

REVIEW

by Assoc. Prof. Tosho Ganev, MD, PhD

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Concerning: Dissertation work for the award of the ESD "Doctor" to **Dr. Doichin Georgiev Nikolov**, MD, a doctoral student in an independent form of study in the doctoral program "Urology", professional direction 7.1. Medicine, enrolled by order No. R-109-252/21.06.2022.

By order of the Rector of MU-Varna No. R-109-408/27.09.2023 and the decision of the Chairman of the Scientific Jury - Protocol No. 1 of 29.09.2023, I am appointed to present a review of the dissertation work of Doichin Georgiev Nikolov, MD on the topic "**CHALLENGES FOR HOSPITAL UROLOGY PRACTICE IN THE CONTEXT OF THE COVID-19 PANDEMIC**".

The review was prepared according to the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for its Application at the Medical University - Varna.

The dissertation contains a total of 126 standard typewritten pages, illustrated with 40 figures and 25 tables. The bibliography includes 190 titles, of which 16 are in Cyrillic and 174 are in Latin. The presentation is structured correctly, in accordance with the requirements of a scientific study, as follows:

- Introduction – 1 page
- Literature review - 39 pages
- Aim and tasks - 2 pages
- Material and methods – 10 pages
- Results and Discussion – 47 pages
- Diagnostic and therapeutic algorithm – 1 page
- Implications - 1 page
- Contributions – 1 page
- Conclusion – 2 pages
- Publications – 1 page
- Bibliography - 16 pages

The presented PhD Thesis of the dissertation work in volume 70 pages is designed according to generally accepted requirements.

1. Evaluation of the actuality of the topic, analysis of the survey sample.

The topic of the scientific work is suitable for dissertation and relevant in view of the challenges faced by health systems around the world during and after the COVID -19 pandemic.

The dissertation begins with a literature review, which is sufficiently extensive. In it, a place is devoted to the history of the discovery of corona virus infections in the human population. Here, the PhD student presents in detail the epidemiology and pathogenesis of the infection by COVID -19, with the possible involvement of multiple organs and systems. The impact of the pandemic on the provision of urological care and services worldwide and in Bulgaria is then examined. The issue of triage of patients in hospital urology practice, by which patients are divided into different groups according to the degree of urgency of the urological disease, was also discussed.

The aim and tasks of the dissertation work follow. The aim is clearly formulated - to analyze the impact of the COVID-19 pandemic on hospitalizations and operational activity in hospital urology practice, proposing an algorithm for the action towards patients with various urological diseases. The tasks set are specific and clear, they correspond to the set aim.

The methodology and clinical material follow, where the doctoral student describes in detail the statistical methods used. Also presented is the available clinical material in the form of summaries and operative journals from UMBAL "Sveta Marina" - Varna. The analyzed patients are divided into two large groups: Period 1 - from before the covid-epidemic and Period 2 - during the epidemic.

2. Evaluation of the results.

The next chapter presents the results of the study. A 20.44% drop in hospitalizations in the urology department was reported (Period 2 compared to Period 1). There is also a decrease of 23.46% in the number of performed urological operations - however, this is at the expense of planned operations. There was an 8% increase in emergency interventions up to 6 hours after hospitalization and a 10% increase in emergency interventions after 24 hours of hospitalization. The analysis also shows a downward trend in local and regional

anesthesia by 6% and 1% respectively, while the use of general anesthesia increased by 7%.

Next, the main groups of urological diseases are examined and a comparison is made between Period 1 and Period 2 in terms of their treatment. Regarding the leading diagnosis, three predominant subgroups are analyzed: oncurology, urolithiasis and other benign diseases in urology. A decrease of 198 in oncurological surgeries was reported for Period 2 compared to Period 1. But within Period 2, an increase of 3.7% in oncurological surgeries was found compared to the total number of surgeries. The analysis showed a decrease of nearly 39% in operative interventions for urolithiasis, but there was a 6% increase in deobstructive manipulations in these patients. There was also a 7% decrease in patients with benign diseases.

The author summarizes the above data and outlines a useful algorithm for the management of urological diseases according to their priority in the conditions of a health crisis. This algorithm also complies with the requirements of the European Association of Urology, which divides urological diseases and conditions into 4 priority levels:

1. Low priority: benign urological diseases in which clinical damage is very unlikely, if delayed for 6 months;
2. Intermediate priority: patients with urolithiasis in whom clinical impairment is possible but unlikely if delayed for 3-4 months;
3. High priority: oncurologic patients in whom clinical progression is highly likely if treatment is delayed for >6 weeks;
4. Urgent situation: patients from the three groups in whom clinical damage and a life-threatening situation have occurred - cannot be postponed for >24 h

3. Publications related to the dissertation work

For the dissertation, the doctoral student presents the following scientific publications:

1. Nikolov D, Anakievski D (2023) Impact of the Covid-19 pandemic on intracorporeal endoscopic treatment in patients with upper urinary tract calculi, Varna Medical Forum, Item 12, 2023, Online First MU-Varna

2. Nikolov D, Evtimov N (2023) Advantages and disadvantages of robot-assisted urological operations compared to laparoscopic ones in the conditions of the COVID-19 pandemic, Varna medical forum, item 12, 2023, Online First MU- Varna

3. Sandulov A, Anakievski D, Ivanov V, Nikolov D, Nikolov V, Abushev P, Magardichyan I - Stent-related symptoms and complications - inevitability in urology, Sp. "Urology and endourology"

4. Evaluation of contributions

The contributions of the dissertation can be summarized as follows:

1. For the first time in Bulgaria, the impact of the COVID-19 pandemic on urological operative activity is analyzed, and the presented retrospective data can support the management of urological diseases in an emergency epidemic situation.

2. Trends and changes in the order of operative interventions, the choice of anesthesia and their duration have been identified.

3. The most appropriate therapeutic procedures for individual groups of patients with various urological diseases in the context of the COVID-19 pandemic were compared and analyzed.

4. The impact of age and comorbidities on patients' hospital stay is reported, which can help in developing individual patient management strategies and optimize their treatment and rehabilitation.

5. A diagnostic-therapeutic algorithm has been developed, tailored to the health system of the country and suitable to serve as a model in a future epidemic situation of a similar nature.

5. Critical notes

No significant critical remarks can be made to the dissertation work.

6. Conclusion

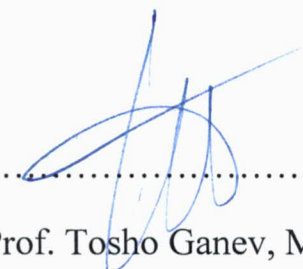
In my capacity as a member of the scientific jury, I declare that Doichin Georgiev Nikolov, MD can be awarded the educational and scientific degree

"Doctor" for his dissertation work on the topic "CHALLENGES FOR HOSPITAL UROLOGY PRACTICE IN THE CONTEXT OF THE COVID-19 PANDEMIC" .

I am convinced that the other members of the scientific jury will also support my positive vote.

16.10.2023

Varna



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Assoc. Prof. Tosho Ganev, MD, PhD