

RECENSION

By Prof. Dr. Christo Tsekov Tsekov, MD, Head of Neurosurgery Clinic at Acibadem City Clinic "Tokuda Hospital", EAD Sofia

Subject: Competition for Associate Professor of Neurosurgery at Varna University of Medical Sciences

Application by Dr. Bogomil Petkov Iliev, doctor – neurosurgeon, at the Department of "Neurosurgery and ENT diseases", Clinic of Neurosurgery at UMBAL "St. Marina " EAD, Varna, for participation in a competition for an "associate professor" in the field of higher education 7. Health care and sports, professional direction 7.1 Medicine, specialty Neurosurgery. The competition was announced in SG no. 102 of 23.12.2022. The members of the jury were determined by Order No. R-109-141 of 23.02.2023 of the Rector of the University of Varna. The necessary documents and certificates are presented according to the Regulations of the MU and the Law on the Development of the Academic Staff in the Republic of Bulgaria.

The only CANDIDATE for participation in the competition is Dr. Bogomil Petkov Iliev, MD - chief assistant at the "Department of Neurosurgery and ENT Diseases" and neurosurgeon at the Clinic of Neurosurgery - MU, Varna.

Dr. Bogomil Iliev was born in 1984 in the city of Varna, completed his secondary education in the city of Burgas. In 2010, he graduated as a doctor - master's degree at MU "Prof. Paraskev Stoyanov", City of Varna. From the following year, he starts working as a doctor in the Clinic of Neurosurgery at the same university, where he works by now. After winning a competition in 2014, he was reappointed as an assistant at the Clinic of Neurosurgery, and in 2018 he was already a "chief assistant" at the same university. In the meantime, in 2012, he completed a master's degree in "Health Management", and in 2015 he defended his doctoral dissertation on the topic: "Endoscope - assisted evacuation of intracerebral hematomas". He acquired a specialty in "Neurosurgery" in 2018.

He works intensively as a neurosurgeon, annually participating in or leading over 400 operative interventions, most of which are high-tech. Performs daily consultative examinations in the city and the region. In his capacity as an "assistant" and "chief assistant", he is extremely busy with teaching activities - exercises and seminars with students, trainees and specialists in Neurosurgery, General surgery, Dental medicine, of medical specialists, X-ray laboratory technicians, cosmetic and plastic surgeons, neurobiologists, inspectors of Public Health.

For his participation in the current competition, Dr. B. Iliev presents a monograph on "Modern concepts and operative trends in chronic subdural hematoma", reviewing the literature on 128 pages and analyzing his own experience on 149 cases with such a diagnosis. Subdural hematomas are a serious problem for modern society due to the progressive increase in their frequency over the last two decades, as the author examines in detail the causes of this phenomenon, emphasizing the importance of factors such as: gender, increasing life expectancy, the widespread use of anticoagulants and antiplatelets, drug addictions incl. and alcoholism, malnutrition, intoxications of any origin, some congenital anomalies and acquired diseases. And

last, but not least, trauma of any kind. According to the author's data, about $\frac{1}{4}$ of the subdural hematomas, operated on in the clinic, received anticoagulants due to ischemic heart disease, another $\frac{1}{4}$ were treated for diabetes and its complications, $\frac{1}{10}$ suffered from epileptic seizures, about $\frac{1}{5}$ had mental abnormalities, and practically all others were taking antiplatelet or anticoagulant therapy. Practically, all patients have experienced a craniocerebral trauma of one or another degree of severity, or have suffered from diseases, predisposing both to trauma and to impaired hemocoagulation.

The study of the etiopathogenesis of subdural hematomas, considered in a historical and scientifically - investigative aspect, is impressive. The possibilities of chronic bleeding from ruptured bridging veins, traumatic rupture of pial vessels, subclinical rupture of the dural border cell layer with subsequent reactive inflammatory cascade, creating conditions for chronic bleeding and formation of fibrin membranes, are explored. Consistently and critically examines the main components of etiopathogenesis: direct and indirect craniocerebral trauma, intracranial hypotension, coagulopathy, the administration of anticoagulants and antiplatelet medications. It examines the pathophysiological mechanisms leading to the occurrence of a subdural hematoma, emphasizing that a subdural hematoma is not actually located in the subdural space, as is commonly believed in the medical and non-medical community. In practice, the hemorrhage is localized in the dural border layer, appearing as a natural plane of cleavage along the horizontal, where the wall of the bridging veins is most vulnerable. The resulting inflammatory spiral creates conditions for permanent bleeding with the formation of clots and subsequent fibrinolysis, as well as the formation of granulation tissue - factors suggestive of bleeding and membrane formation. The proliferation of border cells creates conditions for angiogenesis and inflammatory granulation tissue, with the formation of immature blood vessels, becoming a source of permanent bleeding, respectively hematoma growth. Studies have shown that the membrane is a product of the proliferation of dural border cells. This whole process takes place within 3 to 4 weeks. This newly formed membrane, as well as the formation of post-inflammatory granulation tissue, has a tendency to bleed due to the immature and bleeding blood vessels contained therein, which expands the volume of the hematoma, parallel to the slow maturation of the membranous tissue. If there are conditions for fast membrane formation, there are conditions for these neo-vessels to mature and not bleed, which is why the hematoma does not grow and is resorbed, and the whole process can proceed subclinically. In addition to this mechanism, a second one is also suggested - the development of a hygroma in the dural cell layer. As a reason for the development of a hygroma, apart from clinically unmanifested trauma, can be a congenital defect of the cell layer, asymmetry in the development of the skull, a sharp increase or decrease of the cerebrospinal fluid pressure. The appearance of a hygroma leads to the above-mentioned inflammatory cascade with the development of proliferation of dural border cells, granulations with angiogenesis and conditions for chronic bleeding in the hygroma, and its transition to a chronic subdural hematoma. Thus, at this stage, the explanation of the pathogenesis of subdural hematomas becomes comprehensive and receptive. With the routine introduction of CT and MRI, there is no controversy in the modern literature regarding the establishment of the final diagnosis, and the introduction of volume calculation formulas solves the problem of following up some of the cases with contraindications for operative treatment. The important conclusion for practice is that the operative evacuation of the hematoma has no practical alternative, but the possibility of

the application of corticosteroids, tranexamic acid, embolization of the middle cerebral artery, application of inhibitors of vascular proliferation, etc., is analyzed. The application of conservative methods, for now, can only serve as an adjunct to surgery. The discussion and the resulting recommendations, regarding the administration and control of the anticoagulant, antiplatelet and antiepileptic therapies, are extremely important. As stated, operative treatment has no alternative, and anesthesia is tailored to the urgency of the intervention and the patient's condition. The indications for the type of operative intervention are similar, resp. the size of the craniotomy, which has more to do with the duration of the intervention and the degree of resection of the membranes. Significant difference in the degree of excision of the hematoma membranes was not established, which has a great practical value, as well as the need for subdural drainage postoperatively.

In the publications presented for the competition, the striving for innovation, for broad medical knowledge is visible at first glance. The main directions are outlined in scientific research:

- intracerebral hematomas, with introduction of endoscopic technique, neuronavigation
- subdural hematomas, with development of indications for volume of surgical intervention, introduction of endoscopic control, comparison with world trends and understanding of their treatment
- spinal degenerative surgery, with the introduction of ultrasound control on the degree of decompression in spinal stenosis

There are 14 publications in Bulgarian magazines, monographs and refereed collections, 16 publications outside the country, participation in congresses and other scientific events at home and abroad - 54, as well as the monograph "Modern concepts and operative trends in chronic subdural hematoma". He is the first author in 4 publications, the second and third - in 11, which are criteria for his preparation as an independent researcher. It is also important to note that the publications were published in renowned publications: "Journal of Neurological Surgery", "Medical Oncology", "J IMAB", "Scripta Scientifica Medica", "Bulgarian Neurosurgery", "International Bulletin of Otorhinolaryngology", "Practical Pediatrics", etc. . According to "Google Scholar", it has 89 citations and has an h-index and an i-index of 10. According to the reference from the MU library, there are 4 citations in scientific publications referenced and indexed in global databases with scientific information.

There are also a number of scientific honors and awards: XV WFNS, Seoul-Korea, 2013; XXI Congress of Euroacademy Multidisciplinaria Neurotraumatology, Novi Sad-Serbia, 2016.

In conclusion: Dr. Bogomil Iliev is a trained specialist neurosurgeon, participates and is a leading operator in operative interventions of the major neurosurgery, teaches students and doctors-residents with a high degree of workload, introduces innovative techniques, publishes in renowned publications, is the author of the monograph "Modern concepts and operational trends in chronic subdural hematoma", covers all scientific criteria for filling the academic position "Associate Professor", according to the "Law on the Development of the Academic Staff of the

Republic of Bulgaria” and the “Regulations for the Development of the Academic Staff of the Medical University – Varna”, for filling in the academic position of "Associate Professor".

All this gives me the reason to give a positive answer and to propose to the members of the Scientific Jury to award the chief assistant, Dr. Bogomil Iliev, dm., the academic position of "Associate Professor". I vote "Yes" for the election of Dr. B. Iliev as an "Associate Professor" at the University of Varna in the field of higher education 7. Health care and sports, professional direction 7.1 Medicine, specialty - Neurosurgery.

22.04.2023, Sofia

Reviewer:

A handwritten signature in blue ink, appearing to be 'B. Iliev', written over the 'Reviewer:' label.