Research Article

A Prospective Observational Study to Evaluate the Prescription Pattern of Antiepileptic Drugs in Pediatric Patients

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Received: 15-10-2019; **Revised:** 22-11-2019; **Accepted:** 30-11-2019.

ABSTRACT

Epilepsy is a challenging medical problem in India. Prescription pattern evaluation provide information's like adequate dose, duration and the way it has to be taken. The study was done to get an insight of into the prescription pattern of anti-epileptic drugs (AEDs) in different type of epilepsy in pediatric populations by using WHO prescription indicators. The data was obtained prospectively from 50 patients with antiepileptic drugs over a period of 6 months in pediatric department of tertiary care hospital Among study population male patients (78%) were found to be higher than female. Patients with age group of 5-9 years were at high risk among 1-12years. Conventional AEDs were commonly used in the study than newer AEDs while sodium valproate was frequently used followed by lorazepam. Our study concluded that patients were treated with AEDs along with benzodiazepine while monotherapy and dual therapy were commonly used than poly therapy.

Keywords: Prescription pattern, antiepileptics drugs (AEDs), pediatric, epilepsy.

INTRODUCTION

Prescription pattern monitoring studies are drug utilization studies with the focus on prescribing and usage of drugs. They promote appropriate use of AEDs and reduction of abuse or misuse of monitored drugs.[1] Seizure is a transient occurrence of signs and symptoms resulting from abnormal excessive or synchronous neuronal activity in brain. Epilepsy is a disorder of the brain which is characterized by an enduring predisposition to generate seizure and by its Neurobiological, cognitive, psychological and social consequences.[2] In India epilepsy is a challenging medical problem with an annual incidence of 17% in total population.[3] The overall aim in treating epilepsy should be complete control of seizure, without causing untoward reactions due to the medications.

A large number of drugs are currently available for the treatment of epilepsy.[4] The choice of most appropriate AEDs depends on classification of seizure and patients demographics. Mono therapy is normally the first line treatment as it has less drug interaction, side effects, lower cost, better tolerability, and medication adherence. Despite advances in the treatment of epilepsy, 30-40% of patients remain uncontrolled on a single AED. [5] Conventional drugs like phenytoin, carbamazepine, valproic acid is commonly used as first line drugs. Drugs like gabapentin, lamotrigine, topiramate and tigabine are the newer ones and commonly used as alternative therapies with fewer side effects. [3,4] WHO estimates that at least 50% of all medicines are used irrationally. In developing countries 20-50% of health budget is spend on drugs and another health comorbidity.

WHO have developed a set of drug prescribing indicators to measure prescribing in primary care. It includes the average drug encounter per prescription, percentage of drugs prescribed by generic name, percentage of injection prescribed, percentage of antibiotic prescribed, and percentage of drug prescribed from essential drug list. (3) The main aim of the study is to evaluate the current prescription pattern of anti epileptic drugs in pediatric patients.

MATERIALS AND METHODS

Study population- 50 In-patients

Study design- prospective observational study

Study duration- 3 months

Study area- 600 bedded hospital, Perundurai, Erode

Inclusion criteria:

- All children's from 0-12years of age.
- Both male and female patients

Exclusion criteria:

- Patients with uncertain diagnosis
- Patients above 12 years of age
- Patients who were not willing to participate in the study.

It was a prospective study of 3month duration and designed to evaluate the prescription pattern of AEDs among 50 patients in tertiary care hospital. The study was conducted by taking approval from Institutional review board and study conducted based on the guidelines of declaration of Helsinki. In the present study the assessment of data analysis were done based on WHO prescription indicators, Indian pediatrics association guidelines (IPA), National guidelines and NICE clinical guidelines.

Statistical Analysis: sample size were calculated by using Rao software considering confidence interval 95%. Data analysis was done by using the statistical program prism 0.5 software. Assessment data was presented as percentage and in numerical value.

RESULTS AND DISCUSSION

Epilepsy usually begins in childhood, prompt, accurate diagnosis with appropriate social and medical management were optimize the situation. The main goal of antiepileptic drugs is to reduce the recurrence of seizure and to minimize the side effects. 50 patients prescribed with antiepileptic drugs were enrolled into the study based on the selection criteria. Among the study population male patients (78%) were found to be higher than that of females (22%). The age distribution of study shows that the maximum number of patients were in between 5-9 years, less number of patients belong to the age group of 10-12 years followed by 1-4 years were demonstrated in table 1.

Table 1: Demographic details of the patients

		No. of Patients (N=50)	Percentage
Gender	Female	11	22%
	Male	39	78%
Age	0-11 months	Nil	nil
	1-4 years	14	28%
	5-9 years	21	42%
	10-12years	15	30%

Figure 1, explains the distribution of patients based upon the type of seizure. Mostly patient suffers from simple seizure 42%, followed by afebrile seizure 16%, complex seizure 16%, generalized tonic clonic seizure were 14% and the least were break through seizure and status epilepticus that is 6%.

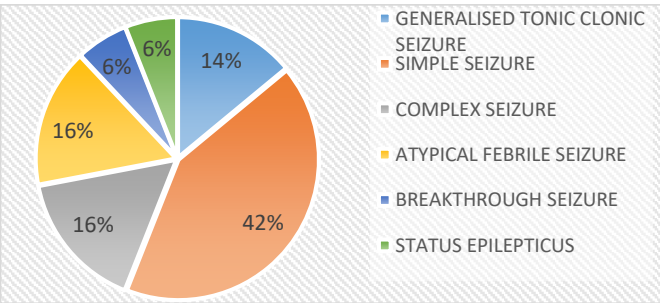

Figure 1: Distribution based on type of seizure

Most of the patients receiving dual therapy than monotherapy and triple therapy, out of 50 patients 19 were taking dual therapy,16 were taking mono and 13 were taking triple therapy and least were on polytherapy explained in table 2.

Table 2: Prescription pattern of AED in pediatric patients

Therapy	Drugs /Combinations	No.of Patients (n=50)
Monotherapy	Sodium valproate	12
	Levetiracetam	1
	Fosphenytoin	2
	Lorazepam	1
Dualtherapy	Sodium valproate+clobazam	2
	Sodium valproate+midazolam	3
	Lorazepam+carbamazepine	2
	Lorazepam+fosphenytoin	5
	Sodium valproate+lorazepam	3
	Lorazepam+clobazam	4
Tripletherapy	Phenytoin+midazolam+ carbamazepine Sodium valproate+levetiracetam+ lorazepam	3
		4
		2
	Lorazepam+fosphenytoin+ midazolam	2
	Lorazepam+levetiracetam+ clobanil	2
	Lorazepam+fosphenytoin+ sodium valproate	
Polytherapy	Oxacarbamazepine+lorazepam +levetiracetam+sodium valproate	2

In the present study conventional AEDs are commonly prescribed than newer AEDs, may be due to higher cost and unavailability of government supply. The study was recorded with more preference to monotherapy and dual therapy in order to avoid unnecessary hazards like drug allergy, side effects, drug interaction and economic burden. The drug like sodium valproate were most commonly used followed by lorazepam even in monotherapy and in combinations with dual or poly therapy due to it's broad spectrum activity. Sodium valproate was used to control most of generalized tonic clonic seizure and complex seizure. Among 50 patients, prescriptions were filled with AEDs and following drug related events were reported like nausea, dry mouth and head ache.

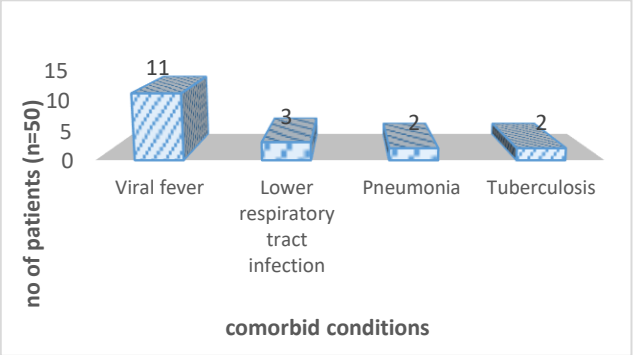

Figure 2: Comorbidities in epileptic patients

Figure 2, explains the distribution of patients based on their co-morbid condition. Out of 50 patients, 11 were admitted with viral fever, 3 with LRI followed by 2 cases of pneumonia and TB were found.

Table 3, describes briefly about the drug use pattern of AEDs, based on WHO prescription indicators which shows out of 50 sample size, each prescription contains 5 drugs, 62% of injections were encountered, antibiotics prescribed were 36%, drug prescribed based on generic name were 52% and 94% of drug was encountered based on essential drug list.

Table 3: Drug use pattern in epileptic patients with who prescribing indicators

Prescribing Indicators	Standard Derived or Ideal	Average/ Percentage
Average number of drugs per encounter	1.6-1.8	5
Percentage of encounters with an injection prescribed	13.4-24.1	62%
Percentage of encounters with an antibiotic prescribed	20-26.8	36%
Percentage of drugs prescribed by generic name	100	52%
Percentage of drugs prescribed by essential drug list	100	94%

CONCLUSION

Our study concluded that male children were more prone to seizure than female children. Based on age wise distribution, children between 5-9 years of age were admitted more with the complaints of seizure.

The drugs like sodium valproate followed by lorazepam was mostly prescribed in our study. The limitation of present study is conducted with smaller population and in limited period of time. Hence the study conducted with trending prescription pattern of AEDs among pediatric patients.

Acknowledgement: I thank the management and staffs of Nandha College of Pharmacy, erode, Tamilnadu who provided all the facilities and support for the successful completion of research.

REFERENCES

1. *Arvind Narwat, Vivek Sharma.* Prescription pattern of antiepileptic drugs in indoor patients at tertiary care hospital in Haryana, India. 7(3), 2018, 537-540.
2. Hirenkumar H. Dave1, Niyati A. Trivedi. Drug utilization pattern of antiepileptic agents among pediatric epilepsy at tertiary care teaching hospital of Gujarat: a cross sectional study. 7(8), 2018, 1606-1611.
3. Easwari P.V.S.N., Pavan Kumar B. and Lakshmi. P. An observational study on prescribing pattern of antiepileptic drugs at tertiary care hospital. 3(7), 2017, 223-226.
4. Oluwaseun Egunsola, Imti Choonara, Helen M Sammons. Anti-epileptic drug utilisation in paediatrics: a systematic review. 2017-000088,1-7.
5. Jincy George, Julia Jose, Divya Ashok Kulkarni, Ramesh Rajesh Pol. Evaluation of drug utilization and analysis of antiepileptic drugs at tertiary care teaching hospital in Karnataka,India. 9(3), 2016, 189-194.
6. Abla Albsoul-Younes, Lubna Gharaibeh, Amer A. Murtaja, Amira Masri, Ibrahim Alabbadi, and Abdelkarim A. Al-Qudah. Patterns of antiepileptic drugs use in epileptic pediatric patients in Jordan. 21(3), 2016 Jul, 264–267.
7. Julie Thampi, R.Ramanathan. A Prospective Study on Prescribing Pattern of Anti-Epileptic Drugs in Pediatric Patients. 6(4), Oct-Dec 2016, 28-33.
8. Landmark CJ1, Fossmark H, Larsson PG, Rytter E, Johannessen SI. Prescription patterns of antiepileptic drugs in patients with epilepsy in a nation-wide population. 95(1-2), 2011 Jun, 51-9.
9. Maity N and Niveditha Gangadhar. Trends in Utilization of Antiepileptic Drugs Among Pediatric Patients in a Tertiary Care Hospital. 2(2), 2011, 117-123.
10. Banerjee TK, Ray BK, Das SK. A Longitudinal study of epilepsy in Kolkata, India. 51(12), 2010, 2384-91.

Source of Support: Nil, **Conflict of Interest:** None.