

## Short Communication

### A Short History of Neuropediatrics in the German- Speaking Area between 1850 and 1950

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#### Abstract

Neuropediatrics or Child Neurology includes the diagnosis and treatment of congenital and acquired diseases of the central and peripheral nervous system and muscles in children and adolescents. Historical aspects of individual neuropediatric clinical symptoms were published in many places, especially about epilepsy and cerebral palsy.

In the medical literature of the late 19<sup>th</sup> century, the diagnoses cretinism, syphilis, and rickets were primarily used for congenital disabilities, which according to modern ideas, are no longer comprehensible and which hide many very different clinical symptoms. In public and, not least, by representatives of the churches, children with developmental disorders and disabilities were viewed as a punishment from God or as a result of "original sin" well into the 20<sup>th</sup> century. They were repeatedly associated with an allegedly sinful lifestyle on the part of the parents.

From today's perspective, other explanations for congenital and early acquired "disabilities" were severe epilepsy, metabolic disorders (e.g. PKU), poliomyelitis, tuberculosis, injuries to the central nervous system, bacterial meningitis, brain tumors, brain malformations, especially hydrocephalus, and various causes of deafness and blindness, and much more. Children with "cretinism" not only had congenital hypothyroidism but also a variety of other causes of the developmental disorder, e.g. chromosomal abnormalities and different syndromes.

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Ludwig Wilhelm Mauthner (later von Mauthstein, 1806-1858), the founder of the first children's hospital in the German-speaking area in Vienna, published the first neuropediatric monograph [1]. "The diseases of the brain and spinal cord in children" in 1844 with detailed descriptions of his autoptic findings. Mostly the children died of infections like congenital syphilis and especially disseminated tuberculosis, but the main reason for death, according to Mauthner, was poverty.

The Würzburg professor of pediatrics Franz von Rinecker (1811-1883) published many casuistic lectures on neuropediatric patients, e.g., about cerebrospinal meningitis, encephalitis, pachymeningitis, "essential polio" and the "madness of the children". In 1850 he founded the first stable children's university hospital in Germany, but at the same time also taught his students in internal medicine, pharmacology, dermatology, and psychiatry.

The Frankfurt psychiatrist Heinrich Hoffmann (1809-1894) described in his worldwide successful children's book "Der Struwwelpeter" published in 1844 children with various, mainly child and adolescent psychiatric and neuropediatric disorders such as ADHD ("Zappelphilipp"), the socio-oppositional behavioral disorder ("The Evil Friederich"), the excessive thumb sucking ("Konrad der Daumenlutscher") and the absence epilepsy ("Hans Guck in the air") without claiming a "scientific contribution".

The first director of a children's university hospital in Germany, Otto Heubner (1843-1926), described in a famous textbook of pediatrics published in 1906 with a total of 1227 pages on a mere 144 pages neurological diseases highlighting the poor differentiation of the various causes of congenital disabilities. He repeatedly emphasized the great difficulties of her treatment but also mentioned incredible treatment successes with dried and powdered thyroid tissue in some cases.

In the last third of the 19th century, significant progress was made, particularly in the detection of neurological diseases in adults. This understanding increasingly found its way into pediatrics. Sigmund Freud (1856-1939) worked for 15 years at the first public children's hospital in Vienna with cerebral palsy in children and published several articles, most extensively in 1897. He is the founder of the international classification of cerebral palsy that is still valid today and differentiated between prenatal and "intra- and postpartum" causes and particularly pointed out the importance of damage during pregnancy. In his opinion there was no causal connection between cerebral palsy and epilepsy but he thought on neurosurgical interventions for epilepsy.

At the beginning of the 20<sup>th</sup> century, the Austrian pediatrician Julius Zappert (1867-1942) published an extensive contribution about the diseases of the nervous system in childhood in the Handbook of Childhood Diseases, edited in 1906 by Meinhard von Pfaundler and Arthur Schlossmann.

Above all, Georg Peritz (1870-1935), primarily specialized in endocrinology, published two detailed monographs on the knowledge at that time about diseases of the nervous system in children. Like his teacher, the founder of adult neurology in Germany, Hermann Oppenheim (1857-1919), he primarily dealt with pathological-anatomical findings and the influence of the then known hormones on the CNS. For example, in his opinion epilepsy in children often expresses a “spasmophilic constitution” with disturbances of the calcium-metabolism.

In summary, in the first decades of the 20th century, the medical treatment options for severe neurological diseases and disabilities were minimal, and the doctors were very reluctant to deal with these patients. Antibiotics or effective anti-epileptics were not available, only in exceptional cases, e.g., in hypothyroidism or acute rickets, causal treatments have improved significantly. Many of these children died prematurely from infections, in particular bacterial pneumonia and meningitis, nutritional disorders, heart, and respiratory failure and prolonged cerebral attacks, but also from senseless and dangerous treatment measures such as serial puncture of hydrocephalus, overdoses of opiates and after 1912 even from Barbituric acid derivatives.

In 1933, at the beginning of the Nazi dictatorship, about half of the pediatricians in the German-speaking world were Jewish, especially in social pediatric and university institutions. They were immediately released from civil service, were usually only able to work in private practices for a short time, had to emigrate, were locked up in concentration camps, transported to extermination camps or voluntarily put an end to their lives.

By decree of the Ministry of the Interior of August 18, 1939, midwives, obstetricians, nurses, and other doctors involved were obliged to report all children with “congenital malformations and mental underdevelopment” to the responsible health authority up to the age of 3. The sheets were sent to the “Reichsausschuss zur wissenschaftlichen Erfassung von erb- und anlagebedingten schweren Leiden” (= Reichs Committee for the Scientific Assessment of Hereditary Serious Sufferings” = RA). There the pediatricians Werner Catel from Leipzig (1891-1981), Hans Heinze from Brandenburg-Görde (1895-1983), and Ernst Wentzler from Berlin (1891-1973) assessed with “enthusiasm and conviction”.

Independently of this, children and adolescents cared for in medical and nursing homes were also included in the “Action T4”, the systematic murder of mentally ill and disabled people, which was carried out independently of the RA procedure. In a personal letter dated September 1, 1939, Adolf Hitler had ordered SS doctors to organize the killing of severely disabled people, which he cynically described as “death by grace”. The children who were positively reported by the RA and T4 experts were transferred to so-called children’s departments under the pretext of getting into “facilities for the best care and the possibilities of modern therapies”. From there, many of them were transported under great secrecy in killing facilities such as Grafeneck, Hadamar, Bernburg, Brandenburg-Görde, and Pirna-Sonnenstein, or murdered directly by administering high-dose barbiturates or morphine, sometimes also by intracardiac injections of phenol.

The “Textbook of Pediatrics”, edited by Philipp Bamberger (1898-1983) et al. in 1942, dealt with the diseases of the nervous system on

71 of 821 pages, of which the malformations on 3 pages, the epilepsy on 4 pages and the intelligence deficits on 1 page.”Behavioral problems” such as sleep disorders, loss of appetite, recurrent vomiting, umbilical colic, finger sucking, nail-biting, nasal drilling, wetting, encopresis and poor concentration were among others explained with vegetative hyperexcitability and mainly seen as a result of educational errors. Also, with “neuropathic persons” there would occasionally be frequent “absences”, shortly diminished consciousness (up to 100 and more per day), which, in contrast to the epileptic absences, would not lead to a change of character without leaving any traces. These would spontaneously disappear and were called “pyknoleptic seizures”. They are “bromine and luminal resistant”. Also, neurotics would produce large seizures at appropriate moments that were almost entirely similar to the epileptic grand mal.

After the end of World War II and the atrocities of the medically and politically responsible persons only gradually becoming known, the improvements of general living conditions, especially overcoming famine, reducing infant mortality, and treating acute infectious diseases, e.g., tbc and poliomyelitis, were in the foreground of pediatric interests. There was no functioning public health system, many of the clinics were bombed out and without qualified personnel, and many pediatric practices were orphaned.

In 1924 and in a much more extensive edition in 1964, the neuropathologist Philipp Schwartz (1894-1977), who originally worked in Frankfurt and emigrated after 1933 via Switzerland to Ankara and later to the United States, described traumatic brain damage during childbirth as the most crucial explanation for a large number of severe and minor cerebral dysfunction. This means a counter position to the overemphasis on hereditary disorders.

Objective diagnostic methods for testing brain functions, e.g., the EEG, were only gradually introduced in German children’s hospitals after 1950. Here the publications of Richard Jung (1911-1986) and Dietrich Pache (1911-1978) in addition to the international literature of William G. Lennox (1884-1960) and Frederic A. Gibbs (1903-1992) were groundbreaking. Medicines to treat common epilepsy were primarily bromine and phenobarbital (Luminal®) and increasingly hydantoin after 1950.

In pediatric neurosurgery, there were only a few treatment options for brain tumors or hydrocephalus, mostly with side effects, especially since many excellent neurosurgeons with Jewish descent had to leave Germany after 1933.

Like many other areas of neuroscience, neuropediatrics had a great boom in Germany between 1850 and 1950, but it also went astray. Essential anatomical principles and the most important clinical symptoms were described up to the beginning of the First World War. Concepts of pathoetiology were shaped by the theory of constitution, infectiology and neurophysiological reflexology. From the beginning of the twenties, heredity was the main explanation for serious neurological illnesses and disabilities, which, especially in Germany between 1933 and 1945, led to the disaster of the sterilization and murder of many thousands of sick and disabled children and adults. It was only after 1950 that advances in electrophysiology, biochemistry, cerebral imaging, and human genetics made it possible to better explain neuropediatric diseases and use effective treatments.

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