

Review

by **Prof. Boyan Balev, MD, PhD,**

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appointed by order № P-109-176 / 03.06.2020 of the Rector of Varna Medical University as a scientific jury member in a contest for the acquisition of the academic title of "**Associate professor**" in in the higher educational field of 7. "Healthcare and sport", professional direction 7.1. "Medicine", and scientific specialty "Medical Radiology and Roentgenology (incl. Use of Radioactive Isotopes)" for the needs of the Department of Diagnostic Imaging, Interventional Radiology and Radiotherapy of the Medical Faculty of Varna Medical University, announced in the **State Newspaper issue 8/28.01.2020**

One candidate has submitted his documents for participation within the time frame allowed by law: Georgi Nikolaev Valchev, MD, PhD, who is admitted to participate in the contest in accordance with the Law for Development of Academic Staff in the Republic of Bulgaria, the Rulebook for its application, and the Regulations for Development of the Academic Staff of Varna Medical University "Prof. Dr. P. Stoyanov"

1. Biographic data and career development.

Dr. Georgi Valchev is born on 24.07.1987. In 2012 he completes his education in Medicine at the Faculty of Medicine of Varna Medical University. From December 2012 he works as a physician at the Clinic of Diagnostic Imaging of UMHAT "Sveta Marina" Varna, from July 2013 he begins his specialization at the Clinic of Diagnostic Imaging of UMHAT "Sveta Marina" Varna and a teaching assistant at "Radiology Technologist" Study Sector of Varna Medical College, part of Varna Medical University "Prof. Dr. Paraskev Stoyanov". Dr. Valchev attains the title of specialist in Diagnostic Imaging on 01.01.2018.

He is awarded 21.05.2018 the educational and scientific title of "PhD" in the scientific specialty "Medical Radiology and Roentgenology (incl. Use of Radioactive Isotopes)" after successfully defending his dissertation "Classification and Selection of Image Defined Risk Factors in Neuroblastoma".

The candidate's academic development is characterized by an active aspiration towards perfecting his radiological skills.

Dr. Valchev is fluent in English and German, with enclosed certificates.

2. Overall characterization of scientific research and applied scientific activity.

Dr. Valchev participates in the contest with 48 scientific works, thematically sorted in different fields of diagnostic imaging. In them he successively presents and analyzes various problems, which are fundamentally important for the stage at which they are reviewed.

A unifying trait of all these works is their thoroughness, practico-scientific relevance, and acknowledged contributions that they bring.

Total number of scientific works	Total number
1. Dissertation	1
2. Full-text publications	37
2.1. Publications in international and Bulgarian journals, referred and indexed in world-renowned scientific databases	9
2.2. Publications in Bulgarian and international non-referred peer-reviewed journals	28
2.2.1. Publications in Bulgaria	18
2.2.2. Publications abroad	10
3. Presented at congresses, conferences, and other scientific forums	8
3.1. At international forums with published abstracts	1
3.1.1. At international forums with abstracts published in journals	1
3.2. At Bulgarian scientific forums	7
3.2.1. At Bulgarian scientific forums with published abstracts	7
4. Monographies	2
Total number of scientific works	48

Citations	7, of which 5 in referred and 2 in non-referred publications
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Impact factor	none
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3. Educational-teaching activity.

Dr. Valchev's educational activity is diverse. Despite being a teaching assistant for only 6 years, he leads an accomplished teaching process and gains valuable academic experience at an optimal intensity. The enclosed reference from the Rectorate of Varna Medical University demonstrates that Dr. Valchev satisfies the requirements for minimal teaching load, with a substantial portion thereof being dedicated to English-speaking students of Medicine.

G. Valchev, MD, PhD actively participates in the conduction of colloquiums and teaching of medical students and specialization trainees (both in fulfillment of the mandatory curricula and extracurricular activities for students of various courses). Especially significant is his participation in the lectures for the Diagnostic Imaging basic course for specialist trainees. His inclusion in the courses' program is a recognition of his high teaching qualification.

Dr. Valchev has an active profile in ResearchGate and GoogleScholar.

4. Primary scientific and applied scientific contributions:

The scientific and practical contributions of Dr. Valchev's activity are significant because of manifest diverse scientific interest in several fields of diagnostic imaging. They are united in a few directions, each of which boasting applied scientific contributions.

Indubitable contributions arise from the dissertation and the remarkable monography, dedicated to neuroblastoma in childhood. The analysis of image defined risk factors yields an original contribution for the practice of diagnostic imaging specialists. The computed tomographic semiotics of the disease are appropriately described and demonstrated, with stipulations on the importance of each imaging symptom. The effect of each such symptom, as well as their number, on patient survivability also makes for a significant original practico-scientific contribution. The protocols developed for carrying out the imaging studies in order to find image defined risk factors are of undisputable

applied scientific contributory value and have a direct positive effect in the everyday work of the paediatric oncologist and imaging diagnostician. In this regard, another contribution is the proposed example checklist in aid of diagnostic imaging.

A contribution of cognitive and methodological type is the literature review for the application of and indications for transcranial Doppler ultrasound as part of a chapter in a collective monography, dedicated to vascular ultrasonography. Applied practical contributions are yielded from the instructions for determining vascular access during the examination.

In the articles published in referred and non-referred peer-reviewed journals several headings, outside of neuroblastoma, are evident.

Articles regarding avant-garde diagnostic techniques

Publications: Г7-3, Г8-9, Г8-10, Г8-15, Г8-24

- Development of an up-to-date comprehensive review of the magnetic resonance pulse sequences employed in cardiac imaging as part of a multidisciplinary project concerning the relationship between epicardial fat and cardiovascular risk in diabetes type 1 patients (contribution of cognitive and applied scientific type).
- Development of three review articles focused on innovative, yet established methods of breast diagnostics, including roentgenological tomosynthesis, automated breast ultrasonography, whole breast ultrasonography, and others (contribution of cognitive and applicable scientific type).
- Development of a review article on capsule endoscopy as an avant-garde potential substitute of conventional endoscopy in GIT (contribution of cognitive, theoretico-methodological, and applicable scientific type).

Articles with a focus on cardio-pulmonary diagnostic imaging

Publications: Г7-3, Г8-3

- A multidisciplinary collaborative team, headed by the candidate, compiles an exceptionally thorough and comprehensive review in an international publication, regarding pulmo-renal syndromes and more specifically their diagnostic imaging findings in high resolution computed tomography; the work is awarded with a Certificate of Merit

at the European Congress of Radiology 2016 (contribution of cognitive, theoretico-scientific, and methodological type).

- Development of an up-to-date comprehensive review of the magnetic resonance pulse sequences employed in cardiac imaging as part of a multidisciplinary project concerning the relationship between epicardial fat and cardiovascular risk in diabetes type 1 patients.

Articles with paediatric focus

Publications: **Г7-4, Г8-1, Г8-6, Г8-23**

- Composition of a current and exceptionally thorough review of potential postoperative complications in liver transplantation in children, illustrated with self-made digital schematics, making note of the contemporary surgical techniques and stipulating the diagnostic imaging characteristics of the complications in various modalities; accompanied by an example imaging algorithm for postoperative follow-up (contribution of original, cognitive, theoretico-methodological, and practico-applicable type).
- The candidate presents two current and especially comprehensive publications regarding congenital urinary anomalies in children.
- Compilation of a thorough and current review of differential diagnoses of cystic renal masses in children.

Articles with focus on congenital anomalies and urology

Publications: **Г8-1, Г8-6, Г8-2, Г8-23, T16-3, T16-4**

- The candidate presents a current review of the data on congenital absence of inferior vena cava, exceptionally richly illustrated with original self-made digital annotated anatomical schematics and computed tomographic and magnetic resonance images from personal practice (contribution of original, cognitive, and applied-scientific type).
- The candidate presents two comprehensive review articles, one in a Bulgarian and the other in an international journal, one with multidisciplinary participation, both concerning the rare renal anomaly oligomeganephronia and its relatively unknown computed tomographic appearance, illustrated with a case from personal practice (contribution of original, cognitive, applied practical type).

- The candidate presents two current and especially thorough review publications concerning congenital renal anomalies in children – one of which, published via an international platform, stressing the embryological stages of the development of the urinary system, and the application of magnetic resonance tomography in prenatal diagnostics, while the other focuses on postnatal ultrasonographic diagnostics; the second article is cited 3 times in referred journals (contribution of cognitive, practico-applicable, applied scientific and theoretico-scientific type)
- As part of a multidisciplinary team the candidate presents a short review and clinical case of ureteral obstruction due to a rare aneurysm of the internal iliac artery (contribution of original, cognitive, and applied practical type).

Articles with an interventional focus

Publications: Г7-1, Г7-2, Г8-12, Г8-20, Г8-21, Г8-22

- A multidisciplinary team headed by interventional radiologists presents 3 original articles based on personal experience, regarding minimally invasive, intravascular and percutaneous interventions in hepatic malignant lesions (contribution of original, cognitive, and applied practical type).
- The same team presents an article, once more based on personal experience, regarding interventional procedures for mechanical icterus under imaging guidance (contribution of original, cognitive, and applied practical type).
- Original cases of embolization of bronchial arteries in life-threatening bleeding and of a rare complication of stent-assisted coiling of an intracranial aneurysm are presented and supplemented with a comprehensive review of the pertinent literature (contribution of original, cognitive, and methodological type).

Articles with a neuroradiological focus

Publications: Г8-5, Г8-7, Г8-13

- Composition of an exceptionally thorough review, focusing on the broad differential diagnosis of viral encephalitides, based on magnetic resonance findings; this work is vastly popular in Researchgate with over 1700 proven reads (contribution of cognitive and applied scientific type).

- Composition of a comprehensive review of the magnetic resonance pulse sequences and findings in Alzheimer disease, illustrated richly with material from personal practice (contribution of cognitive and methodological type).
- A multidisciplinary team reports a case of cortical laminar necrosis after subarachnoid hemorrhage (contribution of cognitive type).

In addition to these primary headings Dr. Valchev publishes separate articles, yielding contributions in various fields. Original data has been used for the creation of works, illustrating the way of application of statistical methods in analysis of medical information and in the field of medical statistics. Dr. Valchev is part of the team of radiologists translating the latest textbook of clinical diagnostic imaging, awaited for over 20 year in Bulgaria.

Special recognition is due to Dr. Valchev's artistic and graphic skills, which he employs exceedingly successfully in creating demonstrative schematics and illustrations:

- Creation of an original poster for the XVIII Congress of the Bulgarian Association of Radiology, which took place in Varna in 2019;
- Methodological instruction for performing peripheral arterial Doppler ultrasound "Algorithm for assessment of radial artery for coronary bypass for cardiosurgery";
- Reference material "Measurement options in cerebral atrophy";
- Self-made original digital vascular schematics for quick reference – upper limb, arteries and veins;
- Self-made original digital vascular schematics for quick reference – lower limb, arteries and veins;
- Two self-made original digital vascular schematics for quick reference – main arteries (model of Michelangelo's David, model neutral male).

5. Communal activity, scientific projects, organizations

Projects:

1. Changes in the amount of visceral fat mass and its relation to increased cardiovascular risk in patients with long-term type 1 diabetes, Fund "Science", Varna Medical University contract ДН13/3 on 14.12.2017, head Prof. Y. Yotov. (2017 –2020)
2. Cardiovascular and metabolic risk, associated with visceral fat mass in type 1 diabetes patients, Fund "Scientific Research", H13/35 on 26.07.2017, head Prof. V. Yotova. (2017 –2020)

3. Stochastic and simulational models in some fields of medicine, social sciences, and dynamic systems, Fund "Scientific Research", project number H12/36, contract 12/11 at Technical University Sofia, head Prof. K. Prodanova (2017-2020)

Dr. Valchev is an active member of 2 scientific medical associations – Bulgarian Association of Radiology (BAR) and European Society of Radiology (ESR).

He is awarded the Honorary Seal of Varna Medical University for illustration in a foreign publication on May 24 2008.

Awarded with a Certificate of Merit at the European Congress of Radiology 2016 for the full-text work ECR 2016/C-0603 Pulmonary-Renal Syndromes - Comprehensive Review.

6. Critical notes

My recommendation is that Dr. Valchev apply himself in striving to publish his future works in journals with impact factor, which would enable his further career development.

7. Conclusion

Georgi Valchev, MD, PhD is a promising Bulgarian specialist with large scientific potential. The scientific production submitted by him encompasses contemporary imaging methods, while his thorough work in the field of paediatric oncology proves his contribution to the development of diagnostic imaging and for enhancing the authority of Bulgarian medicine. Despite his relatively brief clinical experience, he benefits from undisputable authority not only among the guild of Bulgarian imaging diagnosticians, but also among other clinical specialties. He shows eagerness and skill to share his accumulated theoretical knowledge and practical skills with his younger colleagues, which makes him an excellent instructor and sought-after lecturer.

Based on the exposition, including the overall assessment and analysis of the activity of the candidate, and in accordance with the requirements and the established evaluation criteria of Varna Medical University I find it warranted to confidently recommend to the honorable scientific jury that Georgi Valchev, MD, PhD be awarded the academic position of "Associate professor".

29.07.2020

Varna

Reviewer:

Prof. Boyan Balev, MD, PhD

