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Prescribing Pattern of Antiepileptic Drugs in Adults in a South Indian Tertiary care Hospital

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ABSTRACT

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Our study describes the antiepileptic drugs (AEDs) utilization patterns in Kempegowda Institute of Medical Sciences (KIMS) Hospital and Research Center during January 2008 to May 2011. More research studies are required in this area due to lack of well-defined studies in India to conclude which is the most frequent class of epilepsy seen with the AED's used. We retrieved prescription data from patient profile forms and medical record department. We documented essential data in a Patient Profile Form, specifically designed for our study. A total of 108 patients data were recorded in the study. In our study we found that percentage of men suffering from epilepsy was 61.11% (66 nos.) and percentage of females was 38.88%. Our data shows that most of the patients 33 (30.55%) were from the age group of 40-50 years; followed by 28 (25.92%) of patients in the age group of 29-39 years and 16 (14.81%) patients were in the each age group of 18-28 years and 51-61 years. The most common epilepsy was Generalized Tonic-Clonic seizure 68 (62.96%) followed by Simple Partial Seizures 11 (10.18%) and Myoclonic Seizures 8 (7.40%) respectively. Most commonly prescribed drug concluded by our study is Phenobarbitone which accounts for 61 (56.41%) in both the genders, followed by Phenytoin 38 (35.18%) and Valproic acid (VA) usage was 24 (22.22%). Monotherapy is the type of therapy most frequently used in all types of seizures. The selection of AEDs is based on the efficacy for specific seizures. The most frequently prescribed AED in our study was Phenobarbital followed by Phenytoin, VA, Carbamazepine, and Lamotrigine due to the minimal adverse drug reaction of Phenobarbital in comparison with the other AEDs. We had found that as age progressed incidence of epilepsy increased.

INTRODUCTION

An epileptic seizure is a transient paroxysms of uncontrolled discharges in neurons causing an event that is discernible by the person experiencing the seizure and /or observer.[1] Epilepsy is a medical condition with recurrent, unprovoked seizures.[2,3,4] Epileptic seizures have many causes, including a genetic predisposition for certain seizures, head trauma, stroke, brain tumors, alcohol or drug withdrawal, and other conditions.[3,4] Epileptic seizures are divided into two main pathophysiologic groups—partial seizures and generalized seizures—by EEG recordings and clinical symptomatology.[5] It is estimated that there are 55, 00,000 persons with epilepsy in India, 20, 00,000 in USA and 3, 00,000 in UK.[6,7] A recent study in Bangalore, India, reported that the problem is nearly two and half times higher in rural areas as compared to urban areas, where they are not receiving any treatment.[6,8-17] Monotherapy is the usual dictum, but polytherapy is needed for patients with multiple seizure types or refractory disease.[18]Many controlled clinical trials have tested the efficacy of the older Anti-Epileptic Drugs (AEDs), (such as Phenobarbital and Phenytoin) and newer AEDs (such as Carbamazepine and Valproic acid) in controlling seizure frequency and their safety when prescribed in monotherapy or in combination. The interest in drug utilization studies began in the early 1960s, and its importance has increased since then because of increase in marketing of new drugs, wide variation in the pattern of drug prescribing and consumption, growing concern about delayed adverse effects and the increasing concern regarding the cost of drugs. [18] Hence we have made an attempt to study the prescribing pattern of AEDs in the treatment of different types of epilepsy in Medicine department in KIMS Hospital.

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METHODOLOGY

Study Site: This study was conducted in KIMS Hospital, Bangalore. It is a 1,000-bedded Tertiary Care Superspeciality Hospital, providing specialized health care services to all strata of people in and around Bangalore and also the rural population.

Study Design: This was a hospital based prospective and retrospective observational study conducted on in-patients to review the current prescribing pattern of antiepileptic drugs in patients with epilepsy admitted to medicine wards.

Sample Size: A total of 108 In-patients from different units of medicine department, who were on AEDs and fulfilled the inclusion criteria were selected and the rest of the patients were excluded from the study, and the data were collected in a well designed performa.

Study period: The retrospective study was conducted for a period of 36 months from January 2008 to December 2010. The prospective study was conducted for a period of six months from January 2011 to May 2011.

Study Criteria:

1) Inclusion Criteria All adult In-patients who were treated with AEDs admitted in different units of Medicine Department.

2) Exclusion Criteria All pregnant women who are on AEDs.

3) Source of Data: Data was collected using a well-designed patient data collection form.

1. By reviewing the patient's treatment chart, case sheets of the patients.

2. From the Medical Record Department of KIMS Hospital and Research Centre.

Preparation of data collection form: Information extracted from the case files will include: Demographic data, chief complaint, If he/she is a known case of epilepsy and etiology of seizure, habits (Smoker/Alcoholic/food habits), adverse effects, past medical history and past medication history, family history, laboratory details, diagnosis (provisional or confirmatory). Treatment: AEDs prescribed and prescription of the AEDs by generic names. The recommended dosages of the AEDs were obtained from the patient case files and discharge summary

(ii) Statistical method.

The data of each case file was collected and analyzed by a percentage method.

4) Study procedure: After the Institutional Ethics Committee approval a prospective and retrospective study was conducted in KIMS Hospital and research centre to study the prescribing patterns of AEDs in the treatment of epilepsy.

RESULTS

A retrospective and prospective study 108 epileptic patients was undertaken to study the prescribing pattern of AED.

The study included 108 epileptic patients on antiepileptics among whom 66 (61.1%) patients were found to be male and 42 (38.9%) patients were females.

Majority of the patients 33 (30.55%) were in the age group of 40-50 years, followed by 28 (25.92%) of 29-39 years and 16 (14.81%) patients were in both age group of 18-28 years and 51-61 years. About 15 (13.88%) patients were in the age group of 62 years and above. Our data shows that most of the patients were from the age group of 40-50 years and majority of the enrolled patients were male as in the other studies.

Fig. 1: Graphical representation of the distribution of 108 epileptic patients based on the gender.

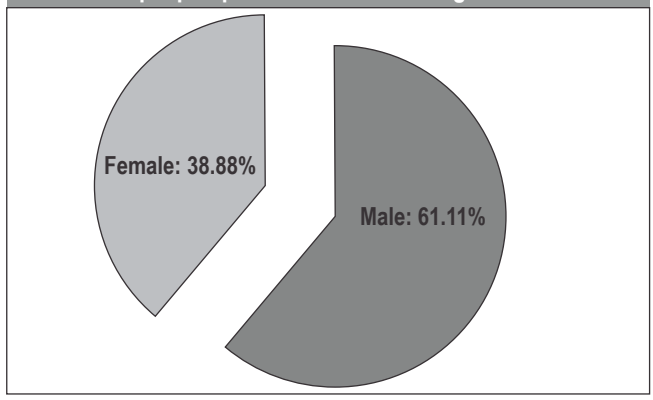
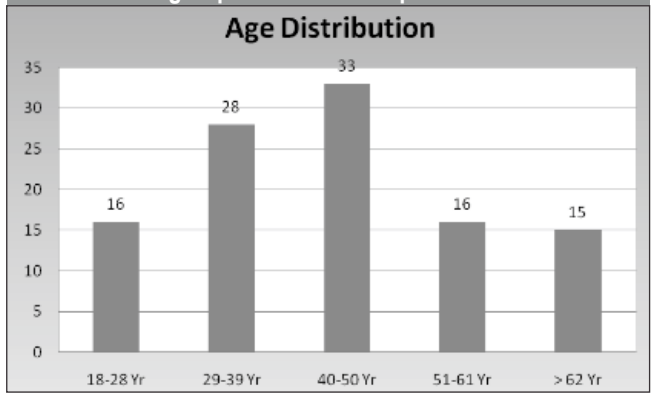


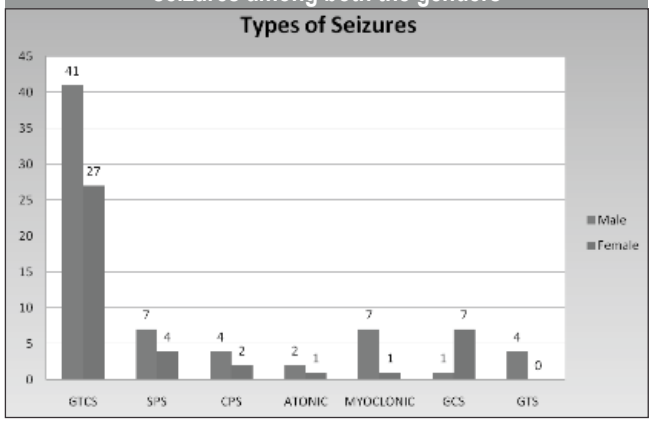
Fig. 2: Graphical representation of distribution of age group with number of patients.



Generalized Tonic-Clonic Seizures was found to be more prevalent 68 (62.96%) patients out of which 41 were males and 27 were female, followed by Simple Partial Seizures 11 (10.18%), 07 were males and 04 were females. Total numbers of Myoclonic Seizures were 08 (7.40%) of which 07 males and 01 female. Generalized Clonic Seizures 08 (7.40%) of which 01 was male and 07 female. In Complex Partial Seizures 06 (5.55%), 04 were male and 02 were female. Generalized Tonic Seizures of 04 (3.70%) patients, there were only male patients. In Atonic Seizures, a total of 03 (2.77%) patients of which 02 male and 01 female.

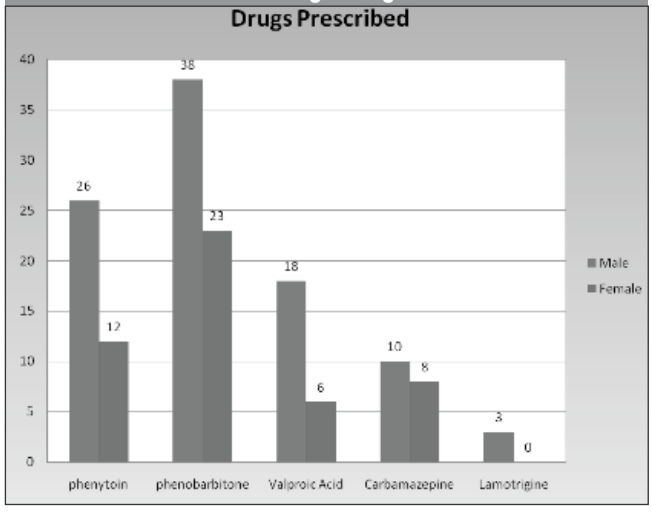
Among all the prescriptions including drugs given individually, and in combinations, the usage of Phenobarbitone accounts for 61 (56.41%) patients of which

Fig. 3: Graphical representation of distribution of types of seizures among both the genders



38 were male patients and 23 were female patients, followed by phenytoin 38 (35.18%) patients of whom 26 were male patients and 12 were females. VA usage was 24 (22.22%) patients of which 18 were males and 08 were females.

Fig. 4: Graphical representation of prescribing pattern of AEDs among both genders



Carbamazepine usage was 18 (16.85 %) patients of which, 10 were males and 08 were females. 03 (3%) of Lamotrigine, 03 patients were males and we did not have any female patients recorded.

Age distribution of the patients with Generalized Tonic Clonic Seizures among both the genders**:** Out of 68 patients of Generalized Tonic Clonic Seizures majority were in the age group of 29-39 years, 18 (26.47%) patients, 11 were males and 07 were females. 15 (22.05%) patients were in the age group of 40-50 years, 13 were males and 02 were females. 14 (20.58%) patients were in the age group of 18-28 years, 07 were males and 07 were females.11 (16.17%) patients were in the age group of 62 years and above, of which 04 were males and 07 were females. 10 (14.70%) were in the age group of 51-61 years, 06 were males and 04 females.

Age distribution of the patients with Simple Partial Seizures among both the genders: Out of 11 patients with simple partial seizures 04 (36.36%) patients were in the age group of 29-39 years and 51-61 years, followed by 03 (27.27%) patients were in the age group of 40-50years.

Age distribution of the patients with Complex Partial Seizures among both the genders: Out of 06 patients with complex seizures 03 (50%) patients were in the age group of 40-50 years, of which 02 were females and 01 was male, followed by 02 (33.33%) and 01 (16.66%) patient were in the age group of 29-39 years and 62 years and above respectively.

Age distribution of the patients with Atonic Seizures among both the genders: Out of 03 patients with 02 (66.66%) patients were in the age group of 40-50 years, followed by 01 (33.33%) patient was in the age group of 29-39 years.

Age distribution of the patients with Myoclonic Seizures among both the genders: Out of 8 patients with Myoclonic Seizures 04 (50%) patients were in the age group of 29-39 years, followed by 02 (25%) patients were in the age group of 40-50 years, 01 (12.5%) patient each were in the age group of 18-28 years and 51-61 years.

Age distribution of the patients with Generalized Clonic Seizures among both the genders: Out of 08 patients with Generalized Clonic Seizures 03 (37.5%) patients were in each of the age groups of 40-50years, and 62years above, followed by 01 (12.50%) patient each in the age group of 18-28 years, and 51-61 years.

Age distribution of the patients with Generalized Tonic Seizures among both the genders: Out of 04 patients with Generalized Tonic Seizures 03 (75%) patients were in the age group of 40-50 years, followed by 01(25%) patient was in the age group of 18-28 years.

DISCUSSION

With the rise in the incidence of epilepsy over the past years developments of newer AEDs have entered into the current scenario. The advances in the therapeutical aspects of epilepsy and the efficacy of monotherapy versus combination therapy have not been extensively studied. The beneficial effects of second generation drugs can also be studied conduction Drug utilization studies in this area. In our study we were able to make inferences with regard to the most commonly prescribed AED's, most common types epilepsy, the different age group distribution, and the gender most likely affected. A total of 108 epileptic patients were included. The incidence of epilepsy was found to be higher in male than in females and also the incidence of epilepsy increases with an

increase in age. This inference was supported by a study in London conducted by Aidan Neligan.[28] Another finding we observed in our study was that Phenobarbital was the most frequently prescribed drug followed by Phenytoin and VA. This drug utilization finding was supported by two other studies conducted by Radhakrishnan K., Nayak S.D. et al. in Kerala and a study conducted by R.K Gupta and Pooja S. Reddy. [29-30] The above studies justified the use of Phenobarbital because it was the equally effective as other AEDs when used in monotherapy, very less incidences of adverse drug reactions (ADR) and also the cost was least when pharmacoeconomics evaluation (Cost Minimization Analysis) was conducted. Our study had certain limitation, as our center is not a referral center for neurology; hence we had limited number of sample size for our study. Our study embarks to conduct a prospective study for about two years to access the quality of life of the epileptic patients, along with this we can also include monitoring of adverse effects of all AED's, long term medication adherence and thereby control of seizures, pharmacoeconomics evaluations and repeated hospitalization due to recurrent episodes of epilepsy.

CONCLUSION

Monotherapy is the type of therapy most frequently used in all types of seizures. The selection of AEDs is based on efficacy for specific seizure types and epileptic syndromes. Most commonly prescribed drug concluded by our study is Phenobarbitone followed by Phenytoin and VA usage We observed that most of the patients had Generalized Tonic Clonic Seizures followed by Simple Partial Seizures and Myoclonic Seizures. The percentage of men suffering from epilepsy was higher than females. Our data shows that most of the patients were from the age group of 40-50 years.

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