A Hospital Based Observational Study to Evaluate the Prescription Pattern of Antiepileptic Drugs

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Abstract

Aim: The objective was to evaluate the prescription pattern of Antiepileptic drugs in a tertiary care hospital.

Methods: The present study was conducted by the Department of Pharmacology, Darbhanga Medical College, Darbhanga, Bihar, India. Adult outpatients who have been diagnosed to have epilepsy were identified and prescribing pattern was studied. Totally 120 prescriptions were collected randomly over a period of 4 months. Patient's demographic details, clinical diagnosis, type of epilepsy, type of AED used, drug dose and frequency were recorded. Average number of drugs per prescriptions was calculated. Prescription of all patients was entered in a preformed proforma and was analyzed using descriptive statistics.

Results: In the present study, out of 120 patients 70 patients were male and 50 patients were females. Epilepsy was more commonly seen in the patients of age group of 20-40 years. The analysis of the type of seizure showed that the most common type was partial seizures (60%) and the least common type was absence seizures (3.34%).

Conclusion: Older antiepileptic agents like carbamazepine, valproate, phenytoin are still the most commonly agents as monotherapy whereas newer ones like levetiracetam are mostly used as add on drug in cases of treatment failure with older drugs. Antiepileptic prescribing in this study population is in accordance to the standard treatment guidelines for epilepsy.

Keywords: Epilepsy, Anti-Epileptic Drug (AED), Monotherapy, Combined therapy, Prescribing pattern.

Introduction

Epilepsy is the most common neurological disorder characterised by recurrent seizures due to abnormal excessive synchronous neuronal activity in the brain. [1,2] Epilepsy affects 0.5 to 1% of the world's population (50 million people worldwide). 1 in 26 people will develop epilepsy in their lifetime. It is estimated that the overall prevalence of epilepsy in India is 5.59 – 10 per 1000. [3]

In most cases, epilepsy has no identifiable cause (idiopathic). Other underlying causes include genetic abnormality and

secondary to head injury, infections, ischemia, mass lesions or exposure to drugs and toxins. [1,4] Uncontrolled seizures are associated with physical and psychosocial morbidity, dependent behavior, poor quality of life and an increased risk of sudden unexpected death. Therefore treatment with antiepileptic drugs (AED) is mandatory once the patient is diagnosed to be a case of epilepsy. [5]

Antiepileptic drugs (AEDs) are the mainstay of the therapy for epilepsy, despite the development in recent years of new therapeutic options, such as brain stimulation or surgery. In the last years, several pharmaco epidemiological studies documented a growing trend in AED use, particularly in elderly patients. [6] The choice of most appropriate antiepileptic drug depends on type of seizures and age of patient. Seizure control may be achieved by monotherapy in about 80% of the patients, while other 20% requiring two to three AEDs. [7,8]

In spite of continued emergence of newer drugs like vigabatrin, gabapentin, lamotrigine, topiramate, levetiracetam, felbamate, oxcarbazepine, lacosamide, the response to antiepileptic therapy is still unpredictable and unsatisfactory. These newer AEDs are not found to be superior to major standard anticonvulsant drugs such as phenytoin, carbamazepine and sodium valproate. They are merely serving as "add-on" drugs. The physicians and even the neurologists are in a dilemma and vary from one another in selecting the most appropriate drug in a particular type of epilepsy. [9,10]

When choosing an AED, factors such as mechanism of action, ease of dosing, efficacy, long term adverse effects, neuropsychiatric profile, sedative burden, interaction with other medications, seizure types and other co-morbid conditions should be considered. [11,12] With the advent of newer antiepileptic agents, there have been major changes in prescribing pattern in epilepsy. By assessing the current pattern of prescription in the country based on the age, mono/polytherapy, use of newer AED's can ensure the rational use of medication and improve patient compliance. [13]

The objective was to evaluate the prescription pattern of Antiepileptic drugs in a tertiary care hospital, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India and to evaluate how rational is the prescription for various epilepsies.

Methods

The present study was conducted by the Department of Pharmacology, Darbhanga Medical college, Darbhanga, Bihar, India. Adult outpatients who have been diagnosed to have epilepsy were identified and prescribing pattern was studied. Approval was obtained from institutional ethical committee.

Inclusion Criteria

1. More than 15 years of age.

2. Both sex, male and female.

3. Idiopathic epilepsy.

Exclusion Criteria

1. Pregnant and lactating woman

Totally 120 prescriptions were collected randomly over a period of 4 months. Patients demographic details, clinical diagnosis, type of epilepsy, type of AED used, drug dose and frequency were recorded. Average number of drugs per prescriptions was calculated. Prescription of all patients was entered in a preformed proforma and was analyzed using descriptive statistics.

Statistical Analysis

An observational study was done. A descriptive statistical analysis was applied in the present study.

Results

Table 1: Age and Sex wise distribution

Age	Male	Female	Total
10-20 years	15	10	25
20-40 years	25	23	53
>40 years	30	17	42
Total	**70**	**50**	**120**

In the present study, out of 120 patients 70 patients were male and 50 patients were females. Epilepsy was more commonly seen in the patients of age group of 20-40 years. (Table 1)

Table 2: Type of seizure distribution in the study population

Type of seizures	N	%
Partial seizure	72	60
GTCS	20	16.66
Febrile	10	8.34
PGE	8	6.66
Myoclonic	6	5
Absence	4	3.34
Total	**120**	**100**

The analysis of the type of seizure showed that the most common type was partial seizures (60%) and the least common type was absence seizures (3.34%).

Table 3: Mode of therapy

Mode of therapy	N	%
Polytherapy	96	80
Monotherapy	24	20

Regarding the mode of therapy, majority of the patients were treated with monotherapy (79%). Polytherapy was given for 21% of the study population. Monotherapy was with conventional drugs carbamazepine, valproate and levetiracetam and polytherapy was given along with conventional drugs with newer drugs like levetiracetam, oxcarbazepine, lamotrigine and topiramate.

Discussion

The availability of numerous antiepileptic drugs (AEDs) have drastically improved the seizure control in patients with epilepsy. Nevertheless, further innovative research is required to substantiate the outward enhancement in tolerability presented by various newer AEDs. [14] The documentation of the most and least commonly used AEDs can be obtained from the studies involving epidemiological data analysis. The least frequently used AEDs include the drugs which freshly entered the market that have restricted acquaintance to patients or older drugs which were substituted by more efficacious and tolerable AEDs.

Prescription pattern studies play a key role in helping the healthcare system to understand, interpret and improve the prescription, administration and use of medications, whose principal aim is to facilitate rational use of drugs. Patient files and computer registries are widely used as instruments for collecting information on drug. [15] Epilepsy is a chronic condition which impairs quality of life due to physical, psychological and socioeconomic consequences. The prime requirements are a complete diagnosis, selection of optimal treatment, and counselling appropriate to individual needs. [16]

In this study, a total of 120 prescriptions of epilepsy were studied. By the analysis of sociodemographic data, it was found that percentage of male patients (58.34%) was

higher than percentage of female patients (41.66%). Male preponderance is seen in gender distribution in our study, which is similar to reports from other studies in countries of Asia. [17] Maximum patients in this study were of age group 20-40 years (44.16%) followed by >40 years (35%) and 10-20 years (20.84%). Bimodal distribution is seen with the incidence of epilepsy. With a peak incidence in first decade and then in elderly patients. [18] In India, most of the population is young, which might be the reason for missing peak in elderly patients in our study. [19]

In this study, 80% were treated with monotherapy and the analysis of prescriptions showed that the most commonly prescribed drug was carbamazepine (35%) followed by valproate (25%) and levetiracetam (22%). the other drugs prescribed were phenytoin (6%), phenobarbitone (5%) and the least commonly prescribed drugs were topiramate (1%) and lamotrigine (1%). According to the present study, the most common drug prescribed for GTCS was Valproate and that for partial seizures was carbamazepine. Meta-analysis of different studies and NICE guidelines showed that carbamazepine and lamotrigine are the most suitable first line options for individuals with partial onset seizures and levetiracetam can also be considered for the same. Results also support the use of sodium valproate as the first-line drug for individuals with generalised tonic-clonic seizures and lamotrigine and levetiracetam were suitable alternatives. [20]

Indian guidelines on epilepsy suggests carbamazepine, oxcarbamazepine, phenytoin, valproate and pheno-barbitone as first line agents for partial seizures and valproate, phenytoin, phenobarbitone and carbamazepine as first line drug for generalized tonic clonic seizures. [21,22]

Conclusion

Our study on prescription pattern of epilepsy in a tertiary care hospital showed

male preponderance with majority of the patients in age group 20-40 yrs. Epilepsy is a condition which needs prolonged treatment with antiepileptics and hence the appropriateness of therapy has a great impact on the quality of life of patients. Older antiepileptic agents like carbamazepine, valproate, phenytoin are still the most commonly agents as monotherapy whereas newer ones like levetiracetam are mostly used as add on drug in cases of treatment failure with older drugs. Antiepileptic prescribing in this study population is in accordance to the standard treatment guidelines for epilepsy. Further studies regarding the safety of these drugs in the study population can be done in future to ascertain these results.

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