OPINION

from
Prof. Dr. Dimitar Georgiev Petkov PhD,

Head of the Clinic of Cardiac Surgery at
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External member of the Scientific Jury

According to the order: №19-06 / 10.01.2022
for obtaining the educational and scientific degree "Doctor of Philosophy"

In the field of higher education 7. "Health and Sports", professional field 7.1 "Medicine"
and scientific specialty "Cardiovascular Surgery", code 03.01.49

On the topic:
"Surgical pulmonary thrombectomy as a method of treatment for acute pulmonary embolism"

of Dr. Assen Stefanov Keltchev

Supervisor: Assoc. Prof. Dr. Dimitar Nikolov, Ph.D.

According to the procedure:
The regulations of the Law for the Development of the Academic Staff in the Republic of Bulgaria and have been complied with the Regulations for its implementation in Acibadem City Clinic Hospital Tokuda Sofia , respectively - the clauses for optaining the educational and scientific degree "Doctor of Philosophy".

I. Structure

The scientific work of Dr. Assen Stefanov Keltchev is formed 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 and recommendations, bibliography. The dissertation material is illustrated with 50 figures and 43 tables. Contributions are presented only in the

Abstract, where a list of publications and scientific is attached messages on the topic. The bibliography is arranged alphabetically and contains 242 cited titles, of which 10 are in Cyrillic and 232 in Latin.
Dr. Keltchev has formulated 5 tasks, covered and studied a statistically significant contingent of 100 patients with acute pulmonary embolism who received reperfusion therapy (36 patients received systemic fibrinolysis and 64 patients underwent surgical pulmonary thrombectomy). 15 conclusions were made, on the basis of which the relevant recommendations and contributions were made.

II. Relevance

The current study addresses one of the socially significant diseases, namely acute pulmonary embolism, which ranks third in mortality worldwide. Different point models help patients risk risk stratification in terms of expected mortality, and the therapeutic approach is determined on this basis. Patients at highest risk of death undergo emergency reperfusion therapy (systemic fibrinolysis or surgical pulmonary thrombectomy). Although systemic fibrinolysis is the gold standard in the treatment of acute pulmonary embolism with the advancement of surgical techniques and the development of machines for extracorporeal circulation, surgical pulmonary thrombectomy is increasingly used in clinical practice. Suitable for this type of therapy are patients with contraindications for fibrinolysis, as well as those with free blood clots in the right heart chambers or with thrombus in transit. Building a multidisciplinary team of specialists relevant to the choice of reperfusion therapy contributes to achieving the best possible results in the treatment of acute pulmonary embolism.

III. Characteristics

Dr. Assen Keltchev aims to determine the criteria for selecting patients suitable for surgical pulmonary thrombectomy as a method of treatment for acute pulmonary embolism (PE) in order to improve the prognosis and reduce mortality from this disease. The patients included in the study were divided into two groups. Group 1 included 36 patients who underwent systemic fibrinolysis and Group 2 included 64 patients who underwent surgical pulmonary thrombectomy. The clinical and demographic pre-procedural indicators of the patients were analyzed, and in the group with fibrinolysis the age of the patients and the frequency of patients with hypotension were lower than in the group with surgical thrombectomy. Predictors of death in both groups of patients have been studied in detail. It was concluded that the use of reperfusion therapy in patients with CTEPH is not effective. With regard to the surgical technique, recommendations were made for the preparation of the operative field and the

extracorporeal circulation machine before the patient was anesthetized due to the increased risk of cardiac arrest, and for not using Fogarty catheters to remove thrombotic material from the pulmonary arteries due to high risk of intrapulmonary haemorrhage. The use of extracorporeal membrane oxygenation in patients with acute pulmonary embolism is indicated in patients with postoperative severe right ventricular dysfunction, but the mortality is still high despite this therapy. It is recommended to build a multidisciplinary team in order to have an effective individualized approach to patients with acute pulmonary embolism. Algorithms for treatment the different risk groups of patients have been developed, which can help in the decision to choose a proper therapy.

IV. Conclusion

The dissertation of Dr. Assen Keltchev is a completed study dedicated to a clinically significant problem related to the diagnosis and optimization of treatment of patients with acute pulmonary embolism. The presented disseration has the necessary qualities - significance, scope, originality and depth, which makes its author worthy of obtaining the scientific and educational degree of "Doctor of Philosophy". The conclusions and contributions of this dissertation should be used to improve the results of surgical pulmonary thrombectomy in Bulgaria.

Based on the above, I recommend the esteemed members of the Scientific Jury to evaluate with dignity dissertation of Dr. Assen Stefanov Keltchev, and to vote positively for his award with the educational and scientific degree "Doctor of Philosophy ".

31.01.2022 Prepared the opinion: ....

/ Prof. Dr. Dimitar Georgiev Petkov MD /