

REVIEW

From: Prof. Vladimir Nakov, MD, PhD, Neurosurgery Clinic, Acibadem City Clinic Tokuda Hospital, Sofia, Bulgaria

Regarding: Competition for the occupation of an academic position "Associate Professor" in the scientific specialty 03.01.41. "Neurosurgery" in the field of higher education 7. "Healthcare and sports" in professional field 7.1. "Medicine" for the needs of the Neurosurgery Clinic at Acibadem City Clinic Tokuda Hospital. The competition was announced in SG no. 47/04.06.2024. The scientific jury was appointed by Order No. 15-05-98/05.08.2024 of the Executive Director and the Procurator of "Acibadem City Clinic Tokuda Hospital" on the proposal of the Director of the Directorate "Scientific and Educational Activity" based on a decision of the Scientific Council - Protocol No. 53/26.06.2024.

The only candidate in the competition is Asen Hristov Cekov, MD, PhD. The documents presented by Dr. Cekov comply with the regulatory framework. The deadlines for holding the competition and the procedure for it are respected according to the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations on the Terms and Conditions for the Acquisition of Scientific Degrees and the Occupancy of Academic Positions at Sofia University.

I. BRIEF BIOGRAPHICAL REFERENCE AND CAREER DEVELOPMENT

Education and training:

Dr. Asen Hristov Cekov completed the full course of the Medical University - Sofia, majoring in "Medicine" (Diploma No. 22039 / 23.12.2011). In 2018, he acquired the rights of a specialist in neurosurgery (Diploma No. AC 016118 / 05.02.2018). In 2014, he successfully completed a three-year professional qualification course "Economics of Health Care and Health Management" at Sofia University. In June 2019, he defended his dissertation on "Modern Trends and Opportunities in the Treatment of Tethered Cord Syndrome" and obtained the educational and scientific degree "Doctor of Medicine" (Diploma No. 7 / 2019). Dr. Cekov has conducted postgraduate training in 23 specialized courses dedicated to various areas of neurosurgery in Bulgaria, Austria, Germany, Finland, Cyprus, and Serbia.

Work experience:

Dr. Cekov has been working from 2009 until now as a resident physician, neurosurgery resident, and neurosurgeon at the Neurosurgery Clinic of Acibadem City Clinic Tokuda Hospital.

Teaching activity:

Dr. Cekov holds the academic position of "Chief Assistant" in neurosurgery from 01.08.2022 until now.

Membership in organizations:

Dr. Cekov is a member of the Bulgarian Society of Neurosurgery, the Bulgarian Spinal Association, and the Bulgarian Medical Union.

II. SCIENTIFIC PRODUCTION

1. Pursuant to the Regulations for the Implementation of the Law on the Development of the Scientific Staff in the Republic of Bulgaria, Appendix for Area 7: Health Care and Sports, Direction 7.1: Medicine, Table 1 - Group of Indicators "A", Indicator 1: Dissertation: Dr. Cekov has 50 items where 50 items are required.

Scientific degree "Doctor of Medicine" - Diploma No. 7 / 2019.

Dr. Cekov acquired the scientific degree "Doctor of Medicine" after defending a dissertation on the topic "Current Trends and Options in the Treatment of Tethered Cord Syndrome." The dissertation is devoted to a rare disease, found mostly in children and somewhat neglected by neurosurgeons. Since Dr. Cekov has devoted a significant part of his neurosurgical activity to pediatric neurosurgery, he has had the opportunity to repeatedly encounter this disease and actively participate in the overall process of diagnosis, treatment, and follow-up of patients with Tethered Cord Syndrome. His studies are based on his own series of 84 patients. In his dissertation, Dr. Cekov summarizes his experience and analyzes the current literature on this subject. He analyzes in detail the various pathogenetic mechanisms in the fixed spinal cord leading to neurological damage. Thanks to his rich surgical experience, the author adds to the available classification of this condition, specifies the indications for surgical treatment, and creates his own algorithm of behavior based on the individual pathogenesis of the disease in each patient. Dr. Cekov optimizes the surgical treatment of the fixed spinal cord in several directions: selection of the operative technique depending on the morphology and pathogenesis of tethering, use of intraoperative ultrasound for morphological verification of tethering, improvement of microsurgical technique in tethering and prevention of recurrences, and the use of electrophysiological neuromonitoring to protect neural elements.

2. According to the Regulations for the Implementation of the Law on the Development of Scientific Staff in the Republic of Bulgaria, Appendix for Area 7: Health Care and Sports, Direction 7.1: Medicine, Table 1 - Group of Indicators "B", Indicator 3: Monograph: Dr. Cekov has 100 items where 100 items are required.

The monograph presented by Dr. Cekov is titled "Percutaneous Vertebroplasty with Bone Cement: Risks, Complications, Prevention" and is a comprehensive guide to the treatment of fractures of the vertebral bodies with bone cement. The topic is current and socially significant, which is confirmed by the fact that vertebroplasty is the most frequently performed procedure in neurosurgery in recent years. Dr. Cekov provides statistics confirming the high incidence of vertebral body fractures and demonstrates in detail the

multiple etiological factors leading to vertebral fractures. Based on the embryology, anatomy, and physiology of the spine and the etiology of the disease, Dr. Cekov has deduced the different pathomorphological and pathophysiological mechanisms and presented the different types of fractures accordingly. Based on this data, he specified the criteria for patient selection and the indications for cementoplasty, as well as the corresponding contraindications. The operative technique and possible complications are described in detail, along with methods for their prevention. The monograph is valuable reading for both trainees and specialists in neurosurgery.

3. According to the Regulations for the Implementation of the Law on the Development of Scientific Staff in the Republic of Bulgaria, Appendix for Area 7: Health Care and Sports, Direction 7.1: Medicine, Table 1 - Group of Indicators "D," Dr. Cekov has 205.95 points where 200 points are required.

3.1. Group of Indicators "D," Indicator 7: Publications in publications, referenced and indexed in world-famous databases with scientific information – Dr. Cekov has 106.45 points.

Dr. Cekov presents 9 publications in refereed and indexed editions (Publications No. 1, 2, 3, 4, 5, 6, 13, 14, 17).

The thematic distribution of these articles is as follows:

Five publications are devoted to orbital lesions and craniorbital surgery, respectively (Publications No. 1, 2, 4, 5, 6). Two of these five articles followed a series of patients with orbital lymphomas. The first of them presents a series of 14 patients with orbital lymphomas, operated on in the Neurosurgery Clinic of "St. Iv. Rilski" Hospital over a 10-year period (1997-2008). The article details the clinical presentation, diagnosis, operative approaches used, extent of tumor resection, and associated outcomes (Publication No. 1). The second article is similar to the previous article but focuses on the clinic, the surgical treatment, and the outcome of 13 patients with primary lymphoma of the orbit, operated on in the Neurosurgery Clinic of "St. Iv. Rilski" Hospital during almost the same time period (1998-2006). I am personally impressed by the successful excision of orbital lymphoma achieved by anterior orbitotomy without bone resection in 2 patients (Publication No. 2). One publication explored the utility of using neuronavigation in orbital surgery, with the main conclusion being that neuronavigation is useful but cannot replace anatomical and surgical knowledge, skill, and experience (Publication No. 4). Two articles followed separate series of patients with orbital metastases and with orbital cavernomas, respectively (Publications Nos. 5, 6). Both cover the period 1995-2009, with the first article (No. 5) including a series of 34 patients with orbital metastases, and the second article (No. 6) including a series of 37 patients with orbital cavernomas. Both articles describe in detail the clinical presentation, the localization of the lesions (intra- or extraconal), the invasion of the orbital wall by metastases in the first article, the surgical approaches used, the degree of resection (for cavernomas, radical resection was achieved in 84% of cases), and treatment outcomes.

Two publications that deserve special attention are dedicated to specific, innovative, and minimally invasive surgical approaches in spine surgery. Personally, I am impressed with the

authors' transfacet approach to disc herniations (Publication No. 13), which is new to neurosurgical practice and I believe has great practical application, especially given the authors' reported bone ingrowth and facet repair after surgery. Publication No. 14 describes a translaminar approach to disc herniations, which also has application, but on a more limited scale.

One article is a review of cases with spinal arachnoid cysts detailing the classic microsurgical technique for their treatment (Publication No. 14).

Publication #3 is an original article on visual disturbances in parasellar meningiomas. The article is based on our own series of 93 patients operated on between 2003 and 2007 and classifies the qualitative and quantitative changes in vision according to the timeliness of their diagnosis, reporting the results of surgical treatment.

3.2. Group of indicators "D," indicator 8: Publications in non-refereed publications with scientific review - Dr. Cekov has 99.5 points.

Dr. Cekov presents 8 publications in non-refereed publications (publications No. 7, 8, 9, 10, 11, 12, 15, 16).

The thematic distribution of the publications is as follows:

Three articles are devoted to orbital surgery.

Particularly impressive is article No. 7, which is an overview tracing the development of transcranial approaches to the orbit in historical and technological terms, based on 37 years of experience, including 604 operated patients. The respectable number of operations allows the author to synthesize the most valuable of his experience, compare the different approaches, formulate the indications for the choice of approach, and present the results of operative treatment according to the selected approach, as well as invaluable practical recommendations for the overall approach in the operative treatment of orbital lesions.

Article No. 15 is a brief overview of dermoid cysts located in the orbit, a rare location that requires a specific surgical approach, which the authors emphasize. Article No. 9 is devoted to complex tumors involving the anterior skull base, including the orbital fossae. The authors emphasize the need for preoperative embolization of feeding vessels in these tumors, given their abundant blood supply from the internal and external carotid artery systems, as well as the need for complex surgical approaches to tumors in this location, often in collaboration with ENT specialists.

Two publications are in the field of pediatric neurosurgery.

The first is an overview describing, in historical terms, the development of the surgical treatment of spinal cord malformations, particularly spina bifida (publication No. 11). The authors defend the thesis that the surgical treatment of children with these malformations is necessary. Their main argument is that, in most cases, normal mental development is preserved, which allows the social integration of these children despite the severe motor deficits in the lower limbs. In article No. 12, the authors focus on "Shaken Baby Syndrome." They analyze the etiology and pathogenesis of this condition, provide statistical data on its frequency and social significance, and propose an algorithm for diagnosis and treatment,

emphasizing the need for an interdisciplinary approach to comprehensively address this neurosurgical and social problem.

Publication No. 10 follows a small series of 4 patients operated on for spontaneous nasal cerebrospinal fluid leak.

In three cases, the surgical treatment was successful, while in one case (25%) the nasal cerebrospinal fluid leak persisted, and repeated surgical treatment was performed with success. The authors concluded that endonasal transsphenoidal endoscopic interventions are the method of choice, and transcranial approaches for sealing cerebrospinal fluid fistulas are indicated when endoscopic operations are not possible.

Article No. 8, devoted to intraoperative electrophysiological neuromonitoring, is of exceptional value.

The authors' goal is to identify areas of suboptimal monitoring performance, as any unrealistic deviation can lead to incorrect actions by the surgeon and negative consequences for the patient. Based on their experience of 147 cases of surgical treatment under electrophysiological control, the authors were able to identify potential problems in specifying the indications and choosing the scope of the different neuromonitoring modalities. The authors offer techniques for selecting the necessary modalities for each case individually and emphasize the precise preparation and accurate performance of neuromonitoring. Of particular value are their identification of monitoring disturbance sources from the equipment in the operating room and from anesthesia, as well as their proposed measures for prevention and neutralization.

Article No. 16, focused on the academic crest as a predisposition to the occurrence of spinal diseases and injuries, is interesting.

The article links sports to neurosurgery and demonstrates the wide range of scientific interests of the authors.

4. According to the Regulations for the Implementation of the Law on the Development of the Scientific Staff in the Republic of Bulgaria, Appendix for Area 7: Health Care and Sports, Direction 7.1: Medicine, Table 1 - Group of Indicators "D," Dr. Cekov has 145 points out of the required 50.

According to a report provided by Dr. Cekov from the Department of Bibliographic and Information Services of the National Library "St. St. Cyril and Methodius," Dr. Cekov's publications have been cited 17 times in international scientific databases such as Web of Science, Scopus, and Google Scholar. In the current competition, Dr. Cekov participated with 10 citations in international databases and with 2 citations in non-refereed publications, which in total provide Dr. Cekov with 145 points according to Table 1 of Regulations for the Implementation of the Law on the Development of Scientific Staff in the Republic of Bulgaria.

III. SCIENTIFIC CONTRIBUTIONS

According to the presented publications, Dr. Cekov's scientific contributions are in the following areas:

1. Methodical development and improvement of surgery of the orbits and anterior cranial base.

Ten of Dr. Cekov's publications are devoted to surgery in this area (publications No. 1, 2, 4, 5, 6, 7, 8, 9, 10, 15). All aspects of craniorbital surgery are covered in them. Thanks to their extensive surgical experience, the authors demonstrate the wide variety of pathological lesions involving the orbit and anterior skull base. The localization of these lesions adjacent to the optic nerves, oculomotor nerves, internal carotid arteries, and anterior brain lobes makes surgery in this area risky and accordingly requires specific surgical skills, knowledge, experience, three-dimensional spatial anatomical orientation, and, last but not least, dedication and persistence from the neurosurgeon. The results demonstrated by the authors, including large series of over 600 patients, prove that they have all the necessary qualities to perform this specific surgery. Their rich surgical experience allows them to analyze the complications of these operations and derive specific recommendations for their avoidance or correction when they occur. The authors are not satisfied with their achievements but also offer innovative minimally invasive, including endoscopic, surgical methods, which are poised to become routine. Part of their drive for innovation, as well as for safe surgery, is the use of electrophysiological intraoperative neuromonitoring as a routine means of functional intraoperative control in these operations, as well as the innovative, for its time, application of neuronavigation in orbital surgery.

2. Introduction into routine neurosurgical practice of practical algorithms and comprehensive models of behavior in congenital dysraphic conditions.

Diagnosing these conditions early after birth and ensuring their timely surgical correction is crucial for preserving the child's intelligence, protecting against CNS infections, and possibly limiting motor deficits of the lower limbs and pelvic-reservoir malfunctions. This is only possible by introducing an interdisciplinary approach, acquiring in-depth knowledge of the pathology and pathophysiology of dysraphic malformations, and developing the practical surgical skills necessary for safe and effective surgical correction. Of particular importance is the specific attitude required toward neonatal patients, based on human qualities such as empathy and altruism, without which practicing this surgery would be impossible.

3. Detailed study of Tethered Spinal Cord Syndrome in the dissertation.

Dr. Cekov's in-depth research in this field is unique in Bulgaria. Therefore, I define his achievements in this area as a separate scientific contribution, even though this syndrome is usually part of congenital dysraphic conditions or a consequence of them.

4. Implementation in spinal surgery of innovative minimally invasive techniques for access to the spinal epidural space and, in particular, to disc herniations.

The introduction of transfacet and translaminar approaches is the result of Dr. Cekov's biomechanical studies. Particularly valuable is the transfacet approach, which is extremely gentle and at the same time convenient for the extirpation of lateral disc herniations. The

evidence of postoperative bone ingrowth and bone defect filling shows the great potential of this approach, and in this sense, Dr. Cekov's studies have supraregional significance.

IV. EDUCATIONAL AND TEACHING ACTIVITY

1. Dr. Cekov has presented certificates of study load totaling 63 hours for the academic years 2020/2021, 2021/2022, 2022/2023, and 2023/2024.
2. Dr. Tsekov submitted documents certifying that he has held the position of "Chief Assistant" from 22.10.2019 to the present (Order 393 / 22.10.2019), which corresponds to the requirements of Regulations for the Implementation of the Law on the Development of Scientific Staff in the Republic of Bulgaria.


V. DIAGNOSTIC AND THERAPEUTIC ACTIVITY

According to my direct personal observations, over the past 7 years, Dr. Cekov has established himself as an accomplished neurosurgeon with outstanding achievements in pediatric neurosurgery and spinal neurosurgery. He has participated in hundreds of neurosurgical operations, most of which he was the operator, including those of high complexity: multisegmental spinal stenosis and degenerative spondylolisthesis and scoliosis, advanced cervical stenosis, craniospinal dislocations, repair of dysraphic defects, release of a tethered spinal cord, and correction of advanced craniosynostosis.

VI. CONCLUSION

The presented documents and materials demonstrate that Dr. Cekov's scientific, teaching, and diagnostic-treatment workload corresponds quantitatively and qualitatively to the requirements set by the "Regulations for the Implementation of the Law on the Development of Scientific Staff in the Republic of Bulgaria" for occupying the academic position of "Associate Professor." Therefore, I am convinced to vote "YES" for awarding Dr. Cekov the academic title of "Associate Professor" and call on the other members of the jury to vote in the same way.

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Prepared the review:
/Prof. Vladimir Nakov, MD, PhD/

