REVIEW

FROM

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of the dissertation entitled: "Predictive Factors and Prognosis of Patients with Acute Kidney Injury in COVID-19" by Dr. Rumina Plamenova Shaleva, full-time PhD student at the Second Department of Internal Medicine, Teaching Unit "Nephrology, Hemodialysis and Toxicology", Medical University of Varna, for the award of the educational and scientific degree "Doctor" in the scientific specialty "Nephrology"

By order of the Rector of the Medical University of Varna, I have been appointed as a reviewer of the scientific work of Dr. Rumina Plamenova Shaleva.

Dr. Rumina Plamenova Shaleva was born on 16 September 1993 in Varna. She completed her secondary education at the Mathematical High School "Dr. Petar Beron" in Varna in 2012. In 2019, she graduated with a Master's degree in Medicine from the Medical University "Prof. Dr. Paraskev Stoyanov", Varna. From 2020 to the present, she has been an assistant at the Second Department of Internal Medicine, Teaching Unit "Nephrology, Hemodialysis and Toxicology", Medical University of Varna, and a resident physician in nephrology and dialysis at St. Marina University Hospital, Varna.

Relevance and Characteristics of the Dissertation

The dissertation addresses a highly significant contemporary problem—acute impairment of human health in the context of a pandemic. For the first time in

modern history, humanity has faced a pandemic of such magnitude. This fact alone determines the high relevance and importance of the dissertation.

The dissertation is written on 210 standard pages and includes 10 tables and 73 figures. The literature review comprises 327 sources, demonstrating the comprehensive scope of the information used.

Dr. Shaleva demonstrates a very good characterization and understanding of COVID-19 infection, including the severe complications it causes. Her focus is directed toward problems affecting the nephrological population in the context of COVID-19 infection.

The dissertation represents an observational study conducted over a four-year period and includes a sufficient number of hospitalized patients with confirmed COVID-19 infection—3,980 patients. The author used data from an electronic hospital information system as well as medical records.

The dissertation is a retrospective, observational, single-center clinical study conducted over a sufficiently long period of four years. The literature review is adequate for the purposes of the dissertation.

The dissertation has a clearly formulated objective: to determine the incidence and independent predictors of acute kidney injury in hospitalized patients with laboratory-confirmed COVID-19 infection and to assess the impact of AKI on key clinical outcomes during hospitalization.

The doctoral candidate logically formulates seven research tasks. The results are correctly and logically structured and well interpreted.

The study demonstrates the significance of multivariate analysis in identifying arterial hypertension, diabetes mellitus, and urea levels as independent predictors for the development of acute kidney failure.

The doctoral candidate proves that acute kidney injury has a high incidence as a complication of COVID-19 infection, with a clearly expressed association with age and the presence of comorbidities.

In patients with arterial hypertension and diabetes mellitus, a higher risk of developing acute kidney injury is demonstrated. These data are conclusively proven for the Bulgarian population. The doctoral candidate shows that the presence of

acute kidney injury is associated with higher mortality and a more severe course of the infection.

A very important characteristic of COVID-19 infection is that in the presence of pre-existing kidney damage, the infection has a more severe course.

The doctoral candidate formulates six conclusions corresponding to the stated objectives. The developed clinical point-based score for early determination has practical applicability in clinical practice.

The doctoral candidate identifies four contributions of a theoretical nature and four contributions of a practical nature. In my opinion, all of them are significant for nephrological practice.

The dissertation contains important conclusions corresponding to the stated objectives.

The presented abstract clearly and accurately presents the main characteristics of the dissertation, the objectives set, the main results, and the possibilities for their clinical application. The doctoral candidate presents three publications on the topic, in two of which she is the lead author. Through these publications, the author demonstrates in-depth knowledge both of the topic and of nephrology as a field.

I believe that the dissertation has both scientific value and highly significant practical importance for clinical practice. I have no critical remarks regarding the dissertation.

Conclusion

The dissertation of Dr. Rumina Plamenova Shaleva has a strong theoretical foundation and a very well-presented practical orientation. Her knowledge in nephrology is in-depth, which allows her to draw significant conclusions relevant to clinical practice. The doctoral candidate demonstrates high competence in the topic of the dissertation, enabling her to formulate specific conclusions of importance for clinical practice. The dissertation meets all the requirements of the Academic Staff Development Act and its Implementing Regulations, as well as the regulations of the Medical University of Varna.

Based on the characteristics outlined above, I give my positive evaluation of the dissertation and propose that the esteemed jury vote in favor of awarding the educational and scientific degree "Doctor" to Rumina Plamenova Shaleva under the doctoral program "Nephrology."

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Prof. Emil Paskalev Dimitrov, MD, PhD, DSc

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