The development of neurology in Indonesia

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INTRODUCTION

Medical education in Indonesia started in 1851 with the establishment by the Dutch colonial government a school for the training of native medical practitioners mainly in order to formalize training in smallpox vaccination. The school was attached to the military hospital in Batavia (now Jakarta) and started with a few students, all indigenous inhabitants of Central- and East-Java. The length of study was one year after primary school education, the teaching staff consisted of Dutch military physicians who taught in the Malay language. Medical terminology was taught in the Latin form.

It was soon recognized that the students could also be trained to diagnose common diseases, perform minor surgery and treat some illnesses. The duration of the study was then extended to two years after primary school. Graduates were granted the title of “Dokter Jawa” or Javanese physicians.

In 1875 the medical training program was extended to six years with Dutch as the language of instruction. Gradually the school developed into a medical school of seven years course after junior high school and in 1927 became a college of medicine with a course of seven years after secondary education and with a curriculum identical to the Dutch medical faculties. Attached to the school was a teaching hospital with a capacity of eight hundred beds.

In the meantime the colonial government established a second medical school in 1913 in Surabaya, East-Java. While the medical college in Batavia was considered to be equal to the faculties of medicine in the Netherlands, the medical school in Surabaya remained on a semi-academic level till the outbreak of the second world war. With the invasion of the Japanese army in 1942 both medical schools were closed, but the Japanese occupational government soon acknowledged the necessity for the continuation of medical training and the medical college in Jakarta was reopened in 1943 with the Japanese name “Ika Daigaku” and with the Indonesian language as medium of instruction. Except for a few Japanese military physicians the entire staff consisted of Indonesian specialists.

During the Indonesian revolution the Dutch took over the medical college in Jakarta and reopened the medical school in Surabaya. Both schools became the faculties of medicine in the Universiteit van Indonesie which was established by the Dutch. Meanwhile in 1948 the Republic of Indonesia opened a faculty of medicine in the newly established Universitas Gadjah Mada in Yogyakarta.

It was not until 1950 that the Universiteit van Indonesie was taken over by the Republic and became the Universitas Indonesia. Indonesian became again the language of instruction, drastic changes and innovations were introduced in the medical curriculum, the concept of community oriented medicine was implemented, while the free study system of the Dutch was replaced by the so-called guided study system.

Other medical faculties, state as well as private, were later opened in newly established universities throughout the country.

THE DEVELOPMENT OF NEUROLOGY

Although neurological diseases have long been known in Indonesia, neurology as a separate discipline among the clinical branches has developed only since 1958 in the Medical Faculty of the University of Indonesia. In other centres this development started much later.

Neurological examination and treatment of neurological diseases were practised during the early stage of medical education in Indonesia. It is interesting to note that the first article in the first issue of the first medical journal (Geneeskundig Tijdschrift van Nederlandsch Indie) in 1852 was a report on the treatment of trigeminal neuralgia. Since then several articles appeared in the same journal in the field of neurology, among others about such subjects as trauma of the nervous system, neuroanatomy of the medulla oblongata, syphilis of the nervous system and epilepsy. The first myelography was done in a case of spinal cord tumour in the late twenties by Dr. Aulia (later professor in internal medicine). Despite this growing interest in neurological disorders, special lectures in

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neurology were not given, while neurological and psychiatric diseases were treated as part of the general diseases in the Department of Internal Medicine.

It was not until 1921 that Professor De Langen, then head of the Department of Internal Medicine at the medical school in Batavia, stressed the importance of a better knowledge about neurological and psychiatric disorders which apparently became more frequent. Since then neurological diseases were grouped together with psychiatric disorders and a new department was established, namely the Department of Psychiatry and Neurology. The combination of neurology and psychiatry in one department was based on the observation that although there were indeed differences, many aspects and clinical manifestations in both groups of diseases could be related to the central nervous system, including the autonomous nervous system. On the other hand although it was recognized that some neurological disorders were manifestations or complications of internal diseases the relation to the Department of Internal Medicine became less pronounced and finally the Department of Psychiatry and Neurology developed into a fully independent department among the other branches of medicine. More attention was paid to the teaching of psychiatry and neurology to undergraduate students, while a start was made with the training of specialists in these fields.

The most common neurological disorders found among the natives were infections of the nervous system, especially tuberculosis and syphilis in its various clinical forms such as the meningovascular type, dementia paralytica and tabes dorsalis. Other neurological diseases included meningitis, hemiplegia, meningomyelo-encephalopathy, vitamin deficiency and leprosy, such as polynuertis and neuritis. Many neurological diseases which could be found in the Western countries were also mentioned in publications in Indonesia, among others congenital malformations such as tuberous sclerosis (Bourneville), neurofibromatosis (von Recklinghausen), Sturge Weber syndrome and syringomyelia. Degenerative diseases were also found such as Parkinson disease, Alzheimer disease, Pick's disease, amyotrophic lateral sclerosis, Little's diseases, progressive spinal muscular atrophy (Aran-Duchenne), progressive bulbar paralysis, peroneal muscular atrophy (Charcot-Marie-Tooth) and progressive hypertrophic neuritis (Dejerine-Sottas). Among the myopathies reported were cases of progressive muscular dystrophy, myasthenia gravis, myotonia congenita and paroxysmal periodic paralysis. Cerebrovascular disorders including transient ischaemic attacks were also not rare. Tumours of the nervous system have been diagnosed and verified at autopsy. Most frequent among the intracranial malignancies were cases of anaplastic carcinoma of the nasopharynx with infiltration through the base of the skull. One of the neurological conditions rarely mentioned was poliomyelitis anterior acuta, while multiple sclerosis was never found in natives. Surprisingly reports on epilepsy were scarce although epilepsy has long been known among the various ethnological groups of the population.

Despite the increasing attention paid to the teaching of neurology and the management of neurological patients neurology as a medical specialty was not yet fully accepted among the various branches of medicine. In the Department of Psychiatry and Neurology more emphasis was put on psychiatry. The medical attitude towards neurological disorders in general was also far from satisfactory and many physicians were rightly of the opinion that the therapeutic outlook for neurological diseases was poor.

The training for psychiatrist-neurologist lasted three years after seven years of medical study divided into two years training in psychiatry and one year in neurology. Not many physicians were attracted to this field and the few doctors who eventually became specialist had to be recruited by the Dutch colonial government from among physicians who were serving in the rural areas, mainly with the purpose to provide the mental institutions spread out over the country with sufficient qualified staff.

With the appointment of Professor Verhaart, neurologist and research worker in neuroanatomy as head of the section of neurology in the Department of Psychiatry and Neurology, which was coordinated by Professor Van Wulffen Palthe, a psychiatrist, since 1927 research in neuroanatomy and neuropathy reached its height during the last years before the outbreak of the second world war. Meanwhile clinical neurology remained practically at the same level until Indonesia acquired its independence. At the other medical school, in Surabaya, neurology developed along the same line.

As a consequence of the development of psychiatry and neurology before the war there were only a few neuropsychiatrists, mostly in charge of the mental institutions, while not a single neurologist was available when the Dutch transferred the sovereignty to the Republic of
FIG. 1: The Medical Faculty of the University of Indonesia was built in 1920 as the STOVIA (School tot Opleiding van Indische Arsen), medical school for native doctors. This school in 1927 became the Geneeskundige Hogeschool (Higher medical education, equal to the medical faculties in the Netherlands), length of study 7 years after senior high school. It became the Faculty of Medicine, University of Indonesia in 1950.

FIG. 2: A lecture in physics in 1926 by Dr SP Slagter for second year medical students of the STOVIA
FIG. 3: Prof Dr R Slamet Iman Santoso, a neurologist-psychiatrist who was a pioneer and have contributed much to the development of neurology in Indonesia. He was chef de clinique in the subdivision of psychiatry in the colonial period in the Department of Psychiatry and Neurology under chairmanship of Prof Dr PM van Wulffen Paltje. Prof Slamet later established the Department of Psychiatry and Neurology at the Faculty of Medicine, University of Indonesia in 1950. He was the head of the Department in 1950-1958. He has sent young doctors to the USA and the Netherlands for further training either in Psychiatry or Neurology.

Indonesia.

In 1950 when the Universitas Indonesia was established replacing the Universiteit van Indonesia, the staff of the Department of Psychiatry and Neurology consisted only of three neuropsychiatrists and two physicians in training. For neurological patients there were forty beds available. There was an outpatient clinic for both neurological and psychiatric patients. In addition to routine blood and cerebrospinal fluid examinations the diagnostic procedures also included plain rontgen photos and occasionally pneumoencephalography and myelography. Cerebral angiography was done by the only neurosurgeon, Professor Lenshoek, who came from the Netherlands to assist in establishing a neurosurgical unit and to train future neurosurgeons.

It was not until 1955 after the author returned from the USA where he finished his training in neurology at the University of California Medical Centre, that modern neurology was introduced in the teaching hospital at the faculty of medicine in Jakarta.

In the meantime the neurological staff grew and many of its members were sent abroad for further study in the various branches of neurology, such as clinical neurology, neuroradiology, neuropathology, neurophysiology, electroencephalography, electro-
FIG. 4: Dr Sj Schaafsma was another pioneer neurologist who have contributed much to the development of neurology in Indonesia. He was the Head of the subdivision of Neurology, Department of Psychiatry-Neurology, Faculty of Medicine, University of Indonesia in 1953-1958. He started the training of clinical neurologists. When Dr Schaafsma went back to the Netherlands in 1958, the subdivision of Neurology became the Department of Neurology under the author’s chairmanship.

myography, paediatric neurology and also neurosurgery. Gradually the subdivision of neurology expanded its scope. New diagnostic procedures were introduced, including electroencephalography, electromyography and cerebral angiography. A section of neuropathology was established in the Department of Pathology. Neuroradiology was carried out by members of the neurological staff in the Department of Radiology, while neurophysiology was started in the Department of Physiology.

Finally in 1958 the subdivision of neurology at the Faculty of Medicine of the Universitas Indonesia became an independent department. In the same year in order to intensify the study of epilepsy and to improve the medical service for patients with epilepsy a special clinic was opened. The number of beds for neurological patients was increased and a special ward for traumatology and for neurosurgical patients opened. A section of paediatric neurology was established in the Department of Child Health headed by a paediatric neurologist.

In the Faculty of Medicine at the Airlangga University in Surabaya, the subdivision of neurology in the Department of Psychiatry and Neurology which was headed by a psychiatrist became an independent department only in the late seventies, although the training of neurologist did not differ from the one at the Universitas Indonesia.
FIG. 5: Staff meeting in the present Department of Neurology, Faculty of Medicine, University of Indonesia.

THE PRESENT SITUATION OF NEUROLOGY

Since 1958 several other centres where neurological work is carried out have been founded, mostly in the medical faculties. At present there is a department of neurology in 13 states and 12 private medical schools. In general these neurological clinics are mostly doing medical service and undergraduate teaching, while the training of specialists is done in seven state medical schools. Neurological service is also available in the regional state and major private hospitals.

New diagnostic methods have been gradually introduced and at present in most of the neurological centres facilities for EEG, EMG, Evoked Potential, neuroradiology and CT-scan are available, while in the teaching hospital in Jakarta examination with MRI and SPECT is possible. In some of the major private hospitals in Jakarta the same facilities can be found.

Recently a unit of neuroendocrinology and neurobiology was established at the Faculty of Medicine of the University of Indonesia. The Department of Neurology also has subdivisions of neuro-ophthalmology, neuro-otology, neurogeriatry, higher cortical function, neuropsychology, social neurology. There is also a Department of Medical Rehabilitation in the teaching hospital.

The importance of neurology in connection with other diseases is increasingly felt and the neurologist has become the most frequently asked specialist for consultation. On the other hand it is felt that a sufficient knowledge in internal medicine is essential as basis for the training of neurologists.

The training of neurologist lasts four years including a term of three months in internal medicine and three months in psychiatry. Residents have had six years medical education before which also included two years internship. At present there are 305 neurologists in the country and 172 residents in training. The main subjects of research which is mostly clinical among others are epilepsy, cerebrovascular disorders, infections and trauma of the central nervous system. Some basic research is done in neuroendocrinology, neuropharmacology and neurobiology.

PROFESSIONAL ORGANIZATION

In 1961 the Indonesian Society for Neurology, Psychiatry and Neurosurgery was founded and it became member of the World Federation of Neurology. In 1986 the eighth Asian Oceanian
Congress of Neurology was held in Bali.

In 1988 the Indonesian Society for Neurology, Psychiatry and Neurosurgery was dissolved. The neurologists then founded the Indonesian Association of Neurologists. The Indonesian Society against Epilepsy was established in 1982. It became member of the ILAE and the IBE.

CONCLUSION

In conclusion it can be said that although there is still much left to be desired especially in the field of research in the basic neurological sciences, neurology in Indonesia has earned its place among the medical specialties. To improve the present situation and also to stimulate further development of the neurological sciences closer cooperation with neurological centres abroad should be encouraged. Resources should also be sought to provide the neurological clinics with adequate and up to date facilities and equipment.

REFERENCES