UNIVERSITATEA DE MEDICINĂ ŞI FARMACIE
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Neurochirurgia – o specialitate clinică în interconexiune multidisciplinară

REZUMATUL TEZEI DE ABILITARE

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The habilitation thesis entitled “Neurosurgery - a clinical specialty in multidisciplinary interconnection” presents the main and defining elements of my scientific, academic and didactic research activity, carried out during 30 years of professional career. The paper is structured in 4 chapters.

In the first chapter of the paper I present the course of my professional training, both as a neurosurgeon and as a scientific researcher and teacher. In the second chapter, the most consistent, I refer in detail to my scientific research activity, with emphasis on the period developed after the public presentation of my PhD thesis. In this activity I was involved in several fields, both clinical and basic medical research. The most important of these was obviously the field of my specialty, neurosurgery. Also, consistent with an interest instilled since the years of student and internship, I have been co-opted, over the years, in research teams that have worked and published articles and books in the field of physiology, and in the last 5 years I have expanded the horizon of scientific interest towards a new field, that of clinical pharmacology and I joined a team within which I carried out research activities completed in a series of articles. In the subchapters of chapter 2 of the habilitation thesis I present in turn these fields of research with the scientific papers in which my activity has materialized over time. In the field of neurosurgery, this activity was carried out following several topics. The first of them, in which I had the first specialized article published and I also elaborated my PhD thesis, was that of intracranial meningiomas. The PhD dissertation, presented in 2003, was entitled "Meningiomas of the lesser sphenoidal wing". In it, we studied a number of 97 patients diagnosed and operated for sphenoid wing meningiomas at the Clinic of Neurosurgery II of the Bucharest Institute of Cerebrovascular Diseases, between 1.01.1992 - 31. 12.2001. At the end of the paper, based on the conclusions of the analysis of data related to postoperative outcome and prognosis of monitored patients, we proposed a classification of sphenoid wing meningiomas derived from that of Brotchi and Bonnal, but simplified for practical reasons, especially related to surgical treatment. In the following years, I resumed the topic of intracranial meningiomas in a series of scientific articles published in specialized journals between 2004-2017, as well as in presentations at national and international congresses and symposia of neurosurgery. The 5 articles were presentations of special cases, each accompanied by reviews of the literature on these rare pathologies: cystic and microcystic meningiomas, multiple meningiomas with different histopathology, meningiomas with malignant degeneration, atypical meningiomas of olfactory groove. Another topic of neurosurgical research that I focused on was craniocerebral

traumatology. On this pathology segment, I elaborated and published, after presenting my PhD thesis, between 2011 and 2019, 4 articles. Of these, 3 referred to extracerebral intracranial posttraumatic hematomas, one to posterior fossa epidural hematomas, and the other two approached both surgical and conservative treatment of chronic subdural hematomas in terms of decreasing recurrence rate and reducing the risk of surgery and reoperation. The 4th and most recent article on brain trauma, written in collaboration with colleagues from the Physiology Discipline of UMF Carol Davila, tried to identify the possibility of predicting the prognosis of patients with severe brain trauma based on the values of some plasma biochemical parameters. In 2010 I published an article on neurovascular pathology regarding the surgical indications and the prognosis of primary cerebellar hematomas. Regarding spinal pathology, a more recent field of interest for me, I published 3 articles in 2014-2015, on postoperative discitis (2 of them), especially from the perspective of treatment and prevention and an article about the multiple implications of incidental durotomy in lumbar spine surgery. Another article, published in 2017, also on neurosurgical topics, described the unusual case of an intracerebral foreign body granuloma that mimics, clinically and radiologically, a brain tumor. In 2018, as part of a multidisciplinary research team, which included a primary ENT doctor and an OMF surgeon, we published two articles that approached topics related to borderline pathologies between our specialties. In addition to the field of neurosurgery, I have carried out important scientific research in other related areas. Thus, a topic that I was preoccupied with for a long time was that of brain oxidative stress. I published 6 articles on this topic and co-authored 2 books. The articles looked at the study of the effect of free radicals on brain function and their role in affecting it under certain particular pathological conditions, such as intracranial expansive processes - primary intracerebral hematomas and brain tumors, and also the importance of oxidative stress in brain aging. An article, published in 2014, was referring specifically to the possibility of using antioxidant enzymes as potential targets in the treatment of cerebral hemorrhage. My research activity in the field of cerebral oxidative stress, spanning more than two decades, has been summarized, to some extent, in two books published at a considerable time distance. The first of these was published in 2002 and was entitled "The Study of Oxidative Stress in Intracranial Expansive Processes." The second, published in 2020, under the title "News on cerebral oxidative stress", was an analysis of the extent of global scientific research in this field. Regarding another field of research, that of clinical pharmacology, I was co-opted into a team of scientific research consisting mainly of pharmacologists and pharmacists, but also of clinicians

from different specialties. Within this team I participated in the study of antifungal treatments, with an emphasis on modern and innovative therapies, such as those in the field of nanotechnology. This research activity, carried out over three years, resulted in 2 articles published in 2016 and 2018. Another article on clinical pharmacology in which we collaborated appeared in 2019 and studied the effects of caffeine consumption on cardiovascular parameters in sleep deprived resident doctors. In the same year, I co-authored a joint research paper with pharmacologists and psychiatrists on the potential of Cinnarizine to trigger dopamine hypersensitivity in patients with paranoid schizophrenia. Also in 2019 I was co-opted into a research team consisting of neurosurgeons and ophthalmologists, especially from UMF Gr.T.Popa Iași, in which I wrote a study that attempted a comprehensive analysis of the use of mannitol in neurosurgery and neuro-ophthalmology.

A last, but no less important field in which I carried out scientific and journalistic research activity is that of physiology and clinical pathophysiology. This activity materialized in 4 articles, all recently published, between the years 2018-2020. The articles addressed a variety of topics, including the analysis of salivary cortisol as a biomarker in healthy stressed subjects, the description of the role of the glutamate-glutamine cycle in minor hepatic encephalopathy, and the launch of an innovative neurophysiological hypothesis that the stomach has the ability to taste the food and to adjust its emptying speed according to its composition.

In the third subchapter of chapter 2 of the habilitation thesis I present the research projects: grants, POSDRU projects, clinical studies, in which I participated in different qualities. In the next subchapter I list the results of my scientific research activity carried out over almost 30 years, including the citations of my papers recorded in the specialized sites Web of Science, Scopus and Google Scholar.

Chapter 3 of the habilitation thesis refers to the academic and didactic activity. In its first subchapter I summarize the courses, seminars and workshops, national and international, in which I have participated over the years and which have completed and strengthened my professional training. In the second subchapter I present the teaching materials to which I have contributed: books, translations, guides for students. The third subchapter refers to the teaching and guidance activities in which I was involved. Subchapter 4 refers to the evaluation activities in which I was

co-opted, as chair or member of examination or contest committees. The last subchapter presents the professional associations and the board of scientific publications of which I am a member.

The 4th and last chapter of the thesis is represented by the plan of evolution and development of the academic career. In it, I approach three directions, dedicating a subchapter to each of them: the didactic activity, the scientific research activity and the activities for increasing the personal performance. Regarding the didactic activity, I propose to improve and diversify the educational methods through which to achieve a more efficient and sustainable transmission of theoretical and practical knowledge. In order to achieve this goal I list 18 directions on which I will act. Related to the scientific research activity, I aim to further promote interdisciplinary collaboration, intensifying the use of the results obtained in the topics of scientific research addressed. In the future, I will focus on several directions of scientific research that I present in subchapter 2. Regarding the increase of personal performance, I express, at the end of my thesis, a series of decisions in this regard.