

Thesis statement

by **Prof. Dr. Borislav Chaushev, MD**

Head of the Department of "Periodontology and Dental Implants"

Faculty of Dental Medicine

Medical University "Prof. Dr. Paraskev Stoyanov – Varna

of the dissertation work for the acquisition of an educational scientific degree

"Doctor"

in the field of higher education 7. Healthcare and sports,

professional management 7.1.

Medicine, scientific specialist "Medical radiology and radiology (including use of radioactive isotopes)".

Dr. Tanya Zhivkova Stoeva,

Department of "Nuclear Medicine, Metabolic Therapy and Radiotherapy"

Faculty of Medicine

"Dr. Paraskev Stoyanov" Medical University - Varna

Dissertation topic:

Diagnostic role of 18F-FDG PET/CT in multiple myeloma.

Dear members of the scientific jury,

By order of the Rector of MU-Varna No. P-110-68 of 26.02.2024 and as a member of the Faculty of Social Sciences, I am appointed to participate with an opinion on the defense of the dissertation work of Dr. Tanya Stoeva

1. Significance of the problem and formulation of the aim and tasks:

Multiple myeloma is a malignant disease of plasma cells originating from the growth of a single pathological clone, which determines the monoclonality of this hemopathy.

Multiple myeloma, although rare, is the second most common hematologic malignancy after non-Hodgkin's lymphomas. It accounts for 1% of all types of carcinoma and 13% of all hematological neoplasias.

The current dissertation examines the diagnostic role of 18F-FDG PET/CT and its sensitivity and specificity as a hybrid imaging method, presenting its advantages over other imaging methods - conventional radiography, CT and MRI, and compares different scales for assessing metabolic activity and shows its relationship with post-treatment laboratory tests.

The relevance and importance of the problem are determined by the difficulties in diagnosing the disease, staging, evaluating the therapeutic response, early detection of relapse and the prognosis of multiple myeloma.

The aim is clearly formulated and intends to determine the role of 18F-FDG PET/CT in the diagnostic algorithm in the diagnosis of multiple myeloma. There are six tasks set by the Ph.D. student. They are correctly worded and meet the purpose of the study.

2. Structure of the dissertation:

The dissertation has a classic structure. It is written across 155 pages and contains the following sections: literature review, aim and tasks, material and methods, results and discussion, conclusions, contributions. The dissertation contains 22 tables and 47 figures.

The proportions between the individual sections are respected.

Each of the parts of the dissertation work follows the logic of the set tasks and purpose, and the conclusions naturally arise from the results, the statistical processing of the data, and the discussions.

3. Literary awareness of the dissertation student:

The literature review of the dissertation is presented in 38 pages, where the author thoroughly analyzes the data for the application of 18F-FDG PET/CT in multiple myeloma, proving that there is still a lack of a single method in combination with other imaging methods for the evaluation of the metabolic activity of the lesions.

The bibliographic reference includes 231 cited literary sources, of which 2 in Cyrillic and 229 in Latin, a large part of which after 2014.

The conclusions of the literature review are specific and directly related to the purpose and tasks of the scientific development.

4. Methodological level and research design:

125 patients were included in the scientific study for a period of twelve years from 2009 to 2021 with the goal of a sufficiently long follow-up period in which staging and restaging 18F-FDG PET/CT studies were performed. The study included patients divided into groups for staging, after treatment, restaging in case of suspected relapse/progression and with an unclear primary focus. The results were processed using statistical methods.

The research methods and clinical material chosen by the author have enabled the achievement of the set aim, and the tasks set to be solved have received appropriate responses.

5. Consistency between the aim, the results and the conclusions:

There is a logical correspondence between the aim, the results obtained, the discussion and the conclusions drawn. The results and discussion are set out in 77 pages and are richly illustrated. They follow the progress of the set tasks and are presented in detail. The importance and advantages of the diagnostic algorithm of 18F-FDG PET/CT in combination

with the laboratory tests of different groups of patients are indicated, paraosseous and extramedullary involvement, as well as pathologic fractures are studied. A comparison was made between different metabolic activity assessment scales for bone involvement with subsequent stratification of patients according to overall and progression-free survival.

The presented data show the in-depth and detailed analysis conducted by the Ph.D. candidate in the diagnosis and follow-up of patients, which gives grounds for the credibility of the conclusions drawn.

6. Analysis of conclusions and contributions:

The dissertation concludes with 8 conclusions and 6 contributions, which are clearly formulated. The dissertation is the first in-depth scientific study in Bulgaria on the diagnostic capabilities of 18F-FDG PET/CT in patients with multiple myeloma. A particular contribution of the author is that she provide recommendations for clinical practice for different groups of patients with multiple myeloma regarding the use of various scales to account for the metabolic activity of bone lesions and to determine the outcome of the disease.

7. Nature of critical remarks and recommendations:

I have no critical remarks that would cast doubt on the methods, the evidence, the discussion of the results obtained, and the conclusions drawn.

8. Publications and scientific events:

The results of the doctoral student's research on the topic have found a place in 3 scientific journals and in 5 scientific forums, of which five abstracts in the European Journal of Nuclear Medicine (2023).

Personal impressions of the candidate:

Dr. Tanya Stoeva is a nuclear medicine doctor. She is among the young colleagues who continuously develop and show interest not only in daily work but also in the latest innovations in our field. Fair, collegial and not only towards the members of the team at the Clinic of Nuclear Medicine but also towards colleagues from other clinical specialties.

9. Conclusion:

Bearing in mind the scientific merits of the dissertation work, namely: relevance of the problem and the obtained results, the significant conclusions and contributions of the Ph.D candidate, I strongly recommend to the members of the respected scientific jury to award the educational scientific degree "Doctor" to Dr. Tanya Zhivkova Stoeva for the dissertation work "Diagnostic role of 18F-FDG PET/CT in multiple myeloma"

01.05.2024

Varna

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Prof. Dr. Borislav Chaushev, MD