To SCIENTIFIC JURY

constructed by ORDER No RD- 26-2086/5.10.2022

of the Executive Director of UMHATEM „N. I. Pirogov“

POSITION

by Associate Professor Maya Belitova, M.D., Ph. D.

Head of Department of Anesthesia and Intensive care Medicine- Medical University Sofia

Head of Clinic of Anesthesiology and Intensive Care Medicine UMHAT „Tsaritsa Yoanna“

With reference to: procedeure for dissertation defense for the acquisition of educational and scientific degree "Doctor" (Ph.D) in scientific specialty „Anesthesia and Intensive Care Medicine“ in UMHATEM „N. I. Pirogov“ on topic:

„APPLICATION OF POPLITEAL NERVE BLOCK IN LOWER LEG INJURIES IN PEDIATRIC PATIENTS“

I. Regarding procedure:

This Position is made after the above Order of the Executive Director of UMHATEM „N. I. Pirogov“, according to which I am appointed as an ***external*** member of the Scientific Jury. The Position is composed following the Regulations for development of the academic members in UMHATEM „N. I. Pirogov“. In my capacity as a member of the Jury in this procedure, I declare that I have no publications in common with the author and there is no other reason for a conflict of interests subjected to declare.

Author of the dissertation work: Doctor Elena Toncheva Ivanova, free Ph. D. student in Anesthesia and Intensive Care Medicine in UMHATEM „N. I. Pirogov“, with a dissertation defense right with Order No RD-26-1847/06.08.2021. **Scientific supervisor**: Associate Professor Rumyana Andonova, M.D., Ph.D.

II. Analysis of the career development of the Ph. D. student:

University education: In 2013 Doctor Elena Ivanova graduated from Medical University of Sofia, Medical Faculty with a very good grates in Medicine. In 2018 she becomes a specialist in Anesthesiology and Intensive Care Medicine. In 2021 doctor E. Ivanova graduated from Faculty of Public Health, Medical University of Sofia, specialty Public Health and Health Management and thus she acquires second Master ‘s Degree.

Professional experience: Since 2014 doctor Elena Ivanova is working as an anesthesiologist in the Clinic of Pediatric Anesthesia and Intensive Care Medicine in UMHATEM „N. I. Pirogov“, Sofia; she has very good theoretical preparation, rich education and broad general knowledge. She has an emphasized interest in working in volunteer projects („ParaKids“, „Médecins Sans Frontières“/“Doctors without borders“). Her scientific interests are in the field of emergency medicine, anesthesia and intensive care medicine in pediatric surgery; application of locoregional anesthetic techniques in pediatrics, pediatric cardio-pulmonary resuscitation- Lecturer and Presenter in Ministry of health Project- „PULS“, etc. Dr. E. Ivanova is fluent in English, uses French, Spanish and German., has very good computer skils.

Doctor Ivanova is a member of respectable scientific societies in Bulgaria and abroad, including Society of Bulgarian Anesthesiologists, BULSPEN, Bulgarian Medical Association, European Society of Anesthesiology (ESA), European Society of Regional Anesthesia (ESRA).

III. Significance and actuality of the topic:

The dissertation work of doctor Elena Ivanova is significant in both scientific and practical point of view and it is dedicated on a very important issue- study on effectiveness of pain treatment in pediatric patients using US- guided popliteal nerve lock in lower leg injuries. When speaking of children, pain control and regional anesthesia as an alternative of general anesthesia are more and more implemented in anesthesiologists everyday work as those techniques are up to date and they are irreplaceable part of good anesthetic practice. Development and implementation of ultrasound guided regional blocks lead to: safety improvement

of regional techniques; lower incidents of systemic toxic effects of local anesthetics; reduction of iatrogenic traumatic incidents and complications in performing regional blocks and improves pain control. And this is extremely attractive option especially in pediatric patients.

IV. Structure of the dissertation work:

This dissertation work is written on 148 standard pages and it is well presented with 35 figures and 20 tables. It is written in scientific style which allows easy and full presentation of the whole discussed topic as well as the author contribution. Bibliographic references include 202 literature sources, 13 in Bulgarian and 109 in latin. The dissertation work includes the following distinct parts: 1. INTRODUCTION- 2 pages; 2. LITERATURE REVIEW-45 page; 3. AIM OF THE DISSERTATION WORK- 1 page; 4. TASKS- 1 page; 5. MATERIALS AND METHODS- 7 pages; 6. RESULTS- 20 pages; 7. ANALYSIS AND DISCUSSION- 27 pages; 8. CONCLUSION- 2pages; 9. CLOSURE-2 pages; 10. SCIENTIFIC CONTRIBUTIONS OF THE SCIENTIFIC WORK- 2 pages; 11. PUBLICATIONS- 2 pages; 12. BIBLIOGRAPHY-17 pages. Thus the structure of the dissertation work consists of all needed chapters for obtaining scientific and educational degree „doctor“. The proportions between the different structuring sections reflects the view of the authors.

Literature review is the first structural part of every dissertation work. I definitely think that the literature review presented by doctor E. Ivanova is of extreme worth. It is written in accessible reading language, it is easy to read, broad in information, which represents plenty of literature facts and information about the scientific researches concerning the topic until nowadays. It is presented in systematic way, it is critically analyzed and it reveals very deep knowledge regarding the topic. The whole information is presented in themes, in subchapters, all related to the history of regional anesthesia; development of methods of studying and controlling pain in pediatrics; different navigation techniques are discussed- nerve stimulator, US- guidance; structure and age dispersion of injuries in children, all of the above prove the actuality of the topic US- guided popliteal nerve block in children with lower leg injuries. All said are circumstances allowing formation and publication of a Literary Review as a separate book, written on the grounds of the dissertation work which could be of great practical use for students, residents or practicing anesthesiologists, neurologists, orthopedics, etc.

The working hypothesis in the **Main aim** of the dissertation work is focused on the suggestion that US- guided popliteal nerve block is applicable in pediatrics because it reduces pain levels in intra- and postoperative period; reduces stress

levels; it is a safe technique, because of the direct visual control during its technical performance, lower doses of local anesthetics, lack of complications and low risk or systemic toxicity.

Tasks, are 5 and they come out from the established goal and aim. Task 5 is of certain practical application- to introduce a Protocol for performing and following an US- guided popliteal nerve block in children with lower leg fractures.

Materials and methods used are well known and classic, based on 108 patients (35 children undergoing surgical treatment with popliteal nerve block and 73 children with general anesthesia). During the methodology a Protocol and Card for performing regional block and data for every patient which facilitates easy and fast review and of the processing of the results. The results are statistically processed. A worth of the dissertation work and the team is the specific selection of pain assessment scales for each age group.

The achieved results are presented clearly and they are well structured in every aspect of the study, followed by figures and tables. The extensive and detailed analysis of the medico- demographic profile of the patients, the determination of most common fractures in lower leg in children, which need surgical treatment and therefore anesthesia (ankle fractures) makes a particular impression and motivate the actuality, benefits and importance of the popliteal block.

In **Discussion** the author presents analysis of the worldwide experience which motivates the chosen approach of the popliteal block. An enormous worth of the dissertation work is the analysis of the fast development and improvement of regional anesthesia and especially the popliteal nerve block in the everyday practice in the Clinic of Pediatric Anesthesia and Intensive Care Medicine- only one year observed after the study. This demonstrates outstanding practical importance and contribution to the work for better anesthesia practice especially in pediatric patients.

Conclusions are logically systemized according to the analyzed and processed data. They don't follow numeric order but I accept them in the way they are presented as I agree they all have confirming matter.

V. Contributions of the dissertation work:

With certain clarifications!!! I accept the references about the contribution of the dissertation work.

VI. Summery of dissertation work and publications:

The Summery of dissertation work is made according to the Regulations for development of the academic members in Republic of Bulgaria. It contains 93pages and it represents correctly the matter of the dissertation work.

According to the regulations, the Ph. D. student attaches the required number of publications in Bulgarian scientific journal „Emergency Medicine" (№4, 2022)

some of which are in state „under publications“ and for that I received letters from the editorial office of the journal. Dr. Ivanova is a leading author in all publications which is a prove of her leading role and personal dedication in the process of developing the dissertation topic. The Ph. D. student also presents numerous materials, about the dissertation topic as an active participation in International Conferences and congresses.

VII. Critical remarks:

1. **About the structure:** It is logical for the literature review to end with subchapter „Conclusions from the literature review“ on which bases to formulate the aim and tasks of the dissertation work.
2. **About the terminology:** starting from the title and going through the whole dissertation work up to the last page, the term nerve block should be used. People are nervous, but blocks are nerve. From the bibliography- 5 authors are not mentioned in the dissertation work!
3. **About the design of the dissertation work:** lack of real randomization. Aim, methods and tasks should be synchronized. Methods should be clarified and synchronized with the assigned goal. Every task should be addressed! The doses, volumes and concentrations of local anesthetics should be presented in chapter Methods.
4. **About statistics:** every statistic test used for processing the data and proving the thesis should be discussed and pointed (variabilities, statistical significance, etc.)
5. **About the technical design:** there should be personal photos and illustrations in performing the blocks.
6. **Conclusions** should match tasks, methods and results both in number and matter.
7. **I strongly recommend all statistic data and analysis of parametric and nonparametric variabilities to be presented in the dissertation work directly from the statistic program SPSS despite their presentation in tables, figures, numbers.** This would prove the truthfulness of the data and without it there could be suspicions about compilations.

Despite those critical notes regarding the structure of the dissertation work and the style of presentation, I approach to the evaluation of each and every dissertational work as an individual work of the Ph. D. student, his/her ability to state and prove scientific thesis, and thus I consider that those critical notes do not

have a significant impact on my final valuation and they do not belittle the worth of the dissertational work.

VIII. Conclusion:

The Ph. D. student doctor Elena Toncheva Ivanova has research, methodological and clinical abilities. Her dissertation work proves that she is able to assign scientific thesis, to build an adequate methodology and to process scientific studies, to strictly and correctly analyze results by herself. A prove for that are her publications on the topic in prestige journals.

All of the above give me a reason to **vote positively** for awarding doctor Elena Toncheva Ivanova with the scientific and educational degree „doctor“ in specialty „Anesthesiology and Intensive Care Medicine“

14.11.2022

Sofia

Associate professor Maya Belitova, M.D., Ph.D.