

To the President of
Scientific jury appointed by order of
The Executive Director of Acibadem City
Clinic UMBAL Tokuda EAD №19-06 / 10.01.2022

REVIEW

**From Prof. Gencho Krastev Nachev, MD, DSc, President of the World Society of Cardio-Vascular and Thoracic Surgeons, Executive Director of the University Hospital "St. Ekaterina" EAD, member of the jury for the award of scientific and educational degree PhD, defined
by order of the Executive Director of Acibadem City Clinic University Hospital Tokuda EADN 19-06 / 10.01.2022**

Subject: Dissertation work of Dr. Asen Stefanov Kelchev, PhD student in free form of education at the Clinic of Cardiac Surgery. Acibadem City Clinic UMBAL Tokuda EAD, on the topic "Surgical pulmonary thrombectomy as a method of treatment for acute pulmonary tromboembolism"

Supervisor: Assoc. prof. Dr. Dimitar Nikolov, PhD.

The documents presented by Dr. Asen Stefanov Kelchev - dissertation, abstract and additional documents are in accordance with the requirements of the regulations for the acquisition of ONS "Doctor" and the regulations for the development of the academic staff of Acibadem City Clinic University Hospital Tokuda EAD. I do not find any gaps in the submitted documentation. I declare that I have no conflict of interest with the candidate.

Brief biographical data

Asen Stefanov Kelchev graduated from high school in 1997. in 125 Secondary School "Boyan Penev" with study of foreign languages with a profile of French. In 1998 he was admitted to the Medical University - Sofia, graduating from medical school in 2004. Since 2001 he has worked as a nurse in CARIL of UMSBAL "N. I. Pirogov" and then in KARIL of UMHAT "St. Ekaterina" EAD, where during the internships he was a volunteer associate at the Clinic of Cardiac Surgery. In 2005 he was appointed as a resident doctor at the same clinic, where he worked until April 2007. In 2005 he won a competition and was enrolled in a specialization in General Surgery. He started working as a resident doctor at the Department of Cardiac Surgery at Tokuda Hospital in Sofia in May 2007. In 2008 he won a competition and was enrolled in the specialization in cardiac surgery at the Medical University of Sofia. In 2018 he completed a master's degree in health management at SWU "Neofit Rilski". In 2018 acquired the specialty "Vascular Surgery". From May 2018 he is the head of the Cardiac Surgery Department at Acibadem City Clinic Cardiovascular Center. Since 2019 he has been a part-time assistant at the Medical Faculty of Sofia University "St. Kliment Ohridski". He is married and has one child. He has attended a number of courses and trainings abroad. Germany, France, Switzerland, Romania, Greece and Belgium) Fluent in French and English.

Significance of the topic

The topic of the dissertation is modern and interesting. Pulmonary thromboembolism is a socially significant disease. Increased life expectancy and good diagnosis today lead to a gradual increase in its frequency from a statistical point of view. Depending on the thrombotic load and the clinical picture, the prognosis varies from patient to

patient. Patients at proven high risk are indicated for emergency reperfusion therapy, be it drug (fibrinolytic) or surgery.

Surgical pulmonary thrombectomy has long been a method of clinical practice. The subject of this type of therapy are patients with contraindications to fibrinolytic therapy or unsuccessful, with thrombus in transit or free blood clots in the right heart cavities, as well as patients with riding thrombus in the pulmonary artery due to its relatively easy surgical extraction. There are discrepancies in the publications on the topic in terms of diagnosis, indication, styling and results, which makes it interesting and dissertable.

In addition in Bulgaria:

- There is currently no study on the surgical treatment of acute pulmonary thromboembolism.
- There is no clear algorithm for behavior in patients in need of reperfusion therapy in order to select the most appropriate individual procedure (systemic fibrinolysis, surgical thrombectomy).
- There is no national registry of patients with pulmonary thromboembolism, as well as a program for monitoring and treatment of possible complications, namely: post-thrombophlebitis syndrome and chronic thromboembolic pulmonary arterial hypertension (STERN).
- At the time of the study, there was no specialized center for the treatment of patients with acute BTE and its complications.
- There is no clear protocol for preoperative, intraoperative and postoperative behavior in patients treated with surgical pulmonary thrombectomy.
- There is no protocol on the use of extracorporeal membrane oxygenation (ECMO) as a rescue therapy in patients with cardiac arrest.
- There is a lack of specialized multidisciplinary teams (PERTs) to determine the therapeutic approach in acute BTE.

Structure of the dissertation:

The scientific work of Dr. Asen Kelchev is presented on 149 pages according to the requirements and contains an introduction, literature review, research methodology with goals and objectives, materials and methods, analysis of results, discussion, conclusions, bibliography. The dissertation material is illustrated with 50 figures and 43 tables. The bibliography includes 242 literary sources, of which 10 by Bulgarian and 232 by foreign authors, 32 from the last 5 years. Contributions are presented only in the Abstract, where a list of publications and rubber announcements on the topic is attached.

The introduction is on 3 pages. The literature review is presented on 56 pages and shows good awareness of the author regarding the diagnosis and treatment of patients with acute pulmonary thromboembolism, technical aspects of surgical and medical treatment and results of clinical trials. The author demonstrates good information on the topic of the dissertation.

Dr. Asen Kelchev aims to determine the criteria for selecting patients suitable for surgical pulmonary thrombectomy as a method of treatment for acute pulmonary thromboembolism (BTE) in order to improve the prognosis and reduce mortality from it. To achieve this goal, Dr. Asen Kelchev sets himself the following tasks:

1. Study of the level of efficacy and safety of surgical pulmonary thrombectomy in the treatment of acute BTE compared with systemic venous fibrinolysis.
2. Based on the clinical picture, non-invasive and invasive studies, determination of a set of criteria for selection of patients suitable for surgical pulmonary thrombectomy
3. Determining the optimal surgical technique to achieve the best possible results from the application of surgical pulmonary thrombectomy.

4. Determining the optimal pre- and postoperative intensive care and the role of ECMO (extracorporeal membrane oxygenation) in patients with surgical pulmonary thrombectomy.
5. Development and implementation of an algorithm for selection of patients suitable for surgical pulmonary thrombectomy, as well as construction of multidisciplinary team involved in deciding on the optimal therapeutic approach (PERT - Pulmonary Embolism Response Team)

Methods of study: The study included 100 patients with acute massive pulmonary thromboembolism who were treated with reperfusion therapy with systemic fibrinolysis or surgical pulmonary thrombectomy. Patients were divided into two groups according to the reperfusion therapy used, as follows: Group 1, comprising 36 patients treated with fibrinolysis and Group 2, consisting of 64 patients treated with surgical pulmonary thrombectomy. The statistical analysis includes various parametric and non-parametric methodologies that are in line with the set goals.

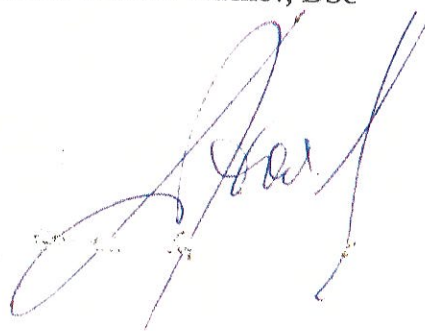
Conclusion: In the presented dissertation work Dr. Assen Kelchev. examines 100 patients with acute pulmonary thromboembolism treated with fibrinolysis or surgical pulmonary thrombectomy. The goal has been chosen correctly, and the fulfillment of the set tasks naturally leads to its achievement. Bulgaria is a small country and due to lack of financial resources we cannot expect large-scale, much less epoch-making scientific achievements. In my opinion, for the award of the scientific degree "PhD" it is necessary for the author to meet 3 conditions:

1. To be acquainted with the world knowledge and achievements on the topic / good literary review /.
2. To show the ability to process and analyze the material.
3. On the basis of the research data to formulate conclusions with practical orientation.

Dr. Asen Kelchev has unconditionally fulfilled all three conditions. The presented work meets the requirements for awarding educational and scientific degree "PhD", laid down in the Law for development of the academic staff in the Republic of Bulgaria and the Regulations for development of the academic staff of Acibadem City Clinic UMBAL Tokuda. Regardless of my critical attitude to some of the conclusions and contributions made, I believe that the dissertation of Dr. Asen Stefanov Kelchev has all the necessary qualities and deserves to be accepted. I will vote in favor and call on the other members of the jury to support it.

24.01.2022

Prepared by: Prof. Gencho Krastev Nachev, DSc



Sofia

