachovski, titled "Correlation between Ultrasound Diagnosis and Immunohistochemistry in Early and Late Abortions," is both relevant and meets the scientometric criteria, as well as the regulations for academic development at MU-Varna for conferring the academic degree of "Doctor."

The doctoral thesis fulfills the criteria of scientific work with clinical and practical orientation in terms of development, execution methods, content, and presentation format.

The author's conclusions are well-illustrated in the text with figures, diagrams, and tables.

I recommend to the esteemed members of the Scientific Jury to vote positively for the award of the academic degree "Doctor" in the scientific specialty of "Obstetrics and Gynecology" to Dr. Tsvetomir Evgeniev Kachovski.

August 19, 2023

Prepared by:

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