

R E V I E W

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On the thesis for the awarding of educational and scientific degree "Doctor" in the field of higher education. 7 Health and Sport; professional field. 7.1 Medicine, doctoral program "Anaesthesiology and Intensive Care".

Doctoral candidate: Dr. Zdravka Ivanova Ivanova Department of Anesthesiology, Emergency and Intensive Care Medicine, Medical Faculty, Medical University of Varna

Scientific Supervisor: Prof. Viliyan Hristov Platikanov, MD, PhD- Department of Anesthesiology, Emergency and Intensive Care Medicine, Medical Faculty, Medical University of Varna

Topic: CONTROLLED ARTERIAL HYPOTENSION NI SHOULDER SURGERY

Presentation of the procedure:

The dissertation was discussed and approved for official public defense at the Departmental Council of the Department of Anesthesiology, Emergency and Intensive Care Medicine of Medical University - Varna and according to the Order № P-109-207 / 17.07.2024 of the Rector of Medical University - Varna.

The submitted set of materials is in accordance with the Regulations for the Activities of Medical University - Varna and the Regulations for the Development of the Academic Staff of Medical University - Varna.

The doctoral candidate has attached two publications in full text on the topic of the thesis.

Biographical data:

Dr. Zdravka Ivanova graduated in Medical University Varna in 2016. Since November 2016 she has been working as a resident at the Clinic of Anesthesiology and Intensive Care at the University Hospital "St. Marina" Varna. Since 2021 she has obtained a specialty in Anesthesiology and Intensive Care. She is enrolled as a regular PhD student at MU-Varna in 2020. Dr. Ivanova has a teaching experience in Emergency Medicine in Bulgarian and foreign languages.

Dr. Ivanova is proficient in written and spoken Spanish and English

She is a member of the BMA and the Bulgarian Society of Anaesthesiology and Intensive Care.

General characteristics of the thesis

The topic of the dissertation on controlled arterial hypotension, its safety and efficacy in surgical settings is relevant and dissertable in the context of the search for patient-oriented methods of analgesia during surgical interventions.

Controlled hypotension, namely the targeted lowering of systemic arterial pressure, has become established as a technique in various surgical procedures to reduce intraoperative blood loss and improve the visibility of the surgical field. In this regard, with the undoubted benefit of the application of the method, a detailed follow-up and study of potential risks and optimal management strategies is also necessary.

In her dissertation, Dr. Ivanova aims to present both the advantages of controlled hypotension and the challenges associated with the equipment used. The dissertation, through a meticulous study of the current literature, seeks to provide a comprehensive overview of this technique and expand our knowledge base regarding its safety and efficacy in surgical settings. In particular, Dr. Ivanova's research relates to the use of interscalene plexus block in combination with general anesthesia as a method of achieving controlled hypotension in surgical interventions of the shoulder joint and proximal humerus.

The prospects of this study are related to the lack of a unified opinion on the preferred method of controlled hypotension in the application of peripheral nerve blocks in surgery and in particular shoulder surgery. In this regard, I believe that the problem chosen by Dr. Ivanova is relevant in a scientific sense and practically significant.

Dr. Ivanova's work has been carried out in the Clinic of Anaesthesiology and Intensive Care and in the Clinic of Orthopaedics and Traumatology at the University Hospital "St. Marina" Varna and Medical University - Varna.

Structure of the thesis:

This dissertation is structured in: eight sections of 105 pages (not including the literature review); 186 references, of which 6 in Cyrillic and 180 in Latin; 13 tables ; 34 figures.

The introduction and the literature review are presented on 40 pages;

Aim and objectives-1 pg; Material and Methods-12 pages; Results and Discussion- 40 pages; Conclusion-2 pages; Findings and Contributions- 3 pages. The volume distribution of the individual chapters is balanced.

Title: The title is formulated in concrete manner and perfectly correlates with the aim and objectives.

Literature review:

The literature review is well structured. It could be conventionally divided into 4 parts:

The first one is devoted to the problems of hemodynamics and controlled hypotension-techniques, monitoring, contraindications and complications.

Second - on shoulder surgery.

Third- examines the problems associated interscalene block as a method of achieving controlled hypotension, and the relationship between arterial pressure and acute pain.

Fourth -comparison between interscalene block and other techniques for controlled hypotension.

Language and style: The literature review is presented in excellent professional language. The data are critically examined, significant aspects are discussed with a professional attitude to the problem.

The approach chosen by the author in terms of the presentation of the literature analysis greatly facilitates and motivates the purpose of the study and justifies the significance of the results.

Overall, the literature review substantiates the stated aim.

Aim and objectives

This dissertation has a clearly stated objective, namely, to evaluate the effectiveness of ultrasound-guided interscalene plexus block in achieving controlled hypotension in patients undergoing arthroscopic and open shoulder surgery under general anesthesia.

In order to achieve it, **six objectives** have been set, which are fully in line with the objective, namely:

1. To intra-operatively monitor the haemodynamic parameters - heart rate, systolic, diastolic and mean arterial pressure of patients undergoing shoulder surgery and controlled hypotension with and without interscalene plexus block.
2. To quantitatively compare intra-operatively administered doses of opioid analgetic, inhalational anesthetic (IAC) and antihypertensive medication in patients with and without interscalene plexus block.
3. To compare the duration of surgical interventions in patients with and without interscalene plexus block as a technique for controlled hypo- tension.
4. To investigate the relationship between hypertension, as a concomitant pathology, and intra-operative blood pressure control for controlled hypotension in patients with and without interscalene plexus block.
5. To follow the post-operative analgesia of patients with preoperatively applied interscalene plexus block.
6. To develop an algorithm for intraoperative controlled hypotension and postoperative pain control.

The aim of the study correlates with the thesis title and is formulated precisely and clearly.

The tasks are also formulated precisely and clearly and are relevant to the objective.

Materials methods

The contingent studied by Dr Ivanova includes those with surgical interventions, arthroscopic and open, in the shoulder joint and proximal humerus.

The patients studied are grouped into two main groups with a total number of 162 studied.

First- the main group- 81 patients studied prospectively.

Second-control group -81 patients studied retrospectively. Patients included in the study underwent arthroscopic or open surgery depending on the preoperative diagnosis. Thus, two subgroups-arthroscopic and open surgical intervention-were formed.

In addition to the inclusion criteria, exclusion criteria are also presented, thereby increasing the comparability of the groups.

The protocol for the work is presented in a structured manner, as is the specific apparatus used. The manual technique is also illustrated with several figures.

Methodologically, the study is described and performed accurately.

The study was approved by the decision of the Ethics Research Committee No. 107 at the Medical University "Prof. Dr. Paraskev Stoyanov" Varna.

Statistical analysis:

The nine statistical methods used are contemporary, professionally selected, adequate for the purpose and objectives of the study.

Results and Discussion:

The approach chosen by Dr. Ivanova for the parallel presentation of the results and their discussion allows to follow the logic of the respective study, to compare it with the literature data and to draw a logical conclusion. Considering them section by section allows making conclusions by the clusters of the study, which motivates the presented conclusions. The results are illustrated excellently and are presented comprehensively, detailed with tables and figures.

Conclusion, conclusions and contributions.

Although brief, the conclusion highlights the main aspects of the study. Specifically, without unnecessary details, the conclusions of the study are identified and presented in the following section " Findings". The contributions formulated are inferable from the results. They

are presented clearly, which once again speaks for the good structuring of the work and the in-depth knowledge of Dr. Ivanova on the problem.

Regarding the contributions - they are separated into two subsections: Practical Contributions and Theoretical Contributions. In general, they reflect the completeness of the work.

Summary - meets the generally accepted requirements. Adequately presents the research done in the dissertation and the results and conclusions and contains 60 pages of text.

Recommendation- I would suggest applying to the overall work, as an appendix, the detailed protocol of the study with details of the parameters tracked. this would be of practical value for those interested in the method applied.

Publications related to the thesis:

In relation to her dissertation, Dr. Ivanova has submitted two publications, in which she is the first author, published in the journal "Anesthesiology and Intensive Care" and "Varna Medical Forum".

In conclusion:

The thesis is on a topical and significant problem. It is an in-depth study of the problem related to the application of interscalene plexus block combined with general anesthesia as a method of achieving controlled hypotension in surgical interventions on the shoulder joint and the proximal part of the ulna /humerus/.

The results of the study are mainly of practical-theoretical value. With this work Dr. Ivanova critically summarizes the data from the literature, interpreted in the context of her research. She provides reasoned conclusions which, as stated, are of significant applied-scientific nature. In this regard The thesis of Dr. Z. Ivanova, entitled "CONTROLLED ARTERIAL HYPOTENSION IN SHOULDER SURGERY" fully meets the requirements for obtaining the scientific and educational degree "Doctor" according to the Law and the Regulations for the Development of Academic Staff in the Republic of Bulgaria, as well as the Regulations for the Development of Academic Staff of MU-Varna. In this regard, I confidently give my positive assessment for the award of the scientific and educational degree of Doctor to Dr. Zdravka Ivanova.

Prof. Dr. Nikola Kolev, MD, PhD, DSc

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