



# STATEMENT

by

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**Regarding: Dissertation work for awarding the educational and scientific degree „Doctor“ Professional field: 7.1 Medicine, Thoracic surgery**

Basis of the order by the Rector of Medical University Plovdiv: No. R-699/  
28.02.2024

**To Dr. Dimcho Dimitrov Argirov MD**

Department of Special Surgery, Medical University Plovdiv, University Hospital “Kaspela“ Plovdiv, doctoral student in regular form of education

**Topic: "Ultrasound-guided transthoracic incisional biopsy - role and importance in the diagnosis of peripheral lesions of the lung, mediastinum and chest wall"**

**Supervisor : Prof. Angel Uchikov, MD, PhD, DSc.**

The candidate submits for review, a dissertation work, an abstract, a list of publications on the topic of the dissertation for the preparation of an opinion, which is in full compliance with the regulations of the Medical University - Plovdiv for the acquisition of the educational and scientific degree "Doctor".

**A brief biography.** Dr. Dimcho Dimitrov Argirov was born on May 6, 1964. He graduated in medicine in 1990 at Medical University of Plovdiv. In 1995 he obtained a specialty in Surgery, and in 2000 he obtained a specialty in Thoracic Surgery. Since 1991 he has been an assistant, senior assistant and chief assistant in the Department of "Special Surgery", Medical University of Plovdiv. He has conducted courses in laparoscopic surgery, abdominal

ultrasound and health management. He possess 29 publications and 16 participations in national congresses with international participation.

### **Structure of the Dissertation Work**

The dissertation work is written on 119 standard pages. The identified correlations are presented and illustrated through 26 figures, 12 tables and 1 appendix. It is evenly divided into the following parts: Introduction, Objectives, Tasks, Materials and Methods, Results, Discussion, Conclusions and Contributions. The bibliography contains 239 literary sources, with 9 in Cyrillic and 230 in Latin script.

### **Relevance and Significance of the Dissertation Work**

Transthoracic ultrasound-guided biopsy has the advantages of being performed at the patient's bedside, no radiation exposure, low cost, and precise control. The technique is relatively safe with a low risk of complications (under 0.5%) and is preferred as an alternative to minimally invasive surgery used for diagnosis. Ultrasound-guided transthoracic incisional biopsy of peripherally located tumor masses of the chest wall, lung, pleura, diaphragm, and mediastinum is a sufficiently reliable minimally invasive procedure that allows obtaining adequate material for histological verification.

Dr. Dimcho Argirov has constructed his dissertation work on a modern health problem - a comprehensive study on the role and significance of diagnostic aspects of ultrasound-guided transthoracic cutting biopsy of peripheral lung lesions, mediastinum and chest wall

The structure of the literature review, the formulation of the objectives and related tasks, the presentation of the results and their analysis demonstrate that Dr. Argirov has a deep research view of the scientific problem under consideration.

### **Characteristic and Evaluation of the Dissertation Work**

**The literature review** is uniformly structured and encompasses all aspects of diagnosis, imaging methods, the technique of ultrasound-guided transthoracic biopsy and modern minimally invasive techniques

**The objective** is briefly and clearly stated, namely to study and improve the diagnostic capabilities of ultrasound-guided transthoracic biopsy in patients

with imaging-proven thoracic masses suspicious for malignancy, and also to measure the sensitivity, accuracy, and predictive values of the method for various neoplasms in the chest, as well as to analyze the complications and ways to prevent them.

**The tasks** are precisely and consistently formulated and are five in number, and the PhD student has achieved an adequate answer to each one of them.

The dissertation work was carried out on 264 patients who underwent ultrasound-guided transthoracic incisional biopsy. The study encompassed the period from January 2020 to December 2021. The patients included in it were hospitalized and treated in University Hospital "Kaspela" - Plovdiv. All patients underwent preliminary CT or PET/CT imaging. Clinical, laboratory, imaging and instrumental methods of examining patients were used. The results were processed using appropriate statistical methods.

**The results** were structured correctly and it was found that in some of the patients, the cause of the pathological finding was related to an asymptomatic course and an accidental finding in the lung parenchyma, which was the result of preventive examinations or hospital stay. It has been shown that in order to achieve an adequate morphology, the combination of computed tomography images with reconstruction and transthoracic ultrasonography is imperative. The high diagnostic accuracy of ultrasound-guided transthoracic incisional biopsy of 93%, sensitivity of 90% and specificity of 95.83% was established. Of the established complications reaching 4.17%, the most common are pneumothorax and hemoptysis. From the analysis of the data, it has been proven that transthoracic biopsy under ultrasound guidance is a safe method, with high efficiency and accuracy leading to the final histological diagnosis.

As a result of own experience and critical analysis of the literature, a proprietary algorithm was proposed to optimize the diagnostic possibilities in patients with thoracic lesions. The latter will be extremely useful in thoracic surgical practice.

In the **discussion**, the own results and literature data on the different sections of the study are discussed.

The **conclusions** are clearly stated and correspond to the objectives. They are built on the main results of the study and the correct interpretation of the data by summarizing conclusions about it.

The **Abstract** contains 39 pages meets the requirements and content of the thesis, reflecting the main results achieved in the study.

The actual number of Dr. Argirov's scientific publications related to the scientific work is three in which he is the first author.

In the presented dissertation work, it can be seen that Dr. Argyrov was able to motivate a team of researchers for the study of the problem "Ultrasound-guided transthoracic cutting biopsy in the diagnosis of peripheral lesions of the lung, mediastinum and chest wall". At the same time, it is established that he has made a major personal contribution to the realization of the current dissertation work. Dr. Argirov has carried out serious research on this medical problem, meeting the criteria for a dissertation.

### **Conclusion:**

Dr. Argirov's dissertation contains scientific-theoretical and scientific-applied results, that represent an original contribution to science and meet the requirements of the Academic Staff Development Act of the Republic of Bulgaria (ASDA), the Regulations for the Implementation of the ASDA and the Regulations of MU - Plovdiv. The development of the dissertation work "**Ultrasound-controlled transthoracic cutting biopsy - role and importance in the diagnosis of peripheral lesions of the lung, mediastinum and chest wall**" shows that Dr. Argirov has in-depth theoretical knowledge and professional skills in the scientific specialty of Thoracic Surgery. He possesses the qualities and skills to independently conduct scientific research. Based on the above, I give my positive assessment of the dissertation work and the conducted studies presented by the above-reviewed: dissertation work, abstract, the achieved results and contributions and propose to the Honorable Scientific Jury to award the educational and scientific degree "**Doctor**" to Dr Dimcho Argirov in the professional field 7.1 Medicine and doctoral program of the specialty "Thoracic Surgery".

19.03.2024  
Sofia

Assoc. Prof. Georgi Stanev Yankov, MD, PhD

Заличено на основание  
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