

**"VICTOR BABEȘ" UNIVERSITY OF
MEDICINE AND PHARMACY TIMIȘOARA
DOCTORAL SCHOOL
MEDICINE DOMAIN**



**RESEARCH IN CEREBROVASCULAR VENOUS
PATHOLOGY AND NOVEL CONCEPTS OF INTERACTION
WITH SARS-CoV-2 INFECTION FROM THE PERSPECTIVE
OF MULTIDISCIPLINARY APPROACH**

ABSTRACT

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ABSTRACT OF THE HABILITATION THESIS

The habilitation thesis, entitled **“Research in cerebrovascular venous pathology and novel concepts of interaction with SARS-CoV-2 infection from the perspective of multidisciplinary approach”**, represents the synthesis of personal postdoctoral achievements, the essence of my professional, academic and scientific activities, including also the academic career development plan.

I completed my doctoral studies in 2001, presenting the doctoral thesis entitled **“Endemic goiter in Hunedoara County: thyroid volumes and urinary iodine action in a lot of children between 6-14 years”** under the scientific coordination of University Professor Doctor Grigore Lungu and thus obtaining the title scientific Doctor of Medicine (Order of the Ministry of National Education no. 4911 of 2.11. 2001). Being a neurologist by training, the study carried out during the preparation of this doctoral thesis (1994-2001) marked the establishment of a link between Neurology and Endocrinology, on a previously undeveloped direction within the "Victor Babeş" University of Medicine and Pharmacy, Timișoara.

Considering the fact that recently, health control initiatives target multidisciplinary diagnostic approaches, such as neuroimaging, neurogenetics or neuroendocrinology, we have continued the development of research directions in these related fields, an activity started three decades ago.

One of the main goals of my professional and research activity served as a practical tool in addressing less developed neurological pathologies, outlining new ways of knowing, in a close multidisciplinary connection. The interdisciplinary achievements analysed in continuous dynamics, have offered a new, complex perspective in cerebrovascular venous pathology, studied quite little until now.

I started from the concrete data from the specialized literature and continued with my own neurological clinical observations from the last thirty years of medical activity, analysing including the period of the SARS-CoV-2 virus pandemic. My scientific research focused on the approach of new diagnostic methods and innovative treatment schemes in Neurology, especially in cerebral phlebothrombosis and endocranial dural sinuses, their applicability being extremely important in saving human lives.

The present thesis is developed in accordance with the criteria recommended by CNADTCU, being organized in four sections: (I) the first section is dedicated to scientific activity, (II) the second section is dedicated to academic activity and academic achievements, (III) the third section includes the professional activity and (IV) the last section includes plans and prospects for professional, academic and scientific career development.

Chapter 1 presents a synopsis that highlights the main areas of research, embodied in a publishing activity that includes books and book chapters published by international and national publishing houses, original studies, articles published in full in international and national journals rated ISI Web of Science (with impact factor), articles indexed in BDI international databases, scientific papers presented at international and national congresses, some in the form of international oral communications, in the current scientific context. In recent years, I have been interested in venous cerebrovascular pathology, especially cerebral venous and sinus thrombosis, representing a rare but extremely serious cause of stroke, difficult to diagnose. In the young adult presenting with this type of pathology, etiologic risk factors include inherited (genetic) thrombophilia, malignancy, and infections. So, I turned my attention to related fields, such as neurogenetics, haematology, oncology, infectious diseases, neuroimaging, succeeding in establishing the correct diagnosis as early as possible, as well as the emergency treatment.

The directions of development and research proposed within the SARS-CoV-2 pandemic targeted the clinical spectrum, neuroimaging aspects, paraclinical changes found in hospitalized patients with various neurological diseases and simultaneously infected with Coronavirus-19, as well as applied innovative therapies. We paid special attention to rare diseases related to neuroinfection with SARS-CoV-2, such as hemorrhagic encephalitis, Guillain-Barre polyradiculoneuritis, Tolosa-Hunt syndrome or cerebral thrombophlebitis.

I had the privilege of carrying out my entire professional activity in a University Clinic, being part of a research team working in the newest fields of Neurology and aimed at early diagnosis and the application of complex thrombolytic therapies, angioplasty with carotid stenting, thrombectomies in patients who followed the printed protocol of acute stroke care. In this way, an innovative nucleus of scientific research was created within the "Victor Babeș" Timișoara University of Medicine and Pharmacy, with collaborators from many related fields, high-value specialists. I participated as a

member of the Cognitive Research Center in Neuropsychiatric Pathology NEUROPSY-COG in the development of specialized scientific papers.

The results of the scientific research activity led to the publication of two specialized books by national publishing houses, one book as sole author, another as co-author; 3 book chapters in international publishing houses and 1 book chapter in the national publishing house; 25 articles published in extenso in recognized journals of international circulation, rated ISI Web of Science with impact factor (15 articles as main author); 14 articles published in extenso in journals indexed in international databases (7 articles as first author); 8 articles published in abstract in international journals rated ISI Web of Science with impact factor (4 articles as first author); 4 articles presented at international scientific events (2 articles as first author); 23 articles presented at national events with international participation; 4 international oral communications as first author and 2 international oral communications as main author.

The relevance and impact of the results of this research, as well as the professional prestige, is also underlined by the citations highlighted by Web of Science Clarivate Analytics: citations 123/ H-index =7 (Publications: 29). Google Scholar (Scholar. Google): citations164/ H-index=8 (Publications: 50).

Chapter 2 includes aspects of academic development and achievement. My professional, academic and postdoctoral research career are closely related to the two positions I currently hold: primary physician in the Neurology specialty and Associate Professor at the Neurology I Discipline, Department of Neurosciences within the "Victor Babeș" University of Medicine and Pharmacy, Timișoara.

Academically, I have gone through all the conventional stages of a university career, from assistant professor to currently being an associate professor.

I was involved in the coordination of didactic activities by supporting the Neurology courses for the students of the Faculty of Medicine, various specialties such as General Medicine, Balneophysiokinetotherapy, offering the students both the written support of the courses and their digital support, revised annually. We have also introduced new courses in previously undeveloped directions for master's students in Balneophysiokinetotherapy, a master's degree aimed at the Recovery of neurological conditions. I coordinated the practical didactic activities of the internships taught to students, who acquired knowledge of semiology, neurological analysis, support for understanding complex neurological pathology. I contributed to the development of

didactic materials, university courses in Neurology, of which I was sole author or co-author. Scientific coordination of bachelor's Theses (13 bachelor's Theses) of future graduates constituted another aspect of the academic activity. I perform the function of guiding physician of Neurology residents who work in the Neurology Clinic I of "Pius Brînzeu" Timișoara County Emergency Clinical Hospital, nominated by UMFVBT.

The didactic activity and academic achievements were substantially improved by my participation in the Level I and II Psihopedagogical Training Program, Department for Teaching Staff Training at the University of West Timișoara (2016-2017).

Personal development is the factor that determined the emergence and maintenance of motivation for choosing an academic career. Through excellence, the teaching profession requires a permanent training and development of the teaching staff so that they can offer the one they teach a comprehensive perspective on the field they teach.

Chapter 3 includes the evolution and main professional achievements. I am currently a senior neurologist at the Neurology Clinic I of the "Pius Brînzeu" Timișoara County Emergency Clinical Hospital. I mention the fact that I have been working as a doctor in the same hospital since 1991, initially as a trainee doctor (1991-1992), then as a resident doctor in the two specialties, Adult General Medicine (1993-1996) and, respectively, Neurology (1997-2002). In 2002, through a national competition, I filled the post of neurology specialist at the Neurology Clinic I of the "Pius Brînzeu" Timișoara County Emergency Clinic Hospital, becoming a primary neurologist in 2008. My professional development continued, obtaining the Certificate of Complementary Studies in Cerebral Doppler Ultrasonography, Human Resources Center in Public Health Bucharest, Ministry of Health, Romania (2019).

This chapter also contains the progress of my scientific development, national and international professional recognition. Throughout my career, I have participated in more than 50 training courses in the country and abroad. I would mention here some of the most important courses: Teaching Course in Neurology (European Federation of Neurological Societies), Eger, Hungary in 2002; Intensive Course in the field of Oculovestibular Diseases at Ludwig Maximilian University in Munich in 2011; Epilepsy Course at Neurologische Klinik-Epilepsiezentrum-Universitätsklinikum Erlangen, Germany in 2011; Training on Duodopa Therapy Copenhagen, Denmark in 2014; PD Expert Meeting at King's of College London, UK in 2016. I participated in numerous

national and international congresses, giving several oral presentations (Malta, Madrid, Athena, Munich).

Chapter 4 includes plans and prospects for teaching and research career development. In order to be able to carry out an appropriate educational activity, it must pursue certain objectives: the axiological orientation of the educational process in accordance with European Union and international trends, the anticipation of didactic results and their optimization, an interactive and student-centred way of teaching, by using the methods of stimulation of personalized thinking.

Constant self-evaluation and continuous improvement represent an important aspect of the didactic activity. The introduction of interactive courses, the involvement of students in scientific and research activities, the encouragement of the presentation of results at various scientific events (conferences, symposia, workshops) are desirable in the development of the teaching career. Based on the didactic experience accumulated in recent years, I want to participate in the development of postgraduate training and continuous professional development programs that lead to the consolidation of the image of "Victor Babeș" University of Medicine and Pharmacy Timisoara.

Regarding the development of the scientific research activity, the main direction is the capitalization of the results obtained by publishing new scientific works in nationally and internationally recognized journals, book chapters or books in the field of Neurology in recognized and CNCSIS-rated publishing houses.

Also, through my entire activity, I will follow the growth of the reputation of the Neurology I Discipline, of the Neuroscience Department, respectively of the Faculty of Medicine and implicitly of the "Victor Babeș" University of Medicine and Pharmacy in Timisoara. This desired will be realized through the strategies proposed by me: participation in clinical studies, proposing new Scientific Research Grants, the continuation of the activity within the various national and international professional medical organizations, as well as the continuation of the activity within the Cognitive Research Center in Neuropsychiatric Pathology NEUROPSY-COG from UMFVB Timișoara.

The development of the academic career leads to the increase of performance in the doctoral coordinator activity, highlighting the results of doctoral research both nationally and internationally. My professional, academic and scientific experience, passion for knowledge and development can be a real support for future PhD students.

The bibliographic references used in writing the thesis can be found at the end of this paper.