

Rationale use of antiepileptic drugs in patients with epilepsy at a tertiary care hospital

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Abstract

Epileptic convulsions have negative consequences on patient's psychological and social life like relationship, education and employment. Seizure which are uncontrolled, are always associated with poor quality of life, physical and psychosocial morbidity, increased risk of sudden unexpected death. Hence, it is important and becomes mandatory to treat epilepsy with appropriate antiepileptic drugs (AEDs) as soon as the patient reports with more than one documented or witnessed seizure. Our purpose was to investigate the use of antiepileptic drugs in epilepsy, changes in prescription patterns, exposure to specific drugs, combination of drugs, and to quantify the use of antiepileptic drugs (AEDs) in epilepsy at a tertiary care hospital. A Total of 105 patients were recruited, majority were male and between 18-25 yrs. and belonged to upper lower class. 80% were diagnosed with GTCS. Majority were on monotherapy and phenytoin was most commonly used antiepileptic drug for the treatment of epilepsy. The drugs prescribed are mainly from older AEDs. Selection of AEDs is based on their known efficacy for specific seizure. Such studies was help in modifying the prescription guidelines as they have an important role in making rationale prescription and to see if it's being followed at tertiary care centres.

Keywords: Epilepsy, Antiepileptic drugs, Rational drug use, Drug utilization.

Introduction

Epilepsy affects 0.5 to 1% of the population that is around 50 million people worldwide.¹ It is considered as one of the most common neurological disorders characterized by spontaneously recurrent seizures. Epileptic seizure is transient, occurrence of signs and symptoms are due to abnormal excessive synchronous activity in brain.² Epileptic convulsions have negative consequences on patient's psychological and social life like relationship, education and employment. Seizure which are uncontrolled, are always associated with poor quality of life, physical and psychosocial morbidity, increased risk of sudden unexpected death. Hence, it is important and becomes mandatory to treat epilepsy with appropriate antiepileptic drugs (AEDs) as soon as the patient reports with more than one documented or witnessed seizure.³

The goal of treatment is always to maintain a normal life style of the patient through complete seizure control with no or very less side effects. The causes of the seizure may be idiopathic or could be due to trauma, infection, or because of the presence of malformation or mass lesion. Hence, there is progressive damage, hyper excitability and convulsions can occur.⁴ Management of epilepsy is difficult at rural and semi urban as they are still primitive due to unavailability of neurospecialists. A large number of antiepileptic drugs are presently available for the treatment of epilepsy and important to know the prescribing pattern of AEDs.

The interest in drug utilization studies began in the early 1960s,⁵ the importance has been increasing since then

as the increase in marketing of new drugs had improved drastically, while wide variation in the pattern of drug treatment, increased concern about adverse effects and regarding the cost of drugs.^{6,7}

Hence we intended to study the use of antiepileptic drugs in epilepsy, changes in prescription patterns, exposure to specific drugs, combination of drugs, and to quantify the use of antiepileptic drugs (AEDs) in epilepsy at a tertiary care hospital.

Materials and Methods

After obtaining ethical committee clearance the study was conducted at a tertiary care hospital in Bangalore. It was a prospective, observational study. We recruited patients with epilepsy visiting outpatient and inpatients department of General medicine. Patients above 18 years of both the genders receiving AEDs either conventional or newer drugs were included. Patients with major neurologic disabilities such as mental retardation, aphasia, or motor deficits, patient with secondary epilepsy, pregnant, lactating women were excluded from this study.

Data was collected using Case Record Form [CRF]. Demographic data was collected as per Kuppaswamy scale⁸ which is considered as standard method for analyzing socioeconomic status. Disease characteristics like type of epilepsy, age of onset and duration of seizure, time since last attack, frequency of seizures, family history of epilepsy, any co morbid conditions were noted. Treatment details like monotherapy/polytherapy, dose, and duration of treatment, alternative systems of medications, and treatment for co

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morbid conditions were noted. Adverse event profile was also recorded. All the investigational reports like biochemical, EEG, CT/MRI reports were collected if available.

Results

A Total of 105 patients were recruited in the study. We noticed male predominance of 60.9% (n=64) compared to females 39% (n=41). Majority 27% (n=29), of the patients were in the age group of 18 – 25 years (Fig. 1)

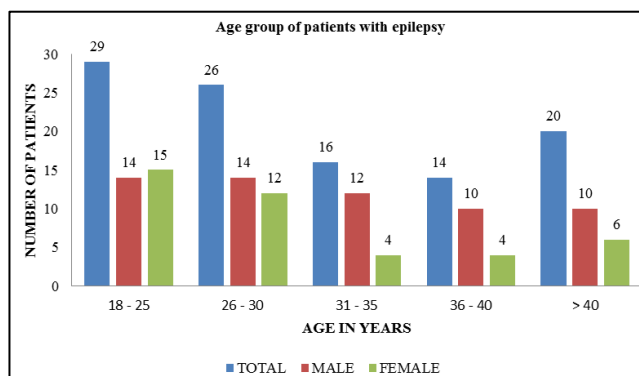


Fig. 1: Age group of patients with epilepsy

Among 105 patients, 62% (n=66) were from rural background, while 37% (n=39) were from urban background. 30% (n=32) of patients completed their high school studies. On assessing the occupation status 33% (n=35) of patients were skilled workers. (Fig. 2). As per modified Kuppuswamy scale,⁸ we analyzed the socio-economic status of these patients and observed that majority of them belonged to Upper lower class 46% (n=48). (Fig. 3)

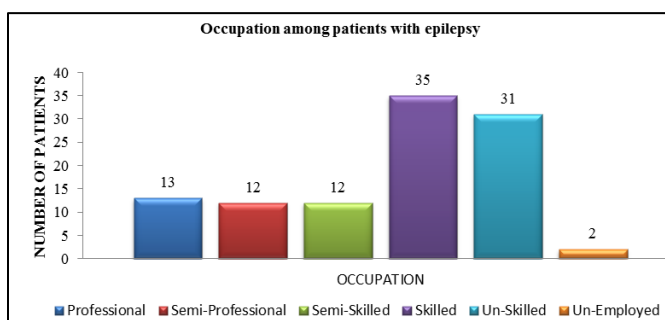


Fig. 2: Occupation of patients with epilepsy

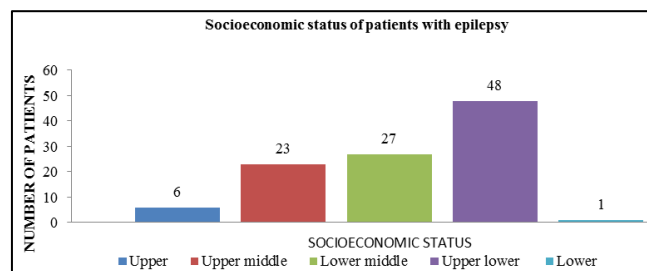


Fig. 3: Socio economic status of patients with epilepsy according to kuppuswamy scale

On assessing the habits of patients, it was found that majority were non smokers 77% (n=81) and non alcoholics 86% (n=90). Amongst the alcoholics, the following details were obtained regarding the alcohol consumption (Fig. 4)

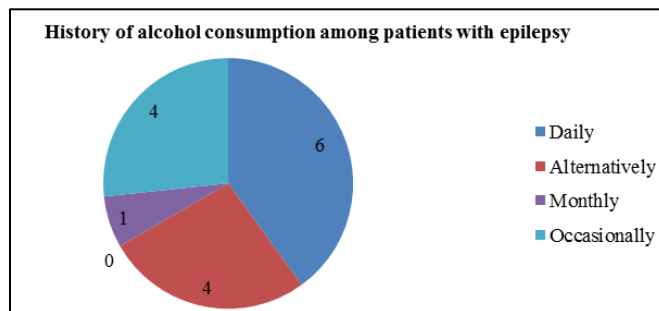


Fig. 4: History of seizures among patients with epilepsy

With connection to the initiation of AED treatment, 63% (n=66) of patients began treatment with AEDs immediately within 3months of attack (Table 1)

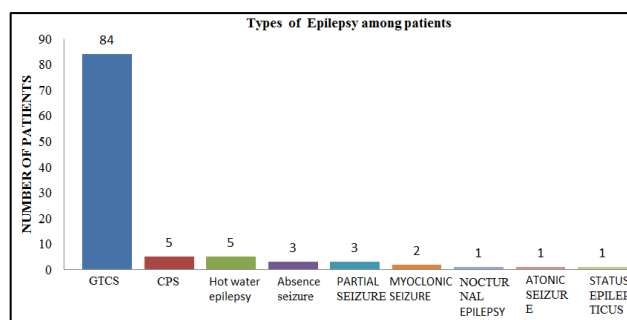


Fig. 5: Type of seizures among patients with epilepsy

Among the 105 patients, majority 80% (n=84) were diagnosed with GTCS (Generalized tonic clonic seizures). Other types of seizures were less common. (Fig. 5)

Table 1: Time taken to initiate treatment after first attack of seizure

S. No.	Time duration	Number of patients
1.	Within 3 months of attack	66
2.	3-6 months of attack	03
3.	6 months-1 year of attack	10
4.	1-2 years of attack	04
5.	2-3 years of attack	10
6.	>3 years of attack	12

On assessing the family history of seizures, 29% (n=31) reported with positive cases of epilepsy within their near/ dear family members and were on treatment / treated with AEDS. Among 105 patients under study, it was found that about 22% (n=23) of them had co morbid conditions like hypertension, diabetes mellitus. Most of them 87% (n=91) did not sustain any past head injury.

With regards to the treatment with antiepileptic drugs, majority of the patients 88% (n=92) received AED monotherapy, among which phenytoin 34% (n=37) was used more commonly prescribed, While 10% (n=11) received dual therapy and only 2% (n=2) received polytherapy. Maximum 78% (n=82) were prescribed with older AEDs, followed by 17% (n=18) received newer AEDs and 5% (n=5) received a combination of older and newer AEDs. (Fig. 6)

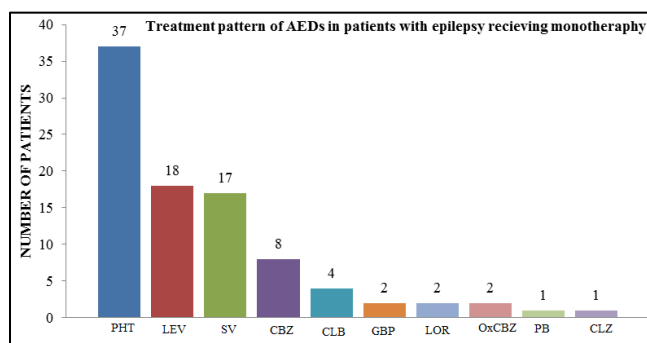


Fig. 6: Treatment pattern of AEDs in patients with epilepsy receiving monotherapy

Table 2: Dual and polytherapy drugs received in patients with epilepsy

S. No.	Aeds combination received	Number of patients
1.	Phenytoin+Clobazam	01
2.	Phenytoin+Lorazepam	01
3.	Phenobarbitone+Carbamazepine	01
4.	Levetiracetam+Phenytoin	02
5.	Levetiracetam+Clobazam	01
6.	Phenobarbitone+Levetiracetam	01
7.	Sodium valproate+Phenytoin	01
8.	Phenytoin+Carbamazepine	02
9.	Sodium valproate +Levetiracetam+ Clobazam+ Phenytoin	01
10.	Sodium valproate + Carbamazepine + Levetiracetam	01

Only 6% (n=6) of the patients complained of adverse effects due to AED therapy amongst which drowsiness was the commonest complain. EEG was done as a diagnostic tool in 90% (n=94) of the patients, on assessing the results 18% (n=19) patients had abnormal EEG. CT and MRI were done in 72% (n=76) of the patients amongst which 28% (n=21) were found to have abnormal CT and MRI.

Discussion

In our study, maximum patients receiving AEDs were males and belonged to age group between 18-25 years which was similar to the study done by Ranjana Gurumurthy and her colleagues⁹(2017). Maximum number of patients belonged to rural area in our study which was in contrast to study done by Abhik Sinha and his colleagues¹⁰ (2012) which had

urban predominance. This could be due to the location of our hospital which is towards the rural area where majority of the patients come from surrounding region. As per modified Kuppuswamy scale,⁸ when we analyzed the socio-economic status of these patients, found that majority of them belonged to upper lower class which is 46% (n=48) while study done by Abhik sinha¹⁰(2012) did not find any association.

On assessing the occupation status, we observed that majority of patients were under the category of skilled workers. This is in contrast to findings of Ranjana Gurumurthy and her colleagues⁹ (2017) where majority were unemployed. In a study done by Barbara A Dworetzky¹² (2018) most of the patients were non smokers which was similar to our findings. On assessing type of epilepsy, GTCS was the most frequent type of epilepsy seen in our study which is similar to findings of Nethmie Chandrarathna¹¹ (2019). With respect to family history of seizures, 29% [n=31] of patients reported with positive cases of epilepsy within their near/dear family members and were on treatment/treated with AEDs which was similar to the study done by Nilofer shams and his colleagues¹²(2018) who observed family history of seizures in 18.9% of cases. This is because if both parents /either of the parents are epileptic, then the risk of child getting epilepsy is more. On assessing co-morbid conditions of seizures, it was found that about 22% (n=23) of them had co-morbid conditions like hypertension,diabetic mellitus. Majority of the patients with epilepsy in our study 87% (n=91) did not sustain any past head injury which is in contrast to study done by Gizachew Kassahun¹³ (2018) and his colleagues,

On assessing treatment pattern of seizures, we found that, 34% (n=37) were prescribed phenytoin and prescribed as monotherapy. While, 10% (n=11) received dual therapy and only 2% (n=2) recieved polytherapy. Maximum 78% (n=82) were prescribed with older AEDs, followed by 17% (n=18) recieved newer AEDs and 5% (n=5) received a combination of older and newer AEDs. This is in contrast to findings of Ancy M Das¹⁴(2018) where 51% were on polytherapy and remaining on monotherapy.

On assessing EEG about 94 patients underwent EEG and found that 18% (n=19) patients had abnormal EEG. A study done by Panagariya A and his colleagues¹⁵(2019), found that EEG was abnormal in 58.9%, which was higher than our findings. On assessing the CT scan of patients with epilepsy, about 76 patients underwent CT and MRI amongst which 28% (n=21)were found to have abnormal CT and MRI.

Conclusion

Maximum patients were male and belonged to age group between 18-25years. Monotherapy was most frequent used in all type of epileptic seizures. The drugs prescribed are mainly from older AEDs. Generalized seizures were prominent and reported by majority of patients. Selection of AEDs is based on their known efficacy for specific seizure. Monotherapy with Phenytoin was most frequently used.

Such studies was help in modifying the prescription guidelines as they have an important role in making rationale prescription and to see if it's being followed at tertiary care centres.

Source of Funding

None.

Conflict of Interest

None.

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