

**To: Chairmen of the Scientific Jury
Medical University
"Prof. Dr. Paraskev Stoyanov" Varna
Medical Faculty**

Statement

by Prof. Dr. Elena Nikolova Pioperkova, PhD, DMSc
Head of the Department of Nuclear Medicine
In The University SHAT of Oncology-EAD, Sofia

Regarding to the competition for the academic position of "Associate Professor" in scientific specialty "Nuclear Medicine", Higher Education Area 7. Health Care and Sports, professional direction 7.1. Medicine, one, 0.5 full-time position, opened for the Department of "Imaging diagnostics, interventional radiology and radiotherapy", Faculty of Medicine and 1 full-time position for the "Nuclear Medicine and Metabolic Therapy" Clinic at UMBAL "Sveta Marina" EAD – Varna, announced in State Gazette No. 28/28.03.2023. By order of the Rector No. R-109-294 dated 25.05.2023 and by decision of the Scientific Jury, I was appointed to participate as a member in the Scientific Jury as chairman and as an internal member with a scientific statement.

The only candidate participating in the competition was the chief assistant. Dr. Zhivka Dancheva Mezan, MDq PhD, Department of "Imaging diagnostics, interventional radiology and radiotherapy", Faculty of Medicine, MU "Prof. Dr. Paraskev Stoyanov" - Varna.

Biographical data:

Dr. Zhivka Dancheva was born in 1979 in the town of Veliki Preslav. She graduated as a master of medicine in 2005 at Medical University-Pleven. She worked as a medical representative for six months. She started her career in Nuclear medicine in October 2006 as a PhD student in Medical University Varna and in the Clinic for "Nuclear Medicine and Metabolic Therapy" UMBAL "Sveta Marina" Varna. In 2010, she successfully passed the state exam in the specialty "Nuclear Medicine". In 2012, she defended her doctorate with the thesis "Metabolic radiopharmaceutical therapy with 89Sr (Metastron) in painful bone metastases in prostate and breast cancer patients. From 01.01.2011 to the present, she is a specialist doctor at the Clinic in "Nuclear Medicine and Metabolic Therapy". Since 2016 she is a chief assistant in the Department of "Imaging diagnostics, interventional radiology and radiotherapy" of the Medical University "Prof. Dr. Paraskev Stoyanov" Varna.

She is a member of BAR, Bulgarian Society of Nuclear Medicine, EANM, national deputy in the Assembly of Delegates of EANM, and a member of WIN Global - Bulgaria.

He has excellent English language skills and as an addition, she created and is administrator of the website of the Bulgarian society of Nuclear medicine.

Research contributions.

The total number of scientific publications to date is 50: 30 scientific papers have been submitted for participation in the current competition, 23 of which have been published in scientific publications, referenced and indexed in world-famous databases with scientific information (Web of Science and/or Scopus). In this contest take part 1 monograph, 7 full-text articles and 22 reports with published abstracts in scientific journals, referenced and indexed in world databases with scientific information and impact factor are presented in the competition.

A report on the implementation of the minimum national requirements, the requirements of MU-Varna for occupying the academic position of "docent" in professional direction 7.1 is presented. Medicine, specialty "Nuclear Medicine".

A total of 13 scientific works of the Assistant Professor contest were presented. Of these, 9 full-text articles, 7 of which have been published in journals, referenced and indexed in world-renowned scientific information databases. 4 papers with published abstracts in journals indexed in Web of Science and/or Scopus are also presented. There is one participation in an international meeting of young scientists - 2012 EANM Young Investigators Meeting — The multimodal approach in pediatric oncology: impact on therapy and patient management, with presentation of own experience on children with neuroblastoma.

For the PhD contest, one dissertation on "89-Sr Metabolic Radiopharmaceutical Therapy (Metastron) in Painful Bone Metastases", 3 full-text articles published in refereed and indexed publications in world-renowned databases, 2 reports with published abstracts in journals indexed in Web of Science and /or Scopus and one full-text article in a non-refereed journal were assigned.

The impact factor presented so far is IF 204.073.

The total number of citations is 26.

Evaluation of scientific contributions

I. Monography

"Cutaneous melanoma through the eyes of Nuclear medicine physician" - The topic concerning the application of nuclear medicine diagnostic methods in skin melanoma is extremely relevant. This monograph is a summary of the world and Bulgarian experience in the staging, follow-up and assessing of the effect of the treatment in skin melanoma, with an emphasis on Nuclear medicine, both from the point of view of lymphoscintigraphy, as a gold standard for nodal staging in early melanoma, and hybrid positron- emission tomography with computed tomography (18F-FDG PET/CT) in advanced disease.

The demonstration of personal results from over 500 patients can be defined as an original contribution, defining in several chapters the role of 18F-FDG PET/CT, in staging, the advantages and weaknesses of the methodology in relation to different types of metastatic lesions, the evaluation of the effect of treatment and follow-up of high-risk groups of patients. An essential scientific-applied contribution is the recommendations presented in two of the chapters (Chapters 6 and 7), which concern the application of 18F-FDG PET/CT for staging and follow-up of high-risk patients, and which are based on both the literature review and of own results.

The most frequent adverse side effects of immunotherapy detectable with 18F-FDG PET/CT are discussed and presented in detail, and also its role in the early, subclinical detection of the latter, which is of practical importance in the need for treatment correction.

II. Contributions from the doctoral dissertation: "Metabolic radiopharmaceutical therapy with 89-Sr (Metastron) in painful bone metastases", MU Varna 2012.

1. For the first time in Bulgaria and synchronously with the TRAPEZE randomized controlled study, a comprehensive assessment of the role and place of metabolic treatment with Sr-89 in patients with prostate cancer was made. In addition, the effect of combining Sr-89, bisphosphonates, chemotherapy, and radiation therapy was also studied in breast cancer patients. The presented materials are reflected in 10 conclusions with scientific and practical application.
2. In addition to the scientific and applied contributions in the field of metabolic therapy, a significant practical contribution comprised also the application for the first time in Bulgaria of Samarium-153 EDTMP (Quadramet) for the palliative treatment of a patient with bone metastases in prostate cancer in 2007.

III. Scientific contributions in the presented articles and reports

1. The leading and original scientific contributions, established by the articles presented in the competition and participation in scientific forums of Dr. Zhivka Dancheva, are mainly related to the long-term and rich experience with 18F-FDG PET/CT and 68Ga-PSMA PET/CT. The studies with 18F-FDG PET/CT concern several main topics - head and neck carcinomas, breast carcinoma, multiple myeloma and two publications related to conducting the study in the conditions of the Covid-19 pandemic. The author presented 6 publications and one presentation at a national urology conference, regarding prostate carcinoma, in which extensive research and own results and experience are demonstrated.
2. Five of the presented reports addressed several aspects of the application of 18F-FDG PET/CT in head and neck carcinomas, including a study on an own cohort of patients. The role of 18F-FDG PET/CT in the detection of synchronous occult carcinomas, which are common in head and neck carcinomas and are often the cause of the patient's short life expectancy, is highlighted, necessitating their early detection.
3. Multiple myeloma is addressed in two of the publications. The role of 18F-FDG PET/CT in the staging of bone lesions is compared to that of MRI and radiographs. It is established that 18F-FDG PET/CT is better for staging than other imaging methods (MRI, X-ray and CT).
4. Four of the publications address different aspects of breast carcinoma, with 3 of them discussing different aspects of the treatment of men with stage IV breast cancer. One article presents an overview of the problems associated with breast carcinoma in young women, summarized as "the different disease." The latter is determined, on the one hand, by the often aggressive biological factors, and on the other hand, in terms of psychosocial difficulties and those related to with family planning.
5. The articles related to the conduct of 18-F FDG PET/CT in the conditions of the Covid-19 pandemic are of current interest. The contribution of the articles is practical and innovative in

nature to the knowledge of post-vaccination lymphadenopathy. It was recommended to administer the vaccine in the arm contralateral to the tumor in patients with malignant diseases.

6. A significant number of articles – 7 are devoted to the diagnosis of prostate carcinoma. The main contributions of these articles include revealing the fact that PSMA is not prostate-specific, as was believed at the beginning of the PSMA diagnostic era. It is possible to establish benign structures and processes with pathological expression of PSMA. It was found that false-positive lesions were frequently found, mainly in bone. This should be considered in patients with low-risk carcinomas and those with an undetectable PSA value. Two of the articles are on the sensitivity of PSMA-PET/CT at low PSA values, below 0.200 ng/ml. The articles contribute to the correct understanding and interpretation of the results, given that there is a significant relationship between the PSA level and the ability of PSMA to reveal metastatic lesions.

7. Of practical importance are a few rare cases in which a correct diagnosis was made thanks to 18-F FDG PET/CT. These cases are detailed examined and supported by histological confirmation. Review article on rare diseases, discusses the need for the specialized center already existing in Bulgaria.

7. In addition to the application of 18-F FDG PET/CT in oncological diseases, among the publications there is also the application of the methodology in inflammatory diseases, and in three of the publications it demonstrates cases of patients with chronic tonsillitis, infective endocarditis of prosthetic heart valves and sarcoidosis. As a scientific-applied contribution, the experience and guidelines provided in the recognition of malignant from inflammatory lesions can be highlighted.

8. An overview of the increasing use of 18F-FDG PET/CT in the staging and evaluation of the effect of tyrosine kinase inhibitor treatment in GIST is presented. The role of imaging methods for early detection of distant metastasis is highlighted.

9. One publication beyond the minimum scientific requirements was also presented, including a literature review and a clinical case of a patient with diffuse B large cell NHL.

Teaching activity

Ch. assistant Dr. Dancheva, DM conducts lectures and seminars in Bulgarian and English for foreign medical students fourth year at Varna Medical University, radiation technologists, nurses and midwives from medical college-Varna. She also participates in the examination committees of Bulgarian and foreign students. Actively participates in conducting the basic theoretical courses for residents in nuclear medicine, not only as a lecturer, but also as an organizer. Dr. Dancheva is one of the organizers in the yearly taking part Nuclear medicine days in Varna.

Clinical work

Dr. Jivka Dancheva is a now a well-known specialist of Clinical Nuclear Medicine. She masters all the techniques and methods of both PET/CT, SPECT/CT and metabolic therapy, according to the national and international standards. Actively participates as a leading specialist in nuclear

medicine in close collaboration with the Clinics of the hospital. She is also a respectable colleague and specialist who is an excellent team-working colleague.

Personal impressions of the candidate

I have known Dr. Dancheva along the years when she has presented different own researches. She is a young, full of energy motivated doctor, with the ambition to learn all the techniques and methods in nuclear medicine and their application in the clinical practice. Over the years, she has proven that he has the deep necessary knowledge and capabilities to establish herself as a leading specialist in the field of Clinical Nuclear Medicine. She shows thoroughness and persistence in her scientific interests. Dr. Dancheva is a tolerant and balanced colleague who is appreciated by everyone in the team and by the patients.

In Conclusion my opinion is that the Ch. assistant Dr. Dr. Zhivka Dancheva Mezan is a very well- educated modern teacher and specialist in nuclear medicine with great experience and practice. She is respected not only by her colleagues in the field of metabolic hybrid SPECT/CT or PET/CT imaging diagnostics and metabolic radio-nuclides therapy, but also by those from other clinical specialties. The presented scientific works are proof of her creative and scientific-research spirit and have a methodical and scientific-practical character. Publications and presentations at international scientific forums contribute to the development of nuclear medicine in Bulgaria and its international validation.

Bearing in mind the above-mentioned scientific contributions, Dr. Dancheva's scientific, teaching and clinical experience, consider that she meets the requirements of the "Law and Regulations for the Development of the Academic Staff in the Republic of Bulgaria" and the regulations of the Medical University "Prof. Dr. Paraskev Stoyanov" -Varna, I am very well-motivated to give my positive vote and I recommend the respected members of the Scientific Jury to award ch. assistant Dr. Dr. Zhivka Dancheva Mezan academic position "Associate Professor" (Docent).

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