Faculty of Medicine
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Neurocognitive Assessment in Patients with idiopathic epilepsy

Thesis

Submitted for Partial Fulfillment of Master Degree in pediatrics

By

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2017

ACKNOWLEDGMENTS

I wish to express my great indebtedness and deep gratitude to ***Dr. Rania Hamed Shatla*** assistant Professor of pediatric neurology, Faculty of Medicine, Ain Shams University for accepting the idea of this work, her kind assistance and efforts, which helped me in accomplishing this thesis, invaluable guidance and great help in supervising this work. No words can express my feelings, respect and gratitude to her as regards her continuous encouragement and constructive criticism given to me at every stage of this work.

I also want to thank ***Dr. Marwa Adel El Missiry*** of assistant Professor of psychiatry,faculty of medicine Ain shams University for her great encouragement and support.

I also want to thank ***to all the staff members and colleagues in department of pediatric neurology***, faculty of medicine, ain shams University for giving me the honor to learn and study between them.

I would *like to say that I couldn't have reached this point in my life without the enduring efforts of* ***my parents****, no words can give them their right or describe how Iam indebted to them.*

This work would not have been possible without the help of ***my dear husband,*** *I am heartily thankful for his endless love, care and support.*

I do appreciate my patients and their families, I couldn't complete this work without their understanding and cooperation.

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INTRODUCTION

Epilepsy is a common neurological condition that can be chronic, disabling, and socially isolating. To this day, a diagnosis of epilepsy can carry social stigma that affects individuals and their families alike, physically, psychologically, and economically. The ever-improving understanding of its scientific basis, however, together with advances in neuroimaging, neurosurgery, and neuropharmacology, means that people with epilepsy now have many more investigations and treatment options than previously, and can expect an improved quality of life ***(Johnston et al., 2016).***

Idiopathic epilepsies are a group of epileptic disorders constitute one third of all epilepsies. They are genetically determined and affect otherwise normal people of both sexes and all races. IGEs manifest with typical absences, myoclonic jerks, and generalized tonic-clonic seizures, alone or in varying combinations and severity ***(Douglas, 2005).***

The effects of epilepsy are felt in multiple aspects of the person's life, including physical and mental health, cognitive function, educational achievements, vocational prospects, and family and peer relations. Cognition has an important role in

the inception, evolution, and manifestation of many aspects of function recognized to be compromised in people with epilepsy. Most cases of epilepsy have their onset in childhood, and thus seizure onset commonly occurs at a time that is essential to the development of basic cognitive, behavioral, and social skills that are crucial for long-term educational, vocational, and interpersonal adaptation.

AIM OF THE STUDY

- Assess the neuro cognitive impairment of children with idiopathic epilepsy.
- Assess the effect of the different anti-epileptic drugs on the cognitive profile of these patients.
- To assess the effect of using more than one antiepileptic drug and duration of treatment on cognition.

RATIONALE OF THE STUDY

- Epilepsy is a common pediatric neurological disorder. Cognitive impairment is a frequent secondary consequence of epilepsy. Memory impairment, mental slowing, and attention deficits are the most frequently reported disorders in patients with epilepsy.
- In Egypt, idiopathic epilepsy is a common medical problem affecting Egyptian children and causing learning difficulties and social burden to their families.

Chapter One

EPILEPSY

Disorder of the brain characterized by an enduring predisposition to generate seizures and by the neurobiologic, cognitive psychologic, and social consequences of this condition. The clinical diagnosis of epilepsy usually requires the occurrence of at least 1 unprovoked epileptic seizure with either a second such seizure or enough EEG and clinical information to convincingly demonstrate an enduring predisposition to develop recurrences. For epidemiologic and commonly for clinical purposes, epilepsy is considered to be present when 2 or more unprovoked seizures occur in a time frame of longer than 24 hr. Approximately 4-10% of children experience at least one seizure (febrile or afebrile) in the 1st 16 yr of life. The cumulative lifetime incidence of epilepsy is 3%, and more than half of the cases start in childhood. The annual prevalence is 0.5-1.0% ***(Berg et al., 2010)***.

Epidemiology

Incidence and Prevalence

Epilepsy is one of the most common serious chronic neurological disorders. Approximately 65 million people worldwide have epilepsy. In developed countries, the annual incidence of epilepsy is nearly 50 per 100,000 population

(range 40–70 per 100,000/year) but is generally higher in resource-poor countries, between 100 and 109 per 100,000/year ***{Thurman et al., 2011).*** The prevalence of active epilepsy is 596 per 100,000 persons, but much higher in low- and middle-income countries ***(Pringsheim et al., 2014)***

Contributing factors to higher incidence and prevalence rates in low- and middle income countries include social deprivation, malnutrition, pre- and peri-natal complications, and an increased risk of conditions with permanent brain damage squeal, e.g. neurocysticercosis, meningitis, and cerebral malaria ***(Sander et al., 2003).***

The overall lifetime prevalence of seizures (the risk of a non-febrile epileptic seizure at some point in an average lifetime) is 2–5 %. The prevalence is highest in neonates and young children, peaking again in the elderly ***(MacDonald et al., 2000).***

In Europe, the prevalence of epilepsy in children appears to lie between 3.2 and 5.1/1000, depending on the age range and country considered ***(Forsgren et al., 2005).***

A recent USA national paediatric survey found that the estimated lifetime prevalence of active epilepsy was 6.3/1,000 (95% CI: 4.9–7.8) ***(Russ et al., 2012)***, epilepsy was found to be more common in children from families with income below the US federal poverty level. In Canada, the prevalence of epilepsy in children in a national survey was 5.26/1,000 ***(Prasad et al., 2011)*** and in the Province of British Columbia 5.5/1,000 ***(Schiariti et al., 2009).***