

To: the Chairman of the Scientific Jury  
Medical University - Varna  
According to the Rector's Order R-109-453/06.11.23

## **REVIEW**

Of the dissertation

### **INTRA-ABDOMINAL ABSCESSSES**

of Assoc. Prof. Plamen Milchev Chernopolsky, PhD  
for the degree of Doctor of Sciences  
in the field of higher education 7. "Health and Sport"  
in the professional area 7.1. "Medicine" and  
Scientific specialty "Surgery" .

by Prof. Dr. Rossen Evgeniev Madjov, DSc

Head of the Department of Surgical Diseases, Medical University - Varna

#### **1. Information about the procedure:**

The dissertation was discussed, accepted and directed for defense by the Departmental Council of the Department of Surgical Diseases, Medical University - Varna. I have been appointed as an internal member of the Scientific Jury for MU-Varna by the decision of the Faculty of Medicine and the Order of the Rector R-109-453/06.11.23. By Protocol No. 1 dated 13.11.2023 of the first meeting of the SJ I am appointed as the Chairperson and to prepare an official review. I have received all necessary documents for the preparation of the review. My review complies with the Law on the Development of Academic Staff in the Republic of Latvia. I am in compliance with the Law on the Development of the Academic

Staff of the University of Varna, the Regulations for its Application and the Regulations of the MU - Varna.

## **2. Professional data of the applicant:**

Assoc. prof. Dr. Plamen Milchev Chernopolsky was born on 17.01.1980.

Graduated in Medicine at Medical University - Varna in **2005** - Diploma № 6851/1998.

**2006 - 2011** - Specialist in Surgery at the Second Department of Surgery.

From **2009** - appointed as Assistant Professor at the Department of Surgical Diseases, Medical University - Varna.

**2011** - acquired a specialty in surgery.

**2012** - Master in Health Management - MU Varna

**2015** - defended his dissertation "Palliative interventions in malignant jaundice", MU - Varna, for which he has been awarded a Diploma for PhD (№102 of 17.05.2013), in the scientific specialty 03.01.37 - "General surgery".

**2016** - holds the position of "Associate Professor" in Surgery, at DSD, MU-Varna (№0132/16.12.2016)

Assoc. Prof. Plamen Chernopolsky, MD is a member of:

- Bulgarian Surgical Society - Member of the Management Board
- Union of Scientists in Bulgaria
- Member of the Bulgarian Medical Association

Assoc. Dr. Plamen Chernopolsky, PhD has numerous postgraduate qualifications and courses in leading European centers - Verona, Italy /2017/, Budapest, Hungary /2017/, Vienna, Austria /2018/, Innsbruck, Austria /2019/ IASGO (Pre-Congress course IOUS), Verona Italy /2023/, etc.

Assoc. Prof. Dr. Plamen Chernopolsky, PhD is fluent in written and spoken English and French.

### **3. Relevance of the topic:**

At the beginning of the twentieth century, the mortality from peritonitis was extremely high. It was treated conservatively until Kishner introduced the basic principles in the surgery of intra-abdominal infections: elimination of septic foci; removal of necrotic tissues and drainage of purulent fluids. By 1930, mortality had been reduced to 50%. With the introduction of antibiotics, mortality continued to decline. Subsequent study of physiology, optimal administration of new drugs, and the development of resuscitation and intensive care resulted in a mortality rate of less than 30%.

Limitation of infection in peritonitis and intra-abdominal abscess formation is characterized by isolation of the infectious process from the abdominal cavity. Intra-abdominal infection /IAI/ is defined as local manifestations that occur as a consequence of peritonitis. Intra-abdominal sepsis leads to systemic manifestation of acute peritoneal infection and severe dysfunction of vital organs.

Intra-abdominal abscesses continue to be a serious problem in daily surgical practice. Most often they occur as complications of diseases and/or surgical interventions on the digestive system, trauma and injuries, diseases of the genitourinary system. Often, their exact diagnosis and localization is difficult and creates problems in the therapeutic strategy. They can be life-threatening and lead to prolonged periods of morbidity, prolonged hospitalization and disability.

In addition, the various diagnostic tests and, the intensive and prolonged treatment and the need for follow-up postoperative care lead to an increasing financial burden of these infections for patients, hospitals and society as a whole.

### **4. Structure of the dissertation**

The dissertation of Assoc. Prof. Dr. Plamen Chernopolsky submitted to me for review is in a form and volume that meets the requirements of the Law on

Research and Development, the Regulations for its application and the Regulations of MU - Varna.

The dissertation is written in **372** standard pages and contains:

- Introduction - 3 pp.
- Literature review - 53 pp.
- Aim and objectives - 1 p.
- Clinical Material and Methods - 25 pp.
- Own Results and Discussion - 166 pp.
- Discussion - 50 pp
- Conclusions and contributions - 3 pp.
- Bibliography - 41 pp.

Illustration is done with **113** tables and **77** figures.

The literature review is focused, clearly structured and includes the necessary information to frame the research problem. It analyses:

- Relevance of the problem of intra-abdominal infections
- Historical data on the development of the problem over the years;
- Definition and classifications;
- Types of intra-abdominal abscesses and their approaches;
- The development of diagnostic and therapeutic methods to optimize treatment and outcomes;

The dissertator's overall knowledge of the problem is very good - many authors and centres dealing with peritonitis and IAI are cited.

The bibliographic reference cites 362 sources, of which 18 in Cyrillic and 344 in Latin, most of which are within the last 10 years, but there are also some which are older. In my opinion, several more Bulgarian authors and centres dealing

with diseases of the peritoneum, intra-abdominal sepsis and their optimal treatment could find a place in the bibliographic reference.

The author's **AIM**:

"To study, analyze and standardize the diagnosis, preoperative approach and treatment of patients with intra-abdominal abscesses in order to optimize treatment outcome, reduce complications and achieve a better quality of life".

The overall aim is well formulated in view of the overall thesis.

In order to achieve the main objective, the author set the following 5 objectives:

1. Retrospective analysis of patients with intra-abdominal abscesses hospitalized in the Second Department of Surgery for the period 2011-2020.
2. Comparative analysis between diagnostic and therapeutic modalities in terms of risks benefits and cost.
3. Evaluation of risk factors and comorbidities on outcome.
4. Analysis of postoperative complications and patient survival.
5. Creation of a diagnostic and treatment algorithm

In the dissertation is performed a retro- and prospective analysis of **555** patients with intra-abdominal abscesses hospitalized in the Second Department of Surgery of St. Marina Hospital.

Of these: 207 with liver abscess and perivesical abscess; 142 pts with periappendicular abscess; 65 pts with pancreatic abscess; 21 - with abscess due to diverticulitis of colon; 59 - with postperforative abscess; 41 - with postoperative abscess; 7 - with splenic abscess.

The prevalence of infection in the peritoneal cavity is mainly determined by: the location and volume of the primary leak; the nature of the underlying disease; the presence of adhesions from previous surgeries/interventions; the time since

onset and duration of the current disease; and the effectiveness of the patient's defense mechanisms. The risk of infection is greater with advancing age, colonic injury necessitating proximal colostomy removal; greater need for blood transfusions and/or volume replacement infusions during the surgical intervention; and increased number of damaged/traumatized organs.

Intra-abdominal collections often pose diagnostic challenges. Ultrasound and CT (especially contrast-enhanced) provide valuable objective information about localization and size, as well as determining the therapeutic plan. Exact diagnosis sometimes requires specialized radiologic interventions in addition to clinical findings.

Minimally invasive approaches /laparoscopic/ have widely entered the daily surgical practice. The laparoscopic approach is an extremely useful diagnostic and therapeutic method for intra-abdominal infections and abdominal sepsis. Depending on the anatomical source of infection and the experience of the surgical team, complete control of the source of infection can be achieved. The many advantages of minimally invasive surgery include the lower incidence of postoperative complications and infections, as evidenced by a lower inflammatory response that is associated with a better preserved immune response.

Percutaneous drainage is the method of choice for many intra-abdominal abscesses - applied under US or CT control in 58 patients in this dissertation /10.5%/, as an intervention for definitive cure or to stabilize the patient's condition and "bridge" to subsequent surgical intervention.

Intra-abdominal infection caused by perforation of the intestinal tract is usually controlled by resection of the pathological site followed by primary anastomosis or proximal enterostomy. Primary anastomosis is not recommended for generalized purulent or feculent peritonitis, especially when the patient has a severe clinical condition and/or comorbidities.

Three major predictive risk factors are time from onset, preoperative hypotension, and persistent postoperative sepsis. Elective re-laparotomy is necessary when the source of infection is not controlled at the first intervention /laparoscopic or open/. The clinic has used the elective relaparotomy approach in patients in whom adequate assessment of the viability of the affected organs was not possible, the presence of multiple abscesses requiring re-sanitation, or in order to perform resection with primary anastomosis in the absence of infection in the abdominal cavity.

Although source control is the most important component of successful treatment of intra-abdominal abscesses, the correct choice of antibiotic therapy is no less important in the overall therapeutic approach.

The analysis of publications from leading centres in Europe and worldwide, as well as our own results, has led to the development and implementation in practice of a modern diagnostic and therapeutic algorithm for patients with peritonitis, intra-abdominal abscesses and abdominal sepsis.

**The conclusions** - eight in total - are well formulated and they correspond to the solution of the main aim and objectives set by the dissertation.

Surgical source control is the most important determinant of optimal outcome of the overall diagnostic and therapeutic algorithm.

**The contributions** brought out by Assoc. Prof. Pl. Chernopolsky are five in total. They are well formulated and reflect an essential part of the analyzed sections. Of particular importance is the overall management algorithm for intra-abdominal abscesses. They are of scientific, applied and confirmatory value and are the result of the activities of the dissertant personally as well as of the staff of the Department of Surgery.

**The abstract** - well-structured in 86 pages, illustrated with figures and tables and reflects in a systematic form the subject and the essence of the dissertation.

**4. Academic reference of the scientific metrics for the degree of Doctor of Science:**

- **A1** / Dissertation /2015 / - **50 pts.**
- **B 2** / Dissertation /2023 / - **100 pts.**
- **D 5 - 9** / Publications - **100, 53 pts.**
- **E 10** / Citations - **7**
- Total D10-12** - **105 pts.**

Assoc. Prof. Dr. Plamen Chernopolsky, PhD has submitted a list of **10** / ten / real publications on the topic of the dissertation.

The results of the candidate's scientific research have been reported at **29** scientific forums in Bulgaria and abroad.

Assoc. Prof. Dr. Plamen Chernopolsky, PhD is a scientific supervisor of two full-time PhD students.

**5. Conclusion:**

The presented dissertation is complete, thorough, problematic, outlines the current opinions on the diagnosis, indications, methods and treatment of patients with peritoneal pathology, intra-abdominal abscesses and abdominal sepsis.

There are results of a contributory nature and publications. He fully complies with the criteria of the LDASRB, the Regulations for its application and the Regulations of the MU - Varna.

Assoc. Prof. Plamen Chernopolsky, PhD is a surgeon with experience in elective and emergency surgery. Important practical and scientific contributions are derived from his scientific works on the basis of researched long-term material of patients diagnosed and treated personally by him, introduced surgical methods, developed algorithms for diagnosis and therapeutic management.

He has a background in medical management. From 2020 he is Deputy Head of the Second Department of Surgery, and from November 2023, after a contest, he



is appointed as a Head of the Second Department of Surgery, University Hospital "St.Marina".

Monitors and actively supports the professional development of academic staff and all medical staff. There are interns, postgraduate and doctoral students under his supervision.

All this gives me the right and reason to recommend the members of the Scientific Jury to give their **positive vote** and to award the scientific degree "Doctor of Sciences" to Dr. Plamen Milchev Chernopolsky.

06.12.2023 г.

Varna

Reviewer:

Prof. Dr R.Madjov, DSc

