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The Effectiveness of Monotheraby in Epileptic Sudanese Patients

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Abstract

Epilepsy is a disease characterized by an enduring predisposition to generate epileptic seizures and by the neurobiological, cognitive, psychological, and social consequences of this condition. Over 5% of Americans have at least one epileptic seizure during their lifetimes . No data found about incidence of epilepsy in Sudan. This is a cross sectional study that had been performed at the National Center OF Neurological Sciences during the period from February to March 2015, 59 Sudanese patients with epileptic seizures, and taking anti epileptic drugs had been randomly recruited from NCNS referral Clinic during the period of study. In the present study we conclude that, the most affected age group in patients with epilepsy was11 – 20 year, moreover 85% of the patients under monotherapy treatment were achieve seizure control.

Key words

Epilepsy;monotherapy; polytherapy treatment,

Introduction

An epileptic seizure is a transient occurrence of signs and/or symptoms due to abnormal excessive or synchronous neuronal activity in the brain. Epilepsy is a disease characterized by an enduring predisposition to generate epileptic seizures and by the neurobiological, cognitive, psychological, and social consequences of this condition. Translation: a seizure is an event and epilepsy is the disease involving recurrent unprovoked seizures (Fisher et al.)

A person is considered to have epilepsy if they meet any of the following conditions.

1/Two unprovoked (or reflex) seizures occurring greater than 24 hours apart.

2/One unprovoked (or reflex) seizure and a probability of further seizures similar to the general recurrence risk (at least 60%) after two unprovoked seizures, occurring over the next 10 years.

Incidence

Epilepsy is one of the most common serious neurological disorders (Hirtz et al.;Thurman et al.) affecting about 65 million people globally (Thurman et al.) . Epileptic seizures are among the most common neurologic symptoms in all human populations. Over 5% of Americans have at least one epileptic seizure during their lifetimes(Hesdorffer et al.)At any point in time, 1% to 2% of Americans have epilepsy. Cumulative lifetime incidence of epilepsy exceeds 3%. These statistics are similar across large human populations, although the incidence and prevalence of epileptic seizures and epilepsies can be higher in certain smaller groups (for

example, in populations exposed to military combat due to high rates of traumatic brain injury [TBI]).

Based on the age-specific incidence rates in European studies, the estimated number of new cases per year amongst European children and adolescents is 130,000 (incidence rate 70 per 100,000), 96,000 in adults 20-64 years (incidence rate 30 per 100,000) and 85,000 in the elderly 65 years and older (incidence 100 per 100,000). The proportion of both new and established cases with epilepsy in the young, adults and elderly in individual countries may differ substantially from total European distribution because of differences in age structure (Forsgren et al.)

No data found about incidence of epilepsy in Sudan. systematic review of the epidemiology of epilepsy in Arab countries in 2009 stated that the prevalence of epilepsy in sudan is 0.9 per 1000 (Benamer and Grosset)

Treatment

The goal of treatment in patients with epileptic seizures is to achieve a seizure-free status without adverse effects. However, many patients experience adverse effects from these drugs and some patients, have seizures that are refractory to medical therapy.

Monotherapy is desirable because it decreases the likelihood of adverse effects and avoids drug interactions. In addition, to this may be less expensive than polytherapy, as many of the older anticonvulsant agents have hepatic enzyme–inducing properties that decrease the serum level of the concomitant drug, thereby increasing the required dose of the concomitant drug . (St Louis, Rosenfeld, and Bramley)

People with seizures experience psychosocial adjustments after their diagnosis; therefore, social and/or vocational rehabilitation may be needed. Many physicians underestimate the consequences that an epilepsy diagnosis may have on patients. For example, patients with epilepsy may live in fear of experiencing the next seizure, and they may be unable to drive or work at heights .

The mainstay of seizure treatment is anticonvulsant medication. The drug of choice depends on an accurate diagnosis of the epileptic syndrome, as response to specific anticonvulsants varies among different syndromes. The difference in response probably reflects the different pathophysiologic mechanisms in the various types of seizure and the specific epileptic syndromes. Most antiepileptic drugs exhibit linear (concentration-independent) pharmacokinetics within their clinically-relevant doses, namely their plasma concentrations increase or decrease proportionally to dose. Phenytoin has non-linear kinetics and a narrow therapeutic range. There is also considerable inter individual variation in the relationship between the serum anticonvulsant concentration and seizure control. The interpretation of serum concentrations should also take into account a drug's pharmacokinetics. Sodium valproate has a wide therapeutic index, large fluctuations in its concentration-time profile and concentration-dependent protein binding. Carbamazepine has a flatter concentration-time profile, a more clearly defined target range, undergoes auto-induction of metabolism and interacts with other drugs. This is of considerable practical importance because small changes in the dose can have profound effects on the plasma drug concentration, which may result in toxicity. (Eadie and Tyrer;Bochner et al.)

Enzymatic biotransformation is the principal determinant of the pharmacokinetic properties of most antiepileptic drugs (AEDs), although some agents are excreted by the kidneys predominantly as unchanged drug. Most AEDs exhibit linear enzyme kinetics, in which changes in daily dose lead to proportional changes in serum concentration if clearance

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remains constant. Many AEDs have the potential to be involved in pharmacokinetic drug interactions when they are co-administered with other AEDs or other medications. These interactions usually involve changes in the rate of biotransformation or in the protein binding of one or both co-administered drugs. (Thomas).

Material and methods

This is a cross sectional study that had been performed at the National Center OF Neurological Sciences during the period from February to March 2015, 59 Sudanese patients with epileptic seizures, and taking anti epileptic drugs had been randomly recruited from NCNS referral Clinic during the above mentioned period. This study was approved by the ethical committee of the National Center of Neurological Sciences. Clinical and demographic data were collected using predesigned structured interview questionnaire. The following variables concerning each case were recorded: age, gender, residence, investigations such as CT brain, MRI brain, EEG, prescribed AED(s). Data were analyzed using the statistical package program for social science (SPSS)13 and the p value of< 0.05 was considered as statistically significant.

Results

A total of 59 epilepsy patients were included in the present study, male were 29 constituting 49% and female were 30 constituting 51% (Fig.1). Age in group of the patients was displayed in (Fig. 2). Frequency of outcome revealed that 45 of the patients constituting 76.3% were controlled, and 8 patients constituting 13.6% were uncontrolled and partially controlled were 6 constituting 10.2%(Fig. 3). Results of the treatment were displayed in table (4, 5, 6, and 7).

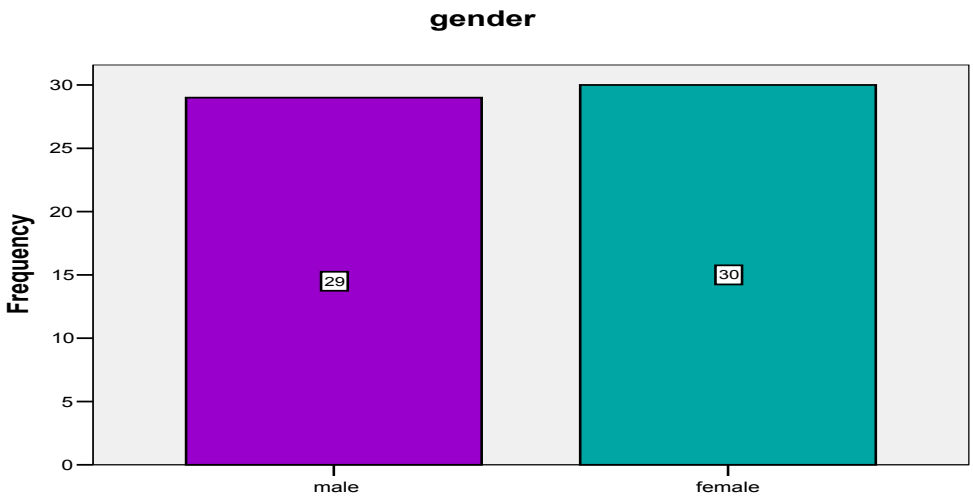

Fig 1 shows frequency of male and female in epileptic patients

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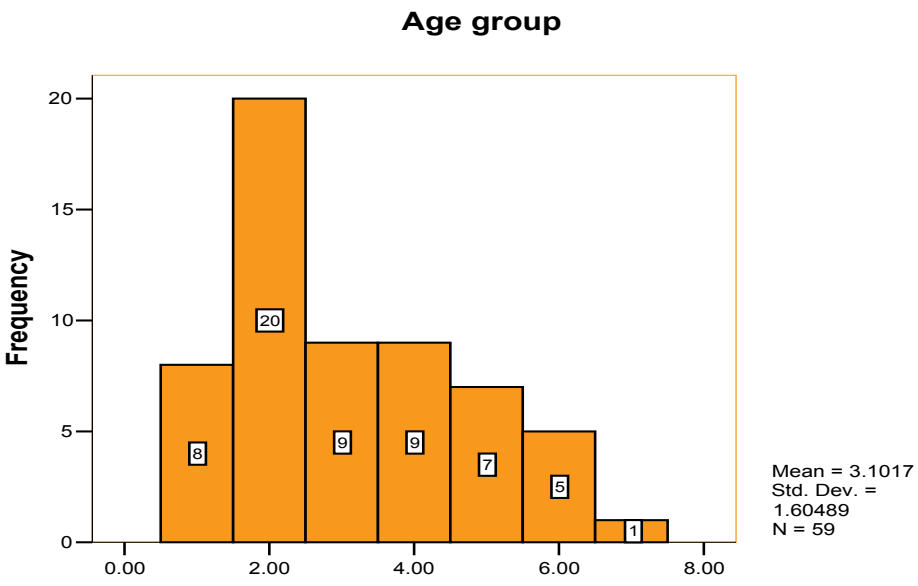

Fig. 2 shows age in group of epileptic patients

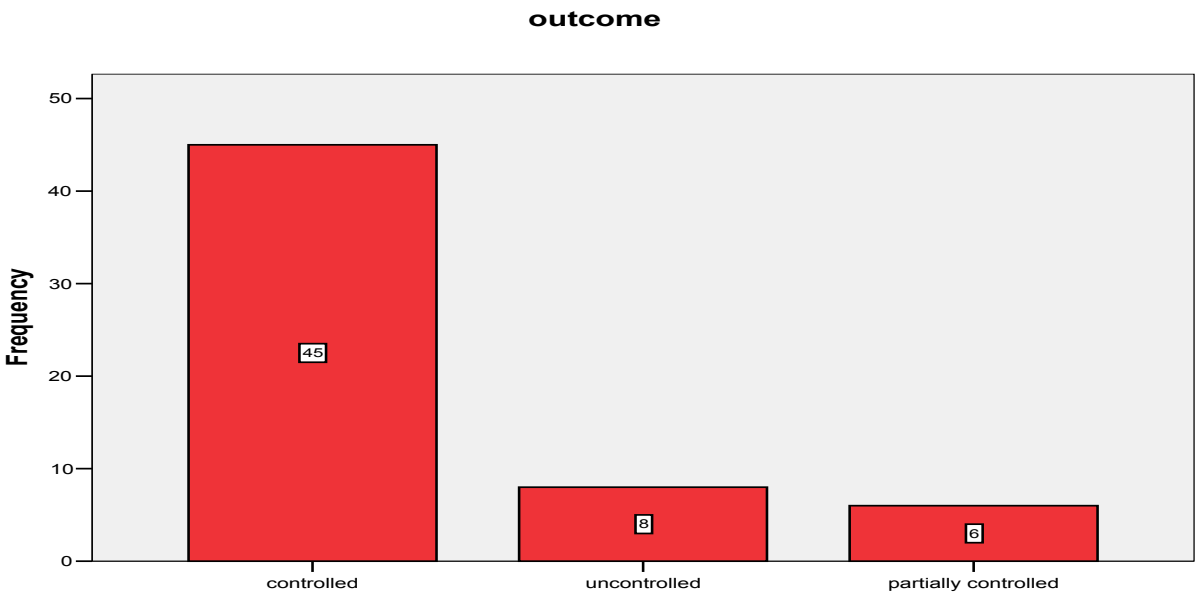

Fig.3 shows outcome of treatment in epileptic patients. P=0.068

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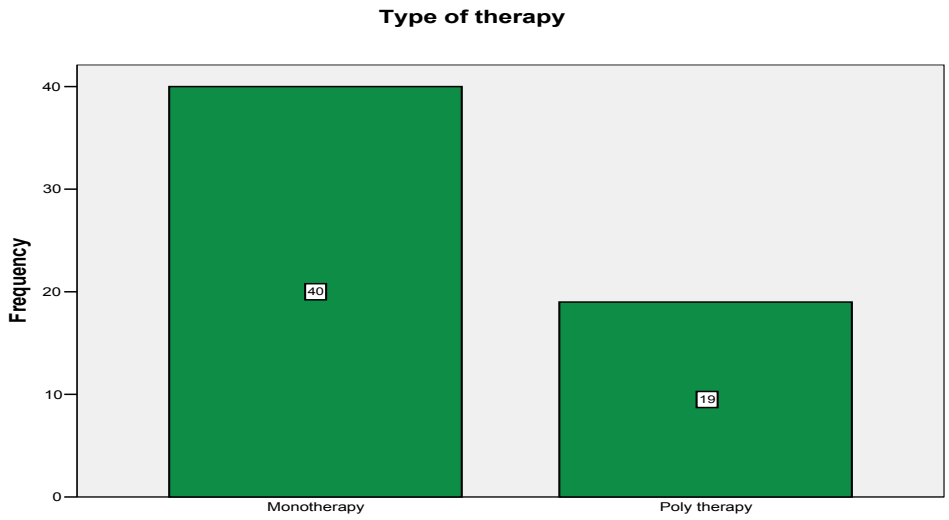

Fig 4 shows types of therapy in epileptic patients

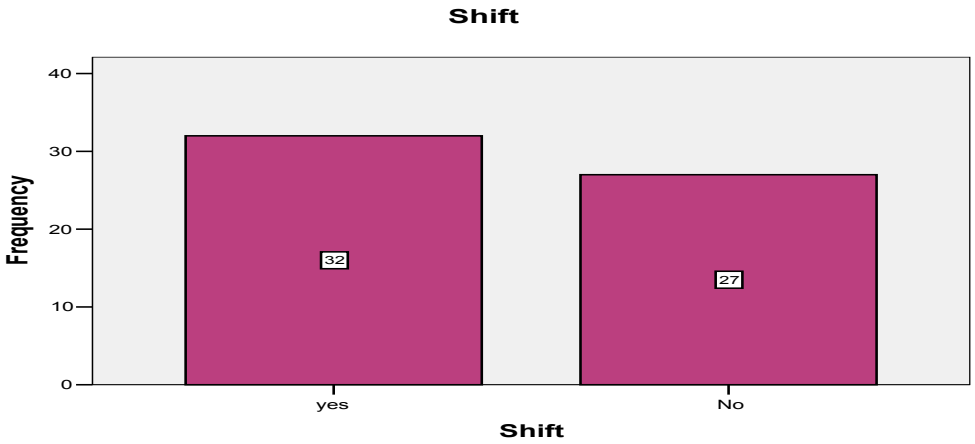

Fig. 5 shows treatment shift in epileptic patients. P=0.04

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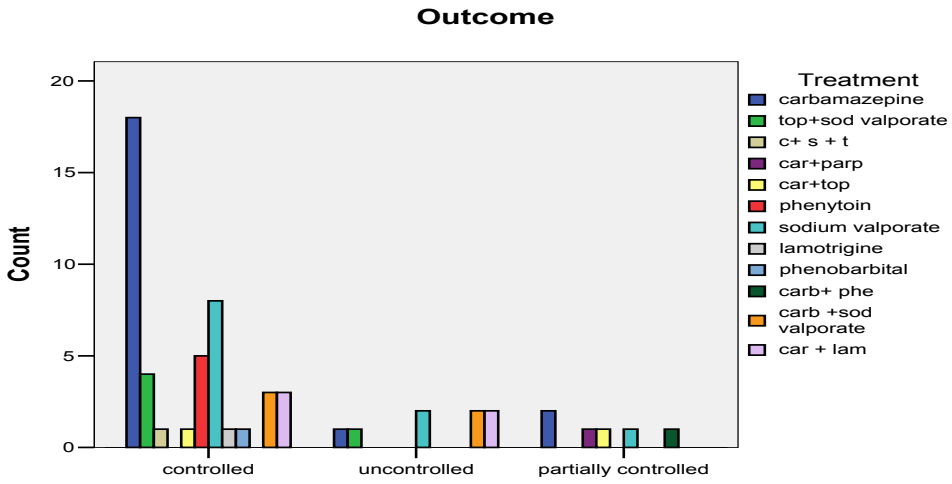

Fig . 6 shows outcome of the treatment in epileptic patients. P=0.068

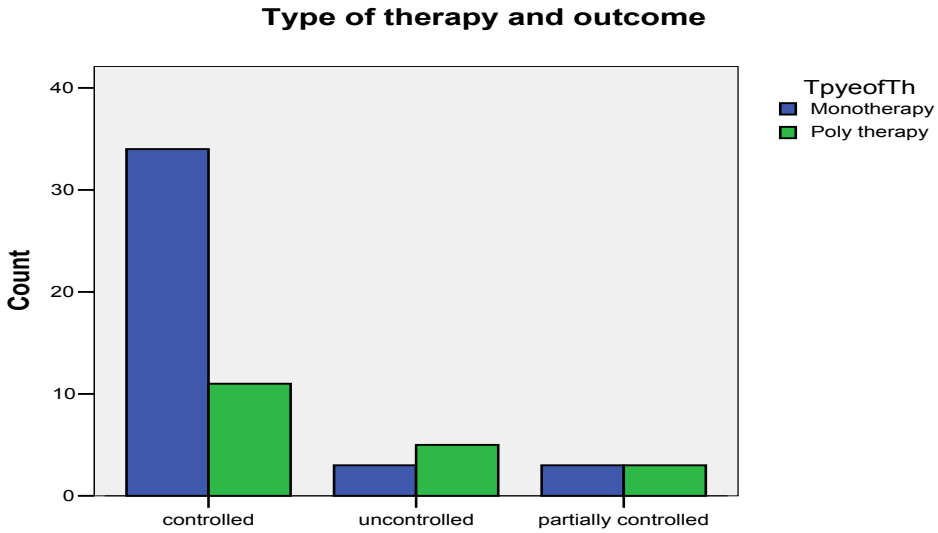

Fig . 7 sows type of therapy and outcome. P=0.06

Discussion

In the present study 59 epileptic patients were included, male were 29 and female were 30 constituting 49% and 51% respectively with male to female ratio approximately equal.

Study done by Rochester showed that the prevalence was slightly higher in male than female (Hauser, Annegers, and Kurland). Another study from Geneva and Island of Martinique showed similar findings to the above mentioned study (Jallon et al 1997,1999), this findings may be attributable to the higher frequency of some major etiologies of seizures in men (cerebrovascular disease, head trauma, alcohol-related seizures). Our results showed similar findings with slightly difference from the above

mentioned studies and these differences may be due to small sample size.

The current study showed that the most affected age group was 11-20 years. Our findings match with epidemiological study in developing countries done by Bharucha and Shorvon which revealed that the most affected age group was 10–20 year.

In this study 41% of the patients from Khartoum state. These findings may be due to Khartoum state is the most inhibited area in Sudan and many patients came to Khartoum seeking medical advice

In the present study 76% of the patients were seizure free after treated with antiepileptic drugs. International study showed that approximately 60-70% of people with new onset epilepsy become, and remain, seizure free with appropriate medication. (Kwan and Brodie).

The findings of this study revealed that 85% of the patients using carbamazepine as mono therapy were controlled. In two pivotal clinical trials in the older AEDs, carbamazepine was shown to be the most effective and tolerable AED (Brodie et al.;Marson et al.). Most studies have shown that newer AEDs have equivalent efficacy to that of carbamazepine, but several newer AEDs have superior tolerability including lamotrigine and gabapentin. (Brodie et al.).Our findings did not differ from the above two studies, hens 85% of our patients were treated with carbamazapine.

In this study 58% of the patients were controlled by monotherapy. Many studies investigated the poly therapy and mono therapy in epileptic patients showed that monotherapy is superior to polytherapy (Privitera), (Reynolds and Shorvon), (Schmidt),(Schmidt, Elger, and Holmes), (Sisodiya and Marini), (Guberman), (Mattson et al.),(Schneiderman) and (Kwan and Brodie).

In this study 41% of the patients were achieve seizure free status with first tried antiepileptic drug. This findings match with a study done by Kwan and Brodie, their findings showed that 47% of patients become seizure-free with the first AED tried, and another 13% achieve freedom from seizures with the second monotherapy trial. (Kwan and Brodie).

Conclusion

In the present study we conclude that, the most affected age group in patients with epilepsy was11 – 20 year, moreover 85% of the patients under monotherapy treatment were achieve seizure control.

Acknowledgement

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