

Child Neurology in Tunisia: Current Status and Future Prospects

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Sustainable pediatric neurology development at the national and international levels

At the international level, pediatric neurology is singled out since the 19th century with its need for a specific treatment of cerebral palsy in the USA and a particular management for acute anterior poliomyelitis in France. Then, this discipline was individualized by the American Academy of Neurology in 1960 in “the child neurology section”. It is from this point, that the pediatric neurology began to grow very rapidly with the help of new diagnostic technologies such as enzyme assays, magnetic resonance imaging and molecular biology that made the early and precise diagnosis possible. This specialized individualization has also put in place strategies of early and multidisciplinary care of children with neurological diseases. In Tunisia, the field of pediatric neurology began first in the 1980s at the neurology department in the Mongi Ben Hamida National Institute of Neurology in Tunis by Professor Najoua Miladi who started in 1984 a neuropediatric activity. In 2000, through Professor Najoua Miladi’s tremendous effort, funds were obtained for building in Tunisia the first pediatric neurology department, in the Mongi Ben Hamida National Institute of Neurology at La Rabta in Tunis. In July 2003, this department was first launched and Prof Najoua Miladi was appointed chief of this department. During the nineteen years from 1984 to 2003, the pediatric neurology practice at this Institute met a strong resistance from the senior neurologists who were very concerned about the progress of this speciality practice and were opposed firmly to its individualization as a full-fledged speciality by blocking academic nominations and research in this field by pediatric neurologists. As a Secretary of State of Public Health (2007 - 2010), she opened in May 2008 a second child neurology department in the Hédi Chaker university hospital in Sfax. Since then, several networks have been established and research programs have been conducted in both departments. The department of pediatric neurology in the National Institute Mongi Ben Hamida of Neurology was directed successively by Professor Najoua Ben Khaled Miladi (2004 - 2005) who became after Deputy than Secretary of State of Public Health, by Professor Neziha Gouider Khouja (2005 - 2012) then by Professor Ilhem Ben Youssef Turki (2013 until now). The department of child neurology in the University Hospital Hédi Chaker in Sfax is directed from 2008 till now by Professor Chahnez Charfi Triki.

The Tunisian specification of child neurology

In Tunisia, the decline of infectious diseases and malnutrition have drawn an attention to the prevention of childhood neurological diseases and the management of disabled children. Hence, an enormous progress has also been made in the identification and management of inherited metabolic diseases, genetic diseases and epilepsy in children [1-16,19-34]. The same goes for cognitive sciences with better management of a delayed language, learning disabilities and mental retardation [17,18]. A neurological disease in childhood needs an early intervention and a multidisciplinary care covering the areas of prevention, screening, treatment, rehabilitation, school program integration and special social and professional care. The diagnosis and the therapy involve various types of health specialists (medical doctors, nurses, physiotherapists, occupational therapists, psychologists, speech therapists). Teachers and parents have also been educated to work together, in harmony, for the well-being of the child with a neurological disease and help develop and allow him to live as normally as possible and be able to integrate socially despite the disabilities related to his illness.

Achievements in Tunisia in the field of pediatric neurology

Report on the treatment

From the state of being ill-equipped 20 years ago, today the pediatric neurologists in Tunisia see an expansion of the diagnostic, the treatment, the prevention and social service support. The modern facilitation today, allows the parents of neurologically diseased children a broader spectrum of action (biochemical, radiological and molecular diagnostic investigations in the family or through prenatal diagnosis) and a larger therapeutic possibilities permitting a significant improvement in these children quality of life.

The awareness of the parents who are seeking treatment for their child, explains the increasing number of consultations in these services. Thus, the number of children under treatment had escalated between 2004 to 2019, reaching an average number of 20 000 per year of outpatient and emergency visits in the Tunis department of pediatric neurology and 10 000 per year of outpatients in the Sfax department of child neurology.

Report on the relevant training

In Tunisia, as of today, the Child Neurology is not recognized as an independent specialization. Hence, its residency training is until now included in neurology residency cursus and the residents are certified in neurology. A specialized master degree in pediatric neurology was built in 2006 in the Faculties of Medicine of Tunis and Sfax.

It could not be denied that the quality of treatment is closely linked to the continuing medical education and research activities. Thus, national and international child neurology congresses and workshops were organized since 2000 by ARMNE (Association de Recherche sur les Maladies Neurologiques de l'Enfant: Association for the research on child neurology diseases) and since 2014 by the Tunisian Child Neurology Association (www.tcna.tn)

Report on the research

There are now two child neurology research structures in Tunisia: a research laboratory of Child Neurology (LR18SP04) at the Mongi Ben Hamida National Institute of Neurology in Tunis and a research unit at the Faculty of Medicine of Sfax (UR12ES16). An association for research on child neurological diseases was certified in November 2003. Different research themes have been developed as it follows: the childhood epilepsy, the neurodegenerative inherited diseases, the neuro-metabolic diseases, the learning disabilities, the abnormal movements, the improving care for children with multiple disabilities, the molecular diagnosis of mental retardation, the leukodystrophies, the peripheral neuropathies and the autism.

Prospects for Tunisian child neurology

Our goal is to continue to provide children with neurological diseases or disabilities, the best care for their needs and to alleviate their parents suffering by better understanding of the disease and having a good accompaniment. For this purpose, it is imperative to take into account the specification of the child development (developing brain, maturation and growth) and the specification of the child care (medical, psychological, social and educational). To meet these requirements, it has been our duty to help upgrade these two categories in the medical care level and medical education. The process to follow is:

- The continuous improvement of the child neurology training curriculum and the examination program.
- The training of young students and residents doctors in the child neurology services
- The organization of child neurology meetings and congresses.
- The participation in national and international congresses
- The upgrading of the child neurology services which is adapted to a more appropriate space to fit the children's state of disability and handicap and to recruit more specialized educators, physiotherapists, psychologists, occupational therapists, speech therapists and social workers. By this way we support a multidisciplinary approach for these children.
- The development of more research pathways on child neurological diseases.
- The training of nurses and other paramedics in child neurology.

Supplementary Material File

Demographics of Tunisia (National Institute of Statistics; Tunisia):

- Average number of total population (2005 - 2016): 10618933 +/- 399773; 95% Confidence interval: [10618863 - 10619002].
- Average number of children less than 15 years old (2005 - 2016): 2555541 +/- 55557; 95% Confidence interval: [2555522 - 2555561].
- Average number of pediatric population aged between 15 and 18 years (2005 - 2016): 934791 +/- 90631; 95% Confidence interval: [934738 - 934791].
- Average number of pediatric population aged under 18 years (2005 - 2016): 3490333 +/- 62128; 95% Confidence interval: [3490314 - 3490352].

Presentation of the Pediatric Neurology Department at the National Institute Mongi Ben Hmida of Neurology, La Rabta - Tunis (North of Tunisia), is a tertiary care research center and it is the major referral center for children with neurological disorder in the North and the Centre of Tunisia. It serves a population of over than three million with an average number of outpatient and emergency visits: 20 000 per year.

Presentation of the Department of Child Neurology at the University Hospital Hédi Chaker in Sfax (South of Tunisia), is a tertiary care research center and it is the major referral center for children with neurological disorder in the south of Tunisia. It serves a population of over than three million with an average number of outpatient visits: 10 000 per year.

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