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Clinical and laboratory profile of childhood epilepsy

A thesis

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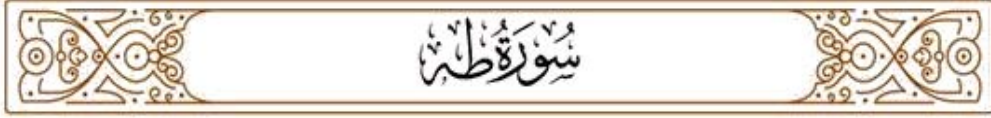
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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



فَتَعَلَى اللَّهِ الْمَلِكُ الْحَقُّ وَلَا تَعْجَلْ بِالْقُرْآنِ مِنْ قَبْلِ أَنْ
يُقْضَىٰ إِلَيْكَ وَحْيُهُ وَقُلْ رَبِّ زِدْنِي عِلْمًا ﴿١١٤﴾

صدق الله العظيم

Dedication

*To my family I dedicate my research
for their unlimited support and help.*

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List of abbreviation:

Abbreviation	Meaning
AED	Antiepileptic drug
ALP	Alkaline phosphatase
ALT	Alanine transaminase
AST	Aspartate aminotransferase
CDC	Center of disease control and prevention
CNS	Central nervous system
CT	Computed tomography
EEG	Electroencephalogram
(ILAE)	International League Against Epilepsy
LBW	Low birth weight
LGA	Large gestational age
MRI	Magnetic resonance imaging
OFC	Occipito- frontal circumference
(SE)	Status epilepticus
SPSS	statistical package for social sciences
TSB	Total serum bilirubin
WBC	White blood cell
TOF	Tetralogy of fallot
NTD	Neural tube defect
PID	Pelvic inflammatory disease
NCU	Neonatal care unit
CS	Cesarean section
CDH	Congenital dysplasia of hip
IL	Interleukin
TNF	Tumor necrosis factor

Abstract

Background

Seizure is defined as a transient occurrence of signs and symptoms due to the abnormal, excessive, or synchronous neuronal activity in the brain. Seizure onset, especially in the child population, is related to specific risk factors like positive family history, fever, infections, neurological comorbidity, premature birth, mother's alcohol abuse, and smoking in pregnancy. Epilepsy affects 1-2% of children. In childhood, epilepsy is more common in the first year of life, and its incidence decreases progressively with increasing age. All the studies have reported a higher prevalence in males. The prevalence is approximately 2-fold higher in children and young adults, compared to the rates in middle age. Primary generalized seizures are reported in 28–97% of cases, partial seizures in 3–43.8%, and unclassified seizures in 18–51%. Idiopathic epilepsy represents 73.5– 82.6% of cases. Early childhood brain damage such as in cerebral palsy and mental retardation represented a major cause of symptomatic epilepsy.

Subject and methods

This cross sectional study was conducted in pediatric department of Albatool teaching hospital in Diyala province, Iraq.

The target population was the children attending the pediatric neurology clinic of Albatool hospital. A total of 100 children were included in the study from 1st February 2020 to 30th May 2020.

All children diagnosed with epilepsy included in the study, while children whose parents refuse to participate were omitted.

Data were collected from medical records and interviewing parents 'or the caregivers of children directly using a questionnaire that was used for study of epilepsy. Statistical analysis: software SPSS (Version 24) and

Microsoft Excel (2016) were used to carry out the statistical analysis of data.

Results

One hundred children with epilepsy, their mean age was 5.96 ± 3.33 years (range 1-14 years), participated in this study, 52(52%) of them aged 5 years and below, 37(37%) of them aged 5-10 years and 11(11%) aged more than 10 years. 48(48%) of the children were male and 52(52%) patients were female, M: F ratio was 0.92.

Of the total patients, 79% was free from seizure on AED, 21% of them was refractory to treatment.

Patients without developmental delay constitute (88.7%, $p=0.012$) were controlled by AED. However, other patients' characteristics have no effect on the control of epilepsy.

Patients who had idiopathic seizure (87.5%, $p=0.04$) can be controlled by AED, patients who had few time seizure attack can be controlled by AED more than patients who had weekly or monthly seizure attack (97.4%) ($p<0.001$). Patients' family history, fathers and mothers' occupation, and history of parental consanguinity do not affect the control of epilepsy.

Patients who had treated by monotherapy (94.7%, $p=0.012$) can be controlled more than patients who treated by multidrug therapy. However, type of monotherapy does not affect the control of epilepsy.

normal EEG results can be detected more in patients with controlled epilepsy (93%, $p=0.003$) than patients with refractory epilepsy who had abnormal EEG results. However, MRI and CT scan results not affect the control of epilepsy.

Affected social interaction and need more supervision were factors that detected more in patients with refractory epilepsy, $p=0.04, 0.01$

respectively. While there was no association between frightening other people and epilepsy control.

Conclusion and recommendation

Most of the patients characterized by monotherapy treatment approach, had normal EEG, less affected by social interaction and need less supervision. Whereas Patients with refractory epilepsy had opposite factors.

Patients controlled by AED are: those who had idiopathic seizure, normal development, and get infrequent seizure.

Early detection and assortment of the patients according to treatment response allows their referral to specialized neuropediatrics or neurosurgical centres.

Chapter one

Introduction

1.1 Introduction:

Epilepsy is a disorder of the brain characterized by an enduring predisposition to generate seizures and by the neurobiologic, cognitive, psychological, and social consequences of this condition. (Kliegman MR, 2016).

A seizure is a transient occurrence of signs and/or symptoms resulting from abnormal excessive or synchronous neuronal activity in the brain. (Kliegman MR, 2016). Seizure onset, especially in the child population, is related to specific risk factors like positive family history, fever, infections, neurological comorbidity, premature birth, mother's alcohol abuse, and smoking in pregnancy. (Minardi C et al, 2019)

Epilepsy affects 1-2% of children. In childhood, epilepsy is more common in the first year of life, and its incidence decreases progressively with increasing age, affecting approximately 100 children per 100,000 births in the first year of life, 40 children for every 100,000 births in subsequent years, and approximately 20 individuals per 100,000 adolescents. In 75% of these cases, seizures are well controlled with antiepileptic drugs and in the remaining 25% epilepsy is refractory to pharmacological treatment and surgical approach may be considered. (Gadze Z. P, 2011)

All the studies report higher prevalence in males. The prevalence is approximately 2-fold higher in children and young adults, compared to the rates in middle age. Primary generalized seizures are reported in 28–97% of cases, partial seizures in 3–43.8%, and unclassified seizures in 18–51%. Idiopathic epilepsy represents 73.5–82.6% of cases. Early childhood brain damage such as in cerebral palsy and mental retardation represented a major cause of symptomatic epilepsy, whereas CNS infection was the main cause in Sudan. (Benamer H.T et al, 2009)

The diagnosis of first seizure or epilepsy may be challenging and misdiagnosis can occur. Studies carried out in various settings have reported misdiagnosis rates of between 4.6% and 30%. Misdiagnosis can lead to serious consequences including inappropriate treatments. It may be difficult to make a definite diagnosis at initial presentation. This is because of a number of reasons including overlapping clinical features with other conditions, inadequate available history and limitations of investigations. (Chowdhury F.A et al, 2008)

Obtaining other laboratory studies on an ongoing routine basis is also of little value, obtaining hematologic and serum chemistry studies (complete blood cell count with differential and platelet count, electrolytes and liver enzymes) is recommended before instituting any antiepileptic medication to establish a baseline and to identify any preexisting abnormalities. Repeat studies during the early phases of treatment (for example, at one and three months) are sometimes useful in identifying abnormalities that may be reflected in laboratory studies but are not yet apparent clinically (for example, significant thrombocytopenia or hyponatremia) (Marks W.J, 1998).

1.2 Aim of the study:

- To describe the clinical features of epilepsy in children.
- To describe laboratory findings of epilepsy in children.
- To evaluate some factors associated with control of epilepsy.