



TO IDENTIFY THE DISTRIBUTION AND NUMBER OF MOST COMMON ANTIEPILEPTIC DRUGS PRESCRIBED IN PAEDIATRIC PATIENTS -A PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT **Background** Epilepsy is a chronic non-communicable disease of the brain that affects around 50 million people worldwide. It is characterized by recurrent seizures, which are brief episodes of involuntary movement. Around 4-10% of children suffer at least one seizure in the first 16 years of life. The incidence is highest in children below 3 years of age with a decreasing frequency in older children. Management of epilepsy is primarily based on the use of antiepileptic drugs. The antiepileptic drugs are categorized into conventional drugs and newer drugs. Conventional Antiepileptic drugs are highly used as compared to new generation antiepileptic drugs because it is less expensive. In epilepsy, patients have to take medications for a long duration, sometimes lifelong. So, the patient is at risk for numerous drug interactions throughout. It is very important to study the drug prescription pattern in epileptic patients. **Objective:** To identify distribution and number of most common antiepileptic drugs prescribed in paediatric patients. **Method:** The present prospective observational study was conducted in and out patients of paediatric department at Chhattisgarh Institute of Medical Science (CIMS) Bilaspur (C.G.). The study period was from December 2021 to October 2022. **Result:** The distribution according to the number of anti-epileptic drugs prescribed showed that the majority of patients had prescribed a single drug (70.91%) followed by two drugs (25.45%) and three drugs (3.64%). The majority of patients had prescribed Sodium Valproate (45.45%) followed by Levetiracetam (10.90%) and Phenytoin (9.09%). **Conclusion:** In our study, therapeutic options for the management of childhood epilepsy have increased with the introduction and increasing utilization of new-generation antiepileptic drugs. Beside prescribing conventional antiepileptic drugs, lamotrigine, levetiracetam and oxcarbazepine are some of the most commonly prescribed new generation antiepileptic drugs. There is a need for up-to-date database studies to determine the prevalence of antiepileptic drugs in children. The prescribing of antiepileptic drugs seems to be in conformity with the overall recommendations of the guidelines on the treatment of epilepsy in children. Physicians should minimize the use of drugs and look into the rationality of each prescription.

KEYWORDS : Epilepsy, New generation antiepileptic drugs, Conventional antiepileptic drugs.

INTRODUCTION

According to the World Health Organization, "Epilepsy refers to a group of chronic brain conditions characterized by recurrent epileptic seizures". These seizures are the clinical manifestations of excessive and/or hyper-synchronous, usually self-limited, abnormal activity of neurons in the brain.^[1] Epilepsy is a chronic non-communicable disease of the brain that affects around 50 million people worldwide.^[2] It is characterized by recurrent seizures, which are brief episodes of involuntary movement. Around 4-10% of children suffer at least one seizure in the first 16 years of life. The incidence is highest in children below 3 years of age with a decreasing frequency in older children.^[3] Management of epilepsy is primarily based on the use of antiepileptic drugs. The antiepileptic drugs are categorized into conventional drugs and newer drugs. Conventional drugs include valproic acid, phenytoin, carbamazepine, phenobarbital and primidone. Newer drugs include lamotrigine, topiramate, levetiracetam, oxcarbazepine and gabapentine. Conventional drugs are highly used as compared to newer drug because it is less expensive.^[4] In epilepsy, patients have to take medications for a long duration, sometimes lifelong. So, the patient is at risk for numerous drug interactions throughout. It is very important to study the drug prescription pattern in epileptic patients.^[5]

Objective

To identify distribution and number of most common antiepileptic drugs prescribed in paediatric patients.

Material and Methods:

The present prospective observational study was conducted in and out patients of paediatric department at Chhattisgarh Institute of Medical Science (CIMS) Bilaspur (C.G.). The study period was from December 2021 to October 2022. The study sample was 110 patients.

Inclusion Criteria:

All in and out patients of both sex prescribed with anti-epileptic drug in Paediatric OPD and IPD.

Patients who were willing to participate in the study.

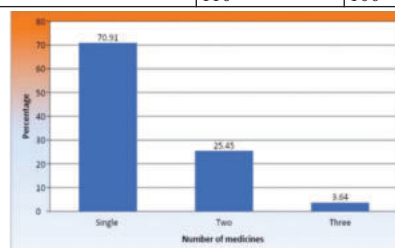
Exclusion Criteria:

Patients who were not willing to participate in the study.

RESULT:

Table 1. Distribution by number of anti-epileptic drugs prescription:

Number of medicines	Frequency	Percentage
Single	78	70.91
Two	28	25.45
Three	04	03.64
Total	110	100



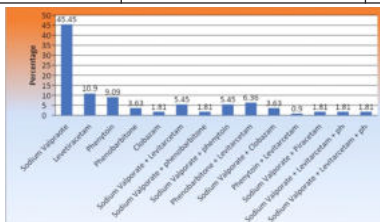
Graph 1. Distribution by number of anti-epileptic drugs prescription:

The majority of patients are taking single medicine (70.91%) followed by 2 medicines (25.45%) and 3 medicines (03.64%).

Table 2. Medicine prescription distribution among patients:

Drug	No. of Patients (n=110)	Percentage
Patient on Single Drug		
Sodium Valproate	50	45.45
Levetiracetam	12	10.90
Phenytoin	10	9.09
Phenobarbitone	04	3.63

Clobazam	02	1.81
Patient on Two Drugs		
Sodium Valproate + Levetiracetam	06	5.45
Sodium Valproate + phenobarbital	02	1.81
Sodium Valproate + phenytoin	06	5.45
Phenobarbital + Levetiracetam	07	6.36
Sodium Valproate + Clobazam	04	3.63
Phenytoin + Levetiracetam	01	0.90
Sodium Valproate + Piracetam	02	1.81
Patient on > 2 Drugs		
Sodium Valproate + Levetiracetam + phenobarbital	02	1.81
Sodium Valproate + Levetiracetam + phenytoin	02	1.81



Graph 2. Medicine prescription distribution among patients:

The above table shows distribution of patients according to medicines taken by the patients. It was observed that majority of patients are taking Sodium Valproate medicine (45.45%) followed by Levetiracetam (10.9%), Phenytoin (9.09%)

DISCUSSION

The distribution according to the number of anti-epileptic drugs prescribed showed that the majority of patients had prescribed a single drug (70.91%) followed by two drugs (25.45%) and three drugs (3.64%). Sundeep Kaushik et al in a study on incidence and patterns of adverse drug reactions of antiepileptic drugs in children aged 2-17 years observed the majority of patients 174 (87%) were on monotherapy whereas 26 (13%) were on polytherapy.^[6] Ramjan Shaik et al in a study observed for the long term management of seizures, monotherapy was seen in the majority of the patients 38(70.3%) followed by dual 12(22.3%) and triple therapy 4(7.4%).^[7] Both these studies positively support our findings in this study. The distribution according to anti-epileptic drugs prescribed showed that the majority of patients were prescribed Sodium Valproate (45.45%) followed by Levetiracetam (10.90%) and Phenytoin (9.09%). Zahra Khoshdel et al studied drug utilization study of antiepileptic drugs observed valproic acid is a highly prescribed drug which is about 43 (36.7%) followed by Carbamazepine 20 (17.1%), Lamotrigine 11 (9.4%), Phenobarbital 10 (7.7%), Topiramate 10 (8.5%), Phenytoin 8 (6.8%), Clobazam 5 (4.3%), Levetiracetam 5(4.3%), and Vigabatrin 3 (2.6%).^[8] Henry Daniel Raj T et al in a study of drug utilization patterns of anti-epileptic drugs and their adverse effects in a tertiary care hospital observed sodium valproate was the most frequently prescribed drug.^[9] This was similar to present study. In another study by Hansens Y et al, Sodium valproate was the most frequently prescribed drug.^[10] Sundeep Kaushik et al in a study on incidence and patterns of adverse drug reactions of antiepileptic drugs in children aged 2-17 years observed Valproate was the commonest drug prescribed as monotherapy in 84 (48.3%) followed by phenytoin in 62 (35.6%).^[11] Levetiracetam has been demonstrated effective as adjunctive therapy for refractory partial-onset seizures, primary generalized tonic-clonic seizures, and myoclonic seizures. It is a unique antiepileptic drug that has multiple mechanisms of action that differentiates it from conventional antiepileptic drugs. Levetiracetam seems to be effective and safe for the treatment of pediatric epilepsy with less evidence of adverse effects. Hence, Levetiracetam is the second most common

drug used in present study. Zhang LL et al found that levetiracetam had a comparable seizure-free rate.^[12] Regarding seizure-frequency reduction $\geq 50\%$ from baseline, levetiracetam also seemed equivalent to other antiepileptic drugs. In spite of patients treated with levetiracetam having a lower incidence of side effects compared with patients treated with other antiepileptic drugs, the difference between them was minute and not statistically significant ($P=0.22$). The study also shows no use of carbamazepine as its propensity to cause serious and life-threatening side effects like blood dyscrasias and bone marrow suppression.^[13] The difference between the two drugs in this study was very less and this is in congruence with other studies may be due to the limited sample size of our study. Moreover some of these studies have considered either pediatric or adult patients and not both.^[14,15]

Conclusion-

Therapeutic options for the management of childhood epilepsy have increased with the introduction and increasing utilization of new-generation antiepileptic drugs. Lamotrigine, levetiracetam and oxcarbazepine are some of the most commonly prescribed new-generation drugs. There is a need for up-to-date database studies to determine the prevalence of antiepileptic drugs in children. The prescribing of antiepileptic drugs seems to be in conformity with the overall recommendations of the guidelines on the treatment of epilepsy in children. Physicians should minimize the use of drugs and look into the rationality of each prescription. Treatment with antiepileptic drugs should be aimed and focused in such a way that controlling seizures with lesser side effects, possibly with monotherapy, allows the child to contribute actively to society with cost-effective treatment. Childhood epilepsy remains a challenge to treat; despite an increase in the number of antiepileptic drugs, children continue to have seizures.^[16] Guidelines should be set up to encourage minimizing the number of medications per prescription and use of each drug should be justified. Strategies are also required to support the continuous availability of supplies of antiepileptic drugs and to increase the range of anti-epilepsy treatment options in the country.

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