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NEUROLOGY IN HUNGARY: PAST, PRESENT, AND FUTURE

Neurology is currently recognized as an independent clinical and academic specialty in Hungary, but the early history of Hungarian neurology was intertwined with the development of internal medicine and psychiatry. Up to the end of the 19th century, neurologic patients were mostly treated at internal medicine departments.

In 1882, the University of Budapest founded the chair of mental diseases, whose first director was Professor Károly Laufenauer. His aim of creating an independent department was achieved by his successor, Ernő Moravcsik, in 1908 when a new building was completed to house the Department of Mental and Nervous Diseases. Their successor Károly Schaffer, a renowned neuropathologist, founded the school of clinical neurology in Hungary. His followers included Béla Horányi, István Környey, Kálmán Sántha, and Dezső Miskolczy, who were all determining figures in the history of Hungarian neurology. Béla Horányi established the neurophysiologic laboratory and initiated research into neuromuscular diseases; neurology and psychiatry first separated under his leadership, but this did not last. The complete separation of neurology and psychiatry in Budapest first occurred in 1976.

The first Department of Mental and Nervous Diseases was founded at the University of Debrecen in 1921 under the leadership of László Benedek. Among his successors was Kálmán Sántha, who made important contributions to the histopathology of hereditary degenerative diseases and to the understanding of aphasia. He also established an independent neurosurgical department.

The excellent neuropathologist István Környey was head of the Department of Neurology and Psychiatry at the University of Pécs from 1947, following Camillo Reuter. The chair had been established in Pozsony (Bratislava) in 1918, and moved to Pécs in 1924; the separation of neurology and psychiatry took place in Pécs in 1987.

At the University of Szeged, the first leader of the Department of Mental and Nervous Diseases was

Károly Lechner, whose research work on reflexes and on hallucination was outstanding. In the period 1930–1940, the head of the department was Dezső Miskolczy, the follower of Ramon y Cajal and Károly Schaffer. In those years, research work focused on the histopathology of the nervous system, and excellent colleagues worked beside Miskolczy, including his later successor, István Huszák.¹ By the end of the 20th century, neurology had become an independent clinical and academic specialty.

At the neurologic departments of the universities, distinguished pupils and high-quality academics followed the renowned predecessors; research programs are offered to graduate and postgraduate students as well. Foreign-language programs are available at all medical faculties in English and German language.

Hungarian universities have always been known for the high-standard scientific research conducted in their laboratories; Hungary gave several Nobel Laureates to the scientific world. Albert Szent-Györgyi received the Nobel Prize in 1937 for his work in the biological combustion processes and for discovering vitamin C. The research work of György Békésy and Róbert Bárány, 2 other Nobel Laureates of Hungarian origin, led to the understanding of the inner ear. Present research work at the neurologic departments covers all main areas of neurology, including migraine, epilepsy, cerebrovascular diseases, neuroimmunology, and the pathomechanism of neurodegenerative diseases.

In the 21st century, neurologic departments are forced to face new problems, which in many cases are currently endangering their existence. Some of these problems are general throughout medicine, including economic issues and the emigration of physicians. The scientific advances, the new subspecialties, and the altered diagnostic groups have posed special challenges for the neurologic departments.

In 2009, a large survey was conducted of the neurologic capacities and the supply of neurologists, based on the database of the Hungarian National Health

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Insurance Fund.² The data revealed that the available capacities and the workload of neurologists are unequally distributed and not in accordance numerically with the population they serve. A more than 5-fold difference can be observed among the counties: the mean number of inhabitants per hospital bed in 2009 was 4,482 (range 2,167–13,017), and the number of inhabitants per neurologist outpatient hour ranged between 495 and 2,663 (mean 1,353).² Between 2004 and 2009, the neurologic capacities substantially decreased, as 12 hospital neurologic wards were closed, reducing the neurologic bed numbers from 3,933 to 2,812. In 2009, of the existing 179 hospitals in Hungary, only 55 had inpatient neurologic wards, 42 hospitals offered only outpatient neurologic services, and in 82 hospitals (45.4%), no neurologic service was available at all. The majority of the cases involve cerebrovascular diseases,² with acute stroke accounting for 53% of the inpatient cases. Unfortunately, most stroke patients arrive outside the optimal timeframe. Sixty-one percent of the stroke patients are treated in a neurologic ward; 39% are treated in internal medicine or in other departments.³

To acquire an exact picture of the workforce, the professors of the 4 university neurologic departments, who are at the same time the presidents of the training boards, have subsequently completed a survey of the recent changes in the number of neurologists. In 2010, 1,310 registered physicians possessed an official license to practice neurology, but the number of neurologists primarily working in neurologic patient care was estimated at 750 to 800. The age distribution is aging: among actively practicing neurologists, 22% are older than 61 years. Between 2000 and 2009, the annual mean number of young neurologists receiving board certifications was 22, which is insufficient to replace those who leave the system to work abroad or for other reasons. At the current rate, the number of neurologists younger than 60 years will decrease to less than two-thirds of the current number by 2020, and if emigration continues at the current rate, only 300 neurologists will be available to provide neurologic services in the whole of the country, which is far from sufficient.⁴

After the analysis of the data of these surveys, a plan was proposed.³ Because cerebrovascular diseases are responsible for the majority of the cases, the plan suggests that acute stroke services should be allocated exclusively to stroke units and that vascular centers should be established where neurologists, cardiologists, and angiologists together provide a complex service. Three levels of inpatient care are defined: university departments, regional hospitals, and city hospitals, each of them with assigned outpatient and inpatient standards. The 4 university centers

would cover all neurologic services, provide graduate and postgraduate training, and participate in quality-assurance activities. Neurorehabilitation should be organized inside neurology wards at every city hospital, in independent neurorehabilitation wards at regional hospitals, and also as an outpatient service. The most notable organizational changes are proposed in the outpatient services. At present, special outpatient units are working in association with university departments and some county hospitals, including epilepsy, headache, and neuroimmunology care. These units should be equipped with appropriate facilities to provide diagnostic tests and more therapeutic potential. In addition to these currently functioning special outpatient units, the proposal calls for neurologic outpatient services to be organized as private practices, providing general neurologic services and screening neurophysiologic and neurosonologic examinations. To fulfill this plan, an adequate financial background should be provided, and the residency training must be reformed.

The challenge of the coming years in Hungary is to reorganize the neurologic services and postgraduate training to meet the present requirements and demands.

AUTHOR CONTRIBUTIONS

Zsófia Majláth, MD: analysis and interpretation. András Ajtay, MD: acquisition of data. Professor Dániel Bereczki, habil DSc, Professor László Csiba, habil DSc, and Professor Sámuel Komoly, habil DSc: critical revision of the manuscript for important intellectual content. Professor László Vécsei, habil DSc: critical revision of the manuscript for important intellectual content, final review of the manuscript.

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REFERENCES

1. Vécsei L, Gárdián G, Tajti J. *Neurology at the Dawn of the Third Millenium*. Budapest: Springer Tudományos Kiadó; 2000.
2. Bereczki D, Ajtay A. Neurology 2009: a survey of the neurological capacities, their utilization and neurologists based on the 2009 reports of the institutions in Hungary [in Hungarian]. *Ideggyogy Sz* 2011;64:173–185.
3. Bereczki D, Csiba L, Komoly S, Vecsei L, Ajtay A. The career model of neurology in Hungary: a proposal for the solution until 2020. *Ideggyogy Sz* 2011;64:377–384.
4. Bereczki D, Csiba L, Komoly S, Vecsei L. Endangered future: education and replacement of specialists in neurology—a survey in Hungary, 2010 [in Hungarian]. *Ideggyogy Sz* 2010; 63:259–265.

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