



Original Article

Drug Utilisation Pattern of Anti-Epileptic Agents among Paediatric Patients with Epilepsy

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ABSTRACT

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Background: The objectives of the study is to find out the current trends in prescribing patterns of anti-epileptic drugs (AEDs) in the treatment of epilepsy in pediatrics department ward at Navodaya Medical College Hospital & Research Centre, Raichur, Karnataka. Patients data such as type of epilepsy, number of AEDs prescribed, dose and duration of prescription, duration of hospital stay, adverse drug events if any during the therapy and whether drug monitoring was carried out or not was collected from various data sources such as case sheets, out-patient cards and laboratory reports. DUE study of epilepsy involves the evaluation of prescriptions. **Results:** Results revealed that there is deviation in the line of treatment with respect to anti-epileptics use as per cms.gov guidelines (Anticonvulsant medications: Use in Pediatric Patients cms.gov guidelines in the treatment of paediatric epilepsy for the better therapeutic outcome). **Conclusion:** The present study conclusively suggests the deviation in the line of epileptic treatment and the need to improve the awareness among the physicians to use the recommendations of anticonvulsant medications: Use in Pediatric Patients cms.gov guidelines in the treatment of paediatric epilepsy for the better therapeutic outcome.

Keywords: Anti-epileptic drugs, DUE, Paediatrics, epilepsy.

1. INTRODUCTION

Epilepsy is one of the common and important neurological disorders characterized by seizures and is responsible for substantial morbidity and mortality. Children develop epilepsy as a result of their brain being injured in some way. This could be due to a severe head injury, difficulties at birth, or an infection which affects the brain such as meningitis [1, 2]. Worldwide, prevalence of the active epilepsy ranges from 4 to 5 per 1000 population and in India, the prevalence rate of epilepsy ranges between 4.15 and 7.03

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per 1000 population. In newly diagnosed cases, 60% are partial and 40% generalized seizures. The incidence of epilepsy is quite high in pediatric population but the same decreases as children age. Over 10 million children worldwide are believed to have epilepsy. 30% of the children with seizures will have their first episode before the age of 4 years and more than half of the children with epilepsy will have more than one type of seizure [3].

There are several anti-epileptic drugs (AEDs) available and are broadly categorized as conventional AEDs and new AEDs. The desired outcome of AED therapy in patients is seizure-free throughout the rest of their lives, and it depends on many factors such as identification of underlying cause, type of seizure and selection of appropriate AEDs. Initial treatment approaches focus on drug therapy, either monotherapy or adjunctive therapy. Treating children with epilepsy differs from treating adults because cognitive effects of AEDs may be more serious than occasional seizures. Children with seizure disorders require prolonged antiepileptic drug (AED) therapy for at least two seizure-free years. The ultimate goal of patient management is to choose the therapeutic option that provides the best chance of improving the patient’s quality of life. As limited studies have been carried in pediatric neurological disorders, it is important to study the drugs prescribed for the management of neurological diseases in children [3, 4].

DRUG USE EVALUATION (DUE)

Without the knowledge of how drugs are being prescribed and used, it is difficult to initiate discussion on rationale drug use and to suggest measures to change prescribing habits for the better management. Information on the past performance of prescribers is the linchpin of any auditing system [5, 6].

Drug utilization studies are powerful exploratory tools to ascertain the role of drugs in society. They create a sound socio-medical and health economic basis for health care decision making. It is one of the most effective methods to assess the prescribing pattern of physicians. Drug utilization studies play a pivotal role in directing towards rational drug prescribing, thus minimizing the possibilities of adverse effects and helping improvement of patient compliance and resultant quality of life [7].

Epilepsy is one of the most common neurological disorders characterized by recurrent episodic paroxysmal involuntary clinical events associated with abnormal electrical activity from the neurons⁸. Without the knowledge of how drugs are being prescribed and used, it is difficult to initiate discussion on rationale drug use and to suggest measures to change prescribing habits for the better management [8]. Therefore, the present study was undertaken to get an overview of the current trends in prescribing patterns of anti-epileptic drugs (AEDs) in the treatment of epilepsy in pediatrics department [3].

OBJECTIVES OF STUDY: The proposed study “DRUG UTILISATION PATTERN OF ANTI-EPILEPTIC

AGENTS AMONG PAEDIATRIC PATIENTS WITH EPILEPSY” is planned with the below mentioned specific objectives [9-15]:

1. To study about anti epileptic’s drugs utilization pattern.
2. To find out medication adherence in children with epilepsy.
3. To identify medication related problems such as misuse/overuse/inappropriate use of drugs, ADRs and drug interactions.
4. To ensure rational prescribing of drugs and thereby reducing treatment costs.

2. MATERIALS AND METHODS

Inclusion Criteria:

- All pediatric patients of age between 1-18 years and who were on antiepileptic drugs in pediatric in-patient and out-patient department of NMCH

Exclusion Criteria:

- Patients above the age of 18 years were excluded from the study.
- Patients whose parents are not willing to participate.

METHODS OF DATA COLLECTION:

Source of data: Patients data such as type of epilepsy, number of AEDs prescribed, dose and duration of prescription, duration of hospital stay, adverse drug events if any during the therapy and whether drug monitoring was carried out or not was collected from various data sources such as case sheets, out-patient cards and laboratory reports. The follow-up of patients was done based on the next appointment given to the patient by the treating clinician.

Operational Modality: The prospective study was carried out for a period of six months from November 2018 to April 2019. I reviewed case records of eligible patients on daily basis till the patient get discharged from the hospital and follow up will be made for in-patient epilepsy patients. DUE study of epilepsy involves the evaluation of prescriptions during the course of therapy in Pediatrics medicine department of Navodaya Medical College Hospital & Research Centre, Raichur.

3. RESULTS

Table 1: Route of drug administration

Routes of administration	Number of drugs	Percentage
IV	16	29%
Oral	21	38%
Both	18	32%

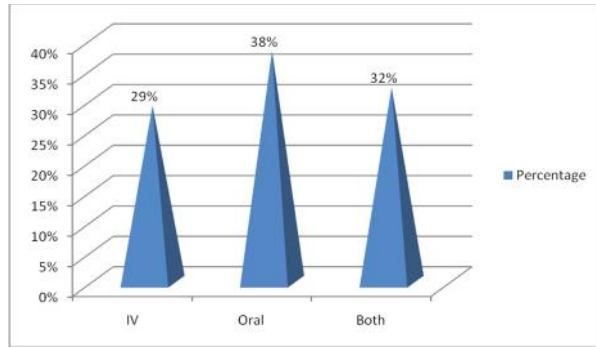


Fig 1: Route of drug administration

Table 2: Pharmacotherapy Prescribed to the patients

Types of seizure	AED Prescribed	Dose
Breakthrough seizure	Inj. Sodium Valproate	20mg/kg/day
Myoclonic seizure	Inj. Sodium Valproate	480mg/kg IV stat @ 20mg/kg maintenance dose
Partial seizure	Syp. Sodium valproate Levicitracetam	5ml 250mg IV
Atypical febrile seizure	Tab. Clobazam	5mg
Simple febrile seizures	Tab. Clobazam Tab. Clonazepam Levicitracetam	0.7mg/kg/day 0.5mg 250mg IV

Table 3: Total number of AEDs prescribed

Drugs	Number of drugs prescribed
Sodium Valproate	8
Clobazam	16
Levicitracetam	12
Clonazepam	1

Table 4: Appropriateness of therapy in study population according to Anticonvulsant medications: Use in Pediatric Patients cms.gov guidelines.

Types of seizures	No. of patients with deviation in therapy (n=30)	Types of drugs prescribed	Therapy according to guidelines	Percentage of deviation
Breakthrough seizure	01	Inj.Sodium Valproate	Carbamazepine	100%
Myoclonic seizure	05	Inj.Sodium Valproate	Levetiracetam 500mg	62%
Partial seizure	10	Syp.Sodium valproate	Carbamazepine 100mg BD Oxcarbazepine 4mg/kg BD Topiramate ER 25mg hs	55%
Atypical febrile seizure	00	Tab. Clobazam	Benzodiazepines Rectal Diazepam	00
Simple febrile seizures	00	Tab.Clobazam Tab.Clonazepam	Benzodiazepines Rectal_Diazepam	00

4. DISCUSSION

During the study period of 6 months, 30 pediatric patients were recruited for the study. In the study, monotherapy was the most common regimen used. In a study conducted by

Egunsola O *et al*, monotherapy was used in 58%–94% of patients. The study revealed that out of 37 drugs, 29% of drugs had given in IV route while 38% by oral route and 32% by both iv and oral routes. In a study conducted by Shaik *et al*, 60% of drugs were given in IV route, 5% by oral route and 45% by both oral and iv routes. Details of therapy revealed that Clobazam was prescribed for maximum number of patients, followed by Levicitracetam and Sodium valproate. Clonazepam was the least preferred drug in the study. In the study conducted by Dave HH *et al*, Carbamazepine was the most commonly prescribed drug followed by sodium valproate.

Partial seizures were the most commonly observed seizure in the present study followed by myoclonic seizures. Maity N *et al*, carried out a study on Trends in Utilization of Antiepileptic Drugs Among Pediatric Patients in a Tertiary Care Hospital and found that, of the total 210 patients, 110 (52.4%) were having partial seizures and 100 (47.6%) had generalized seizures. As per the guidelines of treatment of epilepsy cms.gov carbamazepine and oxcarbazepine are recommended for partial seizures. In this study syrup sodium valproate was prescribed for partial seizures. The febrile seizure was treated with benzodiazepines as per the guidelines.

5. CONCLUSION

Deviation in the line of treatment with respect to anti-epileptics use has been observed as per cms.gov guidelines (Anticonvulsant medications: Use in Pediatric Patients cms.gov guidelines in the treatment of paediatric epilepsy for the better therapeutic outcome). Among 30 patients, deviation in the line of treatment has been observed in a total of 16 patients (53.3%). Higher deviation was observed for the treatment of partial seizures. Thus, the present study conclusively suggests the deviation in the line of epileptic treatment and the need to improve the awareness among the physicians to use the recommendations of anticonvulsant medications.

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