RECENSION

Competition for associate professor in the area of higher education 7. Healthcare and sport in professional direction. 7.1 Medicine and scientific specialty “Neurology”, announced in DV, num.19 from 05.03.2021

Candidate for the announced competition:

Dr. Mariya Ivanova Dimitrova, Ph.D - Head of the Department of Neurology of UMHAT "NI Pirogov ”.

Reviewer: Prof. Dr. Nikolay Stefanov Gabrovsky, DMS. Head of the Clinic of Neurosurgery of UMHATEM "N.I. Pirogov”. Chief Coordinator of the Expert Council for the Medical Specialty "Neurosurgery", member of the Scientific Jury with order № RD-261166 / 05.05.2021. of the Executive Director of UMHAT “NI Pirogov ”and a meeting of the Scientific Jury - minutes №1 / 10.05.2021.

Dr. Mariya Dimitrova was born in 1975. Graduated from high school in 2001 in Mathematical High School "Baba Tonka", Ruse. In 2007 graduated from the Medical University, Sofia, majoring in Medicine. Since 2013 has a recognized specialty "Neurology". In 2018 graduated with a master's degree in Public Health and Health Management.

Dr. Mariya Dimitrova started working at the Clinic of Neurological Diseases of the Military Medical Academy in 2008. She has successively held the positions of resident and assistant, and since 2016 she has been a servicewoman in the Bulgarian Army. In 2018 she defended her dissertation on "Neuropsychological disorders in obstructive sleep apnea" with supervisor Prof. Krassimir Genov, MD and scientific consultant Acad. Lachezar Traikov (diploma № 129 / 30.04.2018). From 2018 year was elected Head of the Department of Neurological Diseases of UMHAT “N.I. Pirogov ".

Dr. Mariya Dimitrova has passed numerous courses and specialized trainings to improve her qualification such as: Spring School For Young Neurologists, Stare Splavy, 2012; ALS diagnosis and care, Prague, 2012; Cognitive disorders in neurological diseases, 2014; Preceptorship on MRI in multiple sclerosis, Milan, Italy, 2015; Regional Teaching Course of the European Academy of Neurology, 2017; World Federation of Neurology continuing medical education program, 2017; Fabry Summer School, 2018; Dementia Academy, 2019; Stroke Treatment Logistics Simulation Training Course, Brno, 2019.

She has a certificate for highly specialized activities in neurology - "Neurosonology" from 2014. as well as:

- EDSS assessment certificate;
- GCP certificate;
- Certificate for assessment of neurological deficit according to NIHSS scale;
- Certificate for assessment of anxiety and depression C-SSR.

Dr. Mariya Dimitrova is a member of the Bulgarian Society of Neurology, Bulgarian Society of Neurosonology and Cerebral Hemodynamics, Bulgarian Society of Somnology, European Society of Neurosonology and Cerebral Hemodynamics, Bulgarian Medical Union.

She speaks English.

In the competition Dr. Mariya Dimitrova appears with 79 scientific papers, of which one dissertation (with summary), one independent monograph. In 34 of the scientific papers the candidate is the first author. Their distribution is as follows:

- Dissertation with summary "Neuropsychological disorders in obstructive sleep apnea" - dissertation for the award of educational and scientific degree "Doctor" in the scientific specialty "Neurological Diseases", code 03.01.19, 2018.
- Monograph "Diagnostic and therapeutic approaches in cryptogenic stroke", 2021, Sofia, J.A.M.G BOOKS, ISBN 978619-7321-16-6.

- 35 scientific publications.
- 21 participations in National Forums.
- 21 participations in international forums.

Six of the scientific publications have an impact factor, as well as 15 of the 21 participations in International Forums.

Publications in journals with IF	IF	Number of authors	Individual IF
Folia medica, 2020	0.87	2	0.435
Folia medica, 2020	0.87	2	0.435
Folia medica, 2020	0.87	4	0.2175
Folia medica, 2020	0.87	2	0.435
Folia medica, 2021	0.87	3	0.29
Folia medica, 2021	0.87	2	0.435
IF			**2.2475**
Messages in journals with IF			
European Journal of Neurology, 2012	4.981	2	2.4905
European Journal of Neurology, 2014	4.676	2	2.338
European Journal of Neurology, 2015	4.483	5	0.8966
European Journal of Neurology, 2016	4.224	5	0.8448
European Journal of Neurology, 2019	4.575	3	1.525
European Journal of Neurology, 2020	4.575	4	1.14375
European Journal of Neurology, 2020	4.575	2	2.2875
European Journal of Neurology, 2020	4.575	3	1.525
European Journal of Neurology, 2020	4.575	3	1.525
European Journal of Neurology, 2020	4.575	3	1.525
European Journal of Neurology, 2020	4.575	3	1.525
European Journal of Neurology, 2020	4.575	3	1.525
International Journal of Stroke, 2014	3.411	5	0.6822
IF	**56.78**		**19.8333**
Individual IF			**22.08**

The bibliographic citations are 18 for the Bulgarian literature.

The scientific papers are presented in the following categories: I Dissertation, II Monograph, III Publications, IV Participation in scientific forums,

divided into 4.1 National Forums and 4.2 International Forums. The necessary evidence is also attached. The scientific works cover various topics in neurology, and can be divided into several thematic areas and form the following main contributions in the relevant areas of research:

1. Obstructive sleep apnea

The most common part of scientific activity is related to obstructive sleep apnea. The section includes a total of 11 works on the author's list and one defended dissertation.

A significant part of the scientific research on the topic of obstructive sleep apnea is related to changes in cognitive functions. Combining the literature data with her own experience, the specifics of the cognitive and personal profile of patients with OSA are described, and this contributes to the patient's early diagnosis and treatment. In a series of reviews, original articles and scientific contributions (III 5, 6, 10, 14, 21; IV 4.1.4, 4.2.4, 4.2.5, 4.2.7, 4.2.9, 4.2.10, 4.2.11) is described the appearance of cognitive impairment. Special attention is paid to already existing scales and batteries to assess these disorders, especially on the use of short tests to detect changes is of great importance. These developments have scientific and practical significance.

The dissertation (I) confirms the presence of neuropsychological disorders in patients with OSA in the Bulgarian patient population, preparing a detailed neuropsychological profile. The study was performed on 103 patients and 31 healthy controls. The following contributions have been made:

• Scientific and theoretical contributions:

- ✓ The study confirms for the first time among the Bulgarian patient population the presence of neuropsychological disorders in patients with OSA, forming a detailed neuropsychological profile of patients with OSA.
- ✓ Presents a comprehensive assessment of the executive functioning of patients with OSA, confirming that the presence of executive disorders is most characteristic of the neuropsychological profile of these patients.

- ✓ The specificity of the methods used to study the executive functioning is determined by selecting short and specific tests suitable for inclusion in a short neuropsychological battery.
- ✓ Relationships between the presence of concomitant pathology and the severity of neuropsychological changes are confirmed, and as the main risk factor for neuropsychological changes was reported the duration of the existing symptoms of the disease.
- ✓ It is established that the presence of cortical atrophy is the cause of changes not only in general cognitive functioning, psychomotor speed and attention, but also in relation to disorders of executive functioning, and the severity of cortical atrophy depends on the level of minimal oxygen saturation and age.

• Scientific and applied contributions:

- ✓ A short battery of neuropsychological tests is suggested, suitable for assessing the neuropsychological condition of patients with OSA.

The scientific publications on obstructive sleep apnea are in the following areas: psychological and cognitive disorders with a major contribution to the preparation of a short neuropsychological battery to assess the deficit, study of the anatomical substrate for the disorders, the role of anthropometric features of patients, analysis of the risk factors for obstructive sleep apnea and for neuropsychological deficits.

2. Multiple sclerosis

Another, main direction of the scientific work is the neuropsychological change and the therapeutic possibilities in multiple sclerosis. Based on a critical analysis of the most used methods, guidelines for creating a set of reliable and sufficiently informative tests and scales for the needs of everyday neurological practice are outlined. Different aspects of the psychological profile and cognitive changes in patients with multiple sclerosis are discussed in detail. The various manifestations of emotional reactions in patients with MS, such as despair, fear, anger, guilt, depression are considered. All of these disorders ultimately

significantly impair the quality of life of these patients. The scales for assessing cognitive deficit, which are widely used in practice, are also presented in detail (III 9, 31; IV 4.2.1). In a series of review articles outlines current pathogenetically sound therapeutic strategies in MS are outlined and some of the new therapeutic options have been outlined. The treatment with Interferons, as the gold standard in treatment, is discussed in a review article. (III 18). In two review articles aimed at general practitioners and are of scientific and practical importance.

3. Cerebrovascular disease

The topic of cerebrovascular diseases is considered in a monographic work and a series of reviews, articles and scientific reports (II, III 7, 20, 22, 25, 28, 34; IV 4.1.6, 4.1.7, 4.1.8, 4.1.9, 4.1.10, 4.1.11, 4.1.12, 4.1.14, 4.1.20, 4.1.21; IV4.2.3, 4.2.6, 4.2.12, 4.2.14). The scientific works are devoted to several important topics: consideration and specification of risk factors for stroke, ischemic stroke with unclear genesis and modern treatment of cerebrovascular diseases.

The monograph "Diagnostic and therapeutic approaches in cryptogenic stroke" is completely independent and consists of nine chapters. It is dedicated to the definition, epidemiology, differential diagnosis and therapeutic recommendations for stroke of unclear genesis. Own cases of patients with rare causes of ischemic stroke are also shared. The monograph summarizes a large number of etiological and pathogenetic factors for the occurrence of stroke in different age groups. Some of the reasons considered are very rare, but knowing them will lead to a better diagnosis of cryptogenic stroke. The monograph is a valuable tool for specialists in neurology, rheumatology, cardiology, genetics, as well as students. **The monograph has a theoretical and scientifically applied contribution to Bulgarian neurology.**

In scientific participation (IV 4.2.12) own data for atrial fibrillation screening in patients with unclear cause of stroke are presented. A telemonitoring system was also used in 185 patients with an average patient monitoring period of 96 hours. The conclusion is that the long-term monitoring

of patients is superior to the 24-hour Holter ECG in the diagnosis of atrial fibrillation, which is of **theoretical and practical importance**.

A series of articles and scientific papers consider the possibilities for differentiated treatment of stroke (III 34, IV 4.1.7, 4.1.8). An original article (III 22) presents own data from a study of early symptoms of anxiety and depression in 117 patients. A review article (III 20) examines the immunological aspects of ischemic stroke. Of interest is also a review article devoted to the study and evaluation of swallowing in patients with acute ischemic stroke (III 28), which is of great practical importance for the work of specialized centers for the treatment of stroke. Several publications are devoted to the diagnosis and treatment of cerebral venous thrombosis, own cases of venous thrombosis are presented in a scientific report (IV 4.1.14). Of interest are the descriptions of clinical cases of patients with parenchymal cerebral hemorrhage (IV 4.1.10, 4.2.14).

4. Spinal pathology

A significant part of the scientific papers is devoted to the diagnosis and treatment of spondylodiscitis (III 2, III 3, III 32, IV 4.1.2; 4.1.3; 4.2.2). In this regard, the scientific papers are of a **scientific-theoretical nature**. A scientific report presents summary of own data from treated patients with spondylodiscitis, considering concomitant diseases, incidence of disease in immunocompromised patients, causative agents, and the study included only non-specific spondylodiscitis (4.2.2), which has a practical contribution.

5. Neuropsychological research in neurological diseases

A series of reports have examined neuropsychological disorders in brain tumors and arteriovenous malformations (IV 4.1.13; 4.1.9). A series of patients are presented, selected according to certain inclusion criteria, where the imaging diagnosis and the localization of the changes are taken into account. Patients in both studies were evaluated with extensive neuropsychological batteries, memory studies, executive functions, psychomotor speed, general cognitive functioning, with leading **theoretical and practical application**.

6. COVID-19

In a pandemic situation, any information related to the neurological complications of the disease is accepted with great interest. Own observations are shared in scientific reports and articles (III 30, III33, III26, IV 4.2.19, 4.2.20). The review articles summarize the known neurological complications and have a generalizing theoretical contribution, and the described clinical cases are of practical contribution.

7. Other

In this section three reviews can be distinguished, devoted to Alzheimer's disease (III 12, 19) and an article on the treatment of the disease with memantine hydrochloride (III 16). Three scientific studies present interesting cases from the practice of a patient with probable Creutzfeldt-Jacob Heidenhain variant (IV 4.2.15). The other case is of an immunocompromised patient with systemic rheumatic disease with established cryptococcal meningitis, which recovers due to the treatment (IV 4.2.17). The third case is of a patient with a clinical and electromyographic finding of acute demyelinating Guillain-Barré polyradiculoneuropathy and concomitant neuroborreliosis (IV 4.2.16).

Dr. Mariya Dimitrova has auditorium employment in the lecture course "Emergencies in Neurology" (40 hours for 2018, 60 hours for 2019, 55 hours for 2020, 55 hours for 2021), as well as in a module to the PULSS program "Neurological Emergency Protocols" for 2020 and 2021. Extraauditory activities include training of seven specialists in nervous diseases, conducting colloquia. The teaching and methodological activity is based on the development of lectures, editing of materials for the journal "Emergency Medicine", scientific activity as a participant in research projects, conducting colleague meetings. The scientometric indicators of Dr. Mariya Dimitrova fully meet and significantly exceed those set in the Regulations on the terms and conditions for acquiring scientific degrees and holding academic positions at UMHATEM "N.I. Pirogov".

Apart from the scientific-metric indicators of Dr. Mariya Dimitrova, which objectify her lasting scientific interests and achievements, I must also share my personal impressions of her perseverance and remarkable efficiency. We are

witnessing a constant desire for self-improvement and development of scientific expertise, which allows the achievement of very high professional results.

Based on the above, without hesitation I give my positive vote for the election of Dr. Mariya Dimitrova to hold the academic position of "Associate Professor" in the scientific specialty "Neurology" for the needs of the Clinic of Neurosurgery of UMHATEM "N. I. Pirogov”

08. 06. 2021 Reviewer:

Sofia .....

Prof. Dr. N. Gabrovsky, DMS