

## STANOVISHTE

By Assoc. Prof. Dr. Chavdar Hristov Bachvarov, MD, interventional radiologist at the Clinic of Imaging Diagnostics of the University Hospital "St. Marina", Varna, appointed by Order No. R - 109-200/16.04.2025 of the Rector of the Medical University - Sofia, as an internal member of the jury in the procedure for occupying the academic position of "Associate Professor" in the specialty "Imaging Diagnostics and Interventional Radiology" in the field of higher education 7. "Healthcare and Sports" in the professional field 7.1. "Medicine" and scientific specialty "Medical Radiology and Radiology (including the use of radioactive isotopes) in the Department of Imaging Diagnostics of the Faculty of Medicine at the Medical University – Varna.

Within the legally established deadline, after the announcement of the competition for participation in it, one candidate submitted documents and was admitted - Dr. Emilian Bozhidarov Kalchev, MD, Chief Assistant Professor at the Department of Imaging Diagnostics, Interventional Radiology and Radiotherapy, Medical University "Prof. Dr. P. Stoyanov" - Varna. The necessary documents prepared by the candidate are in accordance with the requirements of the Regulations for the Application of the Law on Radiological and Radiological Research of the Republic of Bulgaria and the Regulations for the Development of the Academic Staff of the Faculty of Medicine of the Medical University of Varna.

### **Brief biographical data**

Dr. Emilian Bozhidarov Kalchev, MD, was born on 06.06.1986 in the city of Targovishte. He received his higher education at the Faculty of Medicine of the Medical University in Varna. He successfully graduated in 2011, and in 2017. his specialty "Imaging Diagnostics (Radiology)" was recognized. He began his career in 2012 as a resident physician at the Clinic of Imaging Diagnostics at the University Hospital "Sveta Marina". The academic development of Dr. Emilian Bozhidarov Kalchev began in 2012 as an "Honorary Lecturer" at the Medical University "Prof. Dr. Paraskev Stoyanov" - Varna, and at the end of the same year he was appointed to the academic position of "Assistant" at the Department of "Imaging Diagnostics, Interventional Radiology and Radiotherapy", at the Medical University "Prof. Dr. Paraskev Stoyanov" - Varna; In 2019, Dr. Emilian Kalchev obtained the educational and scientific degree "Doctor" at the Medical University "Prof. Dr. Paraskev Stoyanov" - Varna by defending a dissertation on the topic "Arterial spin labeling for assessment of cerebral perfusion in patients with microangiopathy". Since 2021.

Currently holds the academic position of "Chief Assistant" at the Department of "Imaging Diagnostics, Interventional Radiology and Radiotherapy", at the Medical University "Prof. Dr. Paraskev Stoyanov" - Varna;

Dr. Emilian Bozhidarov Kalchev is fluent in English and German.

### Teaching activity

As an assistant, Dr. Emilian Bozhidarov Kalchev, MD, carries out active teaching activities and participates in the training of medical students and residents in Bulgarian, dental students and students at the Medical College – Varna. He is an active specialist in Imaging Diagnostics, focusing his interests mainly on the field of interventional radiology. The submitted report for the period 2013-2021 establishes a significant number of hours of classroom and extracurricular employment. He participated in the writing of 1 textbook on clinical radiology, as well as the author of a number of publications in national and international scientific journals. The materials submitted for review reflect the scientific and research activity for the period 2013 - 2021. These include one chapter in a collective monograph, 10 refereed articles in the world database (Web of Science, SCOPUS) and 1 in non-refereed articles with scientific review. Publications and reports published in scientific journals, refereed and indexed in a world database. His dissertation on the topic "Arterial spin labeling for assessment of cerebral perfusion in patients with microangiopathy" was evaluated by a Scientific Jury. All criteria of the minimum requirements for holding the academic position of "associate professor", according to the ZRASRB, have been met. The presented scientific production can be combined in the following table:

<b>Publikations</b>	<b>All</b>
<b>Printed in full text</b>	<b>14</b>
Publications and reports published in non-refereed peer-reviewed journals or published in edited collective volumes	1
Publications and reports published in scientific journals, referenced and indexed in world-renowned databases of scientific information	13
Collective monographs	1
Additional actual printed full-text publications	2

### **Contributions:**

The main directions of scientific research are aimed at developing and improving diagnostic methods and techniques, in particular the use of Arterial spin labeling (ASL) MRI, as well as the application of innovative approaches in the diagnosis of oncological, cardiovascular and pediatric diseases, as well as the development of medical education.

1. An original 5-point visual scale for global assessment of cerebral perfusion using ASL has been developed, based on visual assessment of key brain regions, the presence of intravascular artifacts and the overall perfusion profile. The scale offers a rapid, clinically applicable tool for the assessment of patients with diffuse neurodegenerative diseases and shows a high IRR (Cohen's kappa = 0.82).
2. A new conceptual model for the interpretation of ASL is introduced in a separate study, in which regional hypoperfusion foci are considered against the background of global perfusion status. It has been shown that combining global and local assessment improves diagnostic sensitivity in early stages of dementia, where the classic focus on isolated areas may be insufficient.
3. It has been found that the presence of fetal type posterior cerebral artery (fPCA) correlates with a reduction in ASL signal in the medial occipital lobes and thalamus, which can be misinterpreted as a pathological finding. Guidelines for correct interpretation in the presence of this anatomical variant are proposed.
4. Another publication analyzes the relationship between globally reduced CBF and increased venous visibility on SWI images. The data indicate a statistically significant positive correlation between these two indicators, suggesting the presence of compensatory hemodynamic mechanisms.
5. The visibility of meningiomas in ASL has been studied and it has been found that tumors located around the skull base demonstrate significantly more often an increased perfusion signal compared to other locations. This observation is important for preoperative planning and differential diagnosis of tumors.
6. A complex clinical case of a combination of arteriovenous malformation and glioma is presented, in which ASL allows assessment of the hemodynamics of both lesions and supports multidisciplinary decision-making.

Publications in the field of oncological imaging diagnostics are dedicated to improving the radiological approach in some of the most common and at the same time challenging scenarios in oncological diagnostics, such as prostate cancer and breast cancer. Particular attention is paid to the optimization of decision-making algorithms in borderline clinical situations, where traditional imaging indicators do not provide an unambiguous answer.

1. In one of the central publications, the added value of Prostate-Specific Antigen Density (PSAD) in patients with Pi-RADS 3 lesions of the prostate gland was assessed. It was shown that a threshold value of  $0.12 \text{ ng/mL}^2$  separates high-risk from low-risk cases with good sensitivity and specificity. This creates an easily applicable criterion that supports the clinical decision to perform a biopsy in borderline findings on biparametric MRI (bpMRI). The proposed methodology may reduce the number of unnecessary invasive procedures and allow a more personalized diagnostic approach.

2. Another publication examines the potential of contrast-enhanced mammography (CEM) as an alternative to MRI in the diagnosis and staging of breast cancer, especially in patients with contraindications to contrast or limited access to MRI. The advantages of the method in terms of sensitivity, accessibility and cost are highlighted, and its place in current diagnostic protocols is also discussed.

3. A rare case of solid pseudopapillary tumor (Frantz tumor) of the pancreas is also presented, in which the role of MRI and PET/CT is key to making the diagnosis and refining the surgical approach. The report emphasizes the importance of multimodal imaging evaluation in rare neoplasms with low malignant potential, especially when the clinical picture is nonspecific. Thus, the contributions in oncological imaging diagnostics cover both widespread and rare oncological conditions, demonstrating how modern imaging diagnostics can be integrated into individualized and clinically applicable decision-making algorithms.

The author also presents publications in the areas of pediatric and cardiovascular imaging.

Publications in the area of medical education and interdisciplinary aspects are also of interest. In this area, the main emphasis is placed on the development of medical education in the field of imaging diagnostics, especially in the context of personalized medicine and digital transformation in education. One of the publications examines the impact of the COVID-19 pandemic on the training of future doctors, emphasizing the acquired adaptability, resilience and skills for working in a crisis situation. The importance of new elements in the educational process – telemedicine, digital technologies, online learning – and the need for integrated and continuous learning through mentoring and an interdisciplinary approach are discussed. An interdisciplinary article is also included that examines physiological and cognitive aspects of

audio perception in the context of the burn-in phenomenon in audio engineering. The article contributes to expanding the understanding of the interaction between sensory physiology and the technological environment and highlights the potential of radiology to engage in interdisciplinary research beyond the traditional clinical focus.

## Conclusion

Based on the above, I believe that Dr. Emilian Bozhidarov Kalchev, MD fully meets the scientometric criteria and indicators for holding the academic position of "Associate Professor", defined by the Regulations for the Application of the ZRASRB and the Regulations for the Development of the Academic Staff of the Faculty of Medicine of MU-Varna. Based on my personal impressions of the candidate, as well as the above-mentioned data on the scientific production, which naturally reflects the diversity and difficulties of clinical practice and is of a contributing nature to the country, I believe that Dr. Emilian Bozhidarov Kalchev, MD has the necessary qualities and scientific production. This makes me confidently give my positive vote and propose to the esteemed members of the scientific jury determined by order of the Rector of the Medical University "Dr. Paraskev Stoyanov" - Varna to approve the academic position of "Associate Professor" in the field of higher education 7. "Healthcare and Sports" in the professional field 7.1. "Medicine" and scientific specialty "Medical Radiology and Radiology (including the use of radioactive isotopes) for the needs of teaching the discipline "Imaging Diagnostics" in the Department of "Imaging Diagnostics, Interventional Radiology and Radiotherapy" of the Faculty of Medicine of the Medical University - Varna, Dr. Emilian Bozhidarov Kalchev, MD.

17.06.2025 г.

Varna

*Signature:*

Assoc. Prof. Dr. Chavdar Bachvarov, MD

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