Clinico -aetiological profile of new onset seizures among adult Egyptians

Thesis

Submitted for Partial Fulfillment of Master Degree
In Neurology & Psychiatry

By

Ahmed Khalil Mohamed
M.B.B. Ch, Faculty of Medicine - Ain Shams University

Supervised by

Prof. Dr. Mahmoud Hemeida Mahmoud El-Rakawy
Professor of Neurology
Faculty of Medicine - Ain Shams University

Prof. Dr. Eman Mahmoud Awad Mahmoud
Professor of Neurology
Faculty of Medicine - Ain shams University

Dr. Mohamed Ahmed Shafik Abdallah
Lecturer of Neurology
Faculty of Medicine - Ain shams University

Faculty of Medicine
Ain Shams University
2019

List of Contents

List of Abbreviations

AEDs.....Anti-Epileptic Drugs

ALT.....Alanine Transaminase

AST.....Aspartate Transaminase

AVMs .....Arteriovenous Malformations

BC.....Before Christ

CBC .....Complete Blood Count

CKD.....Chronic Kidney Disease

CLD.....Chronic Liver Disease

CMs .....Cavernous Malformations

CNS .....Central Nervous System

CSF.....Cerebrospinal Fluid Examination

CT scan .....Computed Tomography scan

CVA .....Cerebrovascular Accidents

DEEG.....Digital Electroencephalogram

DM.....Diabetes Mellitus

DVAs.....Developmental Venous Anomalies

ED .....Emergency Department

EDH.....Extra Dural Hemorrhage

ER .....Emergency Room

ESRD.....End Stage Renal Disease

FCDs.....Focal Cortical Dysplasia

G. Myoclonic.....Generalized myoclonic

G. Tonic .....Generalized tonic

GABA.....Gama Amino-Butyric Acid

GTCs.....Generalized Tonic–Clonic Seizures

HTN .....Hypertension

ICHgE.....Intra-cranial Hemorrhage

List of Abbreviations

IHD.....Ischemic Heart Disease

ILAE .....International League against Epilepsy

LPDs.....Lateralized Periodic Discharges

LOC.....Level Of Consciousness

MRI .....Magnetic Resonance Imaging

MSE.....Mental State Examination

MTS.....Mesial Temporal Sclerosis

NES .....Non-Epileptic Seizure

PLEDs.....Periodic Lateralized Epileptiform Discharges

PNES .....Psychogenic Non-Epileptic Seizure

PRES .....Posterior Reversible Encephalopathy Syndrome

PTS.....Post-Traumatic Seizure

RBS .....Random Blood Sugar

RTA .....Road Trauma Accidents

SAH.....Sub Arachinoid Hemorrahge

SDH .....Sub-Dural Hemorrhage

SE.....Status Epilepticus

SOLs.....Space Occupying Lesions

TBI .....Traumatic Brain Injury

TIA .....Transient Ischemic Attack

USA .....United States of America

List of Tables

List of Tables (continued)

List of Tables (continued)

List of Figures

List of Figures (Continued)

Abstract

Objectives: We aimed to evaluate the clinical and etiological profile of new onset seizures in adults with the help of laboratory and neuroimaging studies in a tertiary care hospital in Cairo.

Methods: An observational hospital based cross sectional analytical study of 120 cases with new onset seizures were included in the study, who had their first seizure above the age of 18, and admitted to Neurology OPCs and ER of Ain Shams University and Nasr city Health Insurance Hospitals between March 2018 to September 2018. We determined the type of seizure and etiological factors.

Results: In the 120 patients, whose specific incidence of acute new onset seizures was found to be highest in males in the age group > 55 years 48 (66.67 %), we found the most common seizure type was generalized seizure 56 (46.67%) and the most common etiologic factor was cerebrovascular diseases 53 (44.17 %). Patients presented with cluster seizures was 31 (25.83 %) and status epileptics was 14 (11.67 %). The most common metabolic insult was hypocalcemia 12 (10%) and hyponatremia 8 (6.76%).

Conclusion: Cerebrovascular disease was the most common etiology after 55 years of age whereas Idiopathic epilepsy syndrome and Metabolic insults were common in younger individuals (18-35) years of age. Patients presented with cluster seizures were mostly found to have SOL.

Key words: New onset seizure, etiology, OPCs (outpatient clinics), ER (emergency room).

INTRODUCTION

Seizure is defined as a transient occurrence of signs and/or symptoms due to abnormal excessive or synchronous neuronal activity in the brain ***(Fisher et al., 2014)***.

Seizures are one of the important causes of morbidity and mortality in adults. There are many studies based on the old seizure and epilepsy classification system but there are only few studies on the clinical profile and causes of new onset seizures ***(Ashwin et al., 2017).***

New onset seizure was defined as the first seizure (or the first cluster of seizures within 24-hour period) ever experienced by the patient ***(Patil, 2016)***.

A single seizure can be the first manifestation of epilepsy, which is characterized by recurrent unprovoked seizures (two or more). It may be a symptom of a brain tumor, a systemic disorder, an infection, or a syndrome that deserves special attention and treatment ***(Shorvon et al., 2011).***

Seizures are common in the general population and about 1 in 10 people will experience a seizure in their lifetime. Most of these seizures are provoked by acute events and are not related to epilepsy ***(Megiddo et al., 2016).***

Epilepsy was regarded as a disease of children for many years, but as researchers gathered more data on an aging population, they found that the incidence of new-onset epilepsy increased among people older than 50. They reported an incidence of 169/100,000 per year in this population, almost twice the incidence among children ***(Leppik, 2013).***

The incidence rate of new-onset epilepsy in older adults ranges from 1 to 3 per 1000 person-years and is estimated to be two to six times higher than in younger adults ***(Choi et al., 2017)***.

Etiology, clinical findings and response to treatment in elderly patients with epilepsy demonstrate variations in comparison with the young patients ***(Stefan et al., 2014).***

Etiology of seizures can be easily made out in most of the older patients. The causes include subdural hematoma, stroke, Central nervous system (CNS) infections, degenerative disorders like Alzheimer's disease and malignancy. They also can occur with systemic metabolic conditions like uremia, hyperglycemia, hypoglycemia and hyponatremia ***(Prakash et al., 2017).***

It is the clinician's first task to determine that an event has the characteristics of a seizure and not one of the many imitators of seizures; the next step is classification into a seizure type ***(Brodtkorb, 2013)***.

The newly developed International League Against Epilepsy (ILAE) 2017 classification of seizure types are between seizures that begin focally in one hemisphere of the brain, generalized onset seizures that apparently originate in both hemispheres, and seizures of unknown onset ***(Fisher et al., 2017).***

Errors in diagnosis, seizure classification, and prognosis are known to lead to inappropriate decisions on the use or choice of antiepileptic drugs and to other serious patient management errors ***(Krumholz et al., 2015).***

With the current scales of technological improvement and better awareness the mean age of population is on rise. Assessment, diagnosis and management of the etiology of new onset seizure are of utmost importance ***(Sibia et al., 2014).***

Hence there is a need for a Clinico - aetiological study of new onset seizures among adults to establish the proper cause and check the inadvertent use of antiepileptic drugs (AEDs).

Aim of the Work

To identify the aetiological profile of new onset seizures and define the clinical semiology of new onset seizures among adult Egyptians above 18 years old.

Seizure Terminology and Epidemiology

The term fit is a sudden violent attack of a disease (such as epilepsy), especially when marked by convulsions or unconsciousness ***(Duncan, 2012).***

Seizure is preferable as a generic term, because it embraces all paroxysmal electrical discharges of the brain **(Table 1).** The term may be motor or convulsive seizure, a sensory seizure or psychic seizure ***(Jagtap et al., 2017).***

Table (1): Seizure terms

Seizure terms	
Ictal	Seizure
Post Ictal	after the seizure
Aura	sensation seconds before seizure occurs
Automatisms	nonsensical movements that patients do during a seizure
Convulsions	Shake
Tonic	Posturing
Clonic	repetitive, forceful rhythmic movements
Complex	lose consciousness
Simple	don't lose consciousness
Partial	involving part of the brain
Generalized	involving whole Brain

(Kartha, 2013).

The word epilepsy is derived from Greek words meaning "to seize upon" or a "taking hold of". A useful medical term to denote recurrent seizures ***(Thomas et al., 2008).***