

REVIEW

by

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of

the dissertation for awarding the educational and scientific degree "Doctor"

Professional field: 7.1 Medicine, Thoracic surgery

Author: Dr. Velizar Dafinov Hadzhiminev

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Form of doctoral studies: Independent preparation

Topic: „Secondary spontaneous pneumothorax – a study on diagnostic and therapeutic approach“

Supervisor:

Assoc. Prof. Dr. Ivan Novakov, DSc

1. Brief biographical data about the doctoral student

Dr. Velizar Dafinov Hadzhiminev was born on March 22, 1988 in Nova Zagora. In 2007 he graduated from the Foreign language school in Haskovo with English and German. In 2013 he graduated from the Medical University of Varna. In the same year he started working as a resident doctor in Second Clinic of Surgery of the University Hospital "Sveti Georgi - Plovdiv. In 2019 he became a specialist in Surgery. In 2017 he started working as an assistant professor in the Department of Special Surgery at MU-Plovdiv. In 2021 he started working as assistant-professor in the Department of Propedeutics of Surgical Diseases, Department of Surgery at MU-Plovdiv. He has participated in courses and seminars in Bulgaria and abroad.



2. Structure of the dissertation

The scientific work is dedicated to a current problem in modern thoracic surgery - secondary spontaneous pneumothorax. The dissertation of Dr. Hadzhiminev is written on 148 pages. The bibliography contains 210 sources, of which 1 is in Cyrillic and 209 in Latin, and over 75% of them are from the last 10 years. The dissertation is structured as follows: introduction - 2 pages; literature review - 42 pages; aim and tasks - 1 page; materials and methods - 7 pages; results and discussion - 65 pages; deductions - 2 pages; conclusion - 2 pages; bibliography - 21 pages; scientific publications - 1 page;

The aim of the research is: performing of a research on the clinical and diagnostic and therapeutic aspects of the secondary spontaneous pneumothorax. To achieve this goal, 5 tasks have been set.

3. Literature review

The literature review has a volume of 42 pages and is sufficiently detailed. The historical aspects and demographic structure of patients with secondary spontaneous pneumothorax are discussed in detail. The various etiological factors of secondary spontaneous pneumothorax are described in detail, and COVID-19 pneumonia is presented here as a new cause of pneumothorax. The methods for diagnosis and measurement of pneumothorax, as well as the various therapeutic methods are discussed in detail. The review is balanced and informative and shows a good knowledge of the problem.

4. Materials and methods

The study was retrospective with a prospective component, including a total of 179 patients hospitalized in the Second Surgical Clinic of the University Hospital "Sveti Georgi" - Plovdiv for the period 2014 - 2020. The signs of observation are determined and the methods are described. They are subdivided into clinical, interventional and therapeutic.

Statistical processing of the results was performed with the statistical package SPSS v.19 inc Chicago, IL, USA. The results are presented by arithmetic mean and standard deviation, the critical significance level used is $P < 0.05$. Appropriate and modern statistical methods are used.

5. Own results:

The results strictly follow the course of the set tasks and are illustrated with 37 figures, 12 tables and 1 diagram.

In the first task, Dr. Hadzhiminev found that secondary spontaneous pneumothorax affects male population more frequently. The most commonly affected age group was those over 55 years of age. There was no significant association between seasonality and secondary spontaneous pneumothorax.

In the second task, the doctoral student analyzed the various causes of secondary spontaneous pneumothorax. Chronic obstructive pulmonary disease has been identified as leading cause. The author registered COVID-19 pneumonia as the second leading cause in association with the pandemic that began in 2020. Interstitial pneumonia has been identified as leading cause of secondary spontaneous pneumothorax in younger patients.

In the third task, an analysis was made of patients with secondary spontaneous pneumothorax in terms of size and affected thoracic part. The author found that pneumothorax was more often right-sided. In terms of its size, it was most often "large", over 2 cm. As "tension" it occurred most often in patients over 55 years.

In the fourth task the dissertation presented a detailed analysis of the different therapeutic methods in secondary spontaneous pneumothorax and its postoperative complications. Prospectively, 19 patients were followed for a period of 6 months. The author found that continuous air leakage is the most common postoperative complication of secondary spontaneous pneumothorax. In the study, tube thoracostomy was proposed as method of choice for treating secondary spontaneous pneumothorax, regardless of its etiology. Video-assisted thoracoscopy with pleurodesis has been identified as the leading method of managing with persistent alveolar permeability/continuous air leakage. The dissertation found that thoracotomy with resection achieved the best postoperative results in the treatment of secondary spontaneous pneumothorax. In the prospective follow-up of patients operated for secondary spontaneous pneumothorax, pleurofibrosis was found to be the most common X-ray finding. The author proposes a diagnostic-therapeutic algorithm in patients with COPD and secondary spontaneous pneumothorax.

In the fifth task of the dissertation, 18 patients with secondary spontaneous pneumothorax associated with COVID-19 pneumonia were studied. Here, Dr. Hadzhiminev found that mortality in patients with COVID-19 and secondary spontaneous pneumothorax was significantly higher. In this type of patients, the author suggested tube thoracostomy as a therapeutic method of choice.

6. Contributions

As contributions I accept:

1. For the first time in Bulgaria, in the conditions of a pandemic, a large group of patients with secondary spontaneous pneumothorax associated with a new pathology - COVID-19 pneumonia was studied in detail.

2. The dissertation work, based on the obtained results, offers a diagnostic-therapeutic algorithm in patients with COPD and secondary spontaneous pneumothorax.

7. Scientific publications

Dr. Hadzhiminev presents 4 scientific publications on the topic, 3 of which are in English and 1 in Bulgarian. He is the first author in all of them.

8. Abstract

The abstract meets the requirements and content of the dissertation, presenting the main results achieved in the study.

9. Critical remarks and recommendations

I find some spelling mistakes and inaccurate omissions in punctuation. The number of cited authors in Cyrillic is low. I consider it promising to follow the operated patients for a period longer than 6 months.

All these notes concern some details and do not reduce the scientific value of the dissertation.

10. Conclusion

The dissertation of Dr. Hadzhiminev contains scientific and applied results that meet the requirements of the Law on the Development of the Academic Staff of the Republic of Bulgaria and Regulations of MU - Plovdiv. I am convinced of my positive assessment of the research and I propose to the esteemed scientific jury to award the educational and scientific degree "Doctor" to Dr. Velizar Hadzhiminev in a doctoral program in "Thoracic Surgery".

24.02.2022 г.

Plovdiv

Prof. Dr. Angel Uchikov, DSc.

