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Drug Discharge and Gauging Of Anti Epileptic Drugs

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ABSTRACT

Background:Epilepsy is the second most common chronic neurological condition. Epilepsy means a tendency to have seizures i.e. recurrent unprovoked seizures. A seizure is a clinical events caused by an abnormal electrical discharge in brain (or) a transient disturbance of cerebral function due to an abnormal paroxysmal neuronal discharge in brain.Aims and Objectives: The main aim of the study is drug utilization evaluation of antiepileptic drugs among patients of different age groups in jayabharath hospital,Andhra Pradesh,. To assess drug utilization pattern of anti-epileptic drugs. METHODOLOGY:A prospective observational questionnaire based cross sectional study in 300 patients of various departments receiving atleastone AEDs. The subjects were included in the study only after they met the criteria for the study and after properly filling a informed consent form. The data was obtained by a questionnaire format and it is evaluated for utilization patterns, medication adherence. The cost of AEDs were calculated to evaluate total costs on each drug.RESULTS:Out of 300 patients, 210 were male and 90 were female. The age group 11- 20 years were found prominent with epilepsy. The average number of AEDs per patient was found to be 1.54. Among all the drugs prescribed phenytoin was the most common drug prescribed 223 (47.89%) for the treatment, followed by lorazepam 89 (19.09 %) and sodium valproate 40 (8.73 %). CONCLUSION:The use of AEDs was almost found to be rational. In this hospital the most commonly prescribed AEDs was phenytoin followed by lorazepam and in combinational therapy it was phenytoin + lorazepam. The utilization of drugs was obtained from the patients using questionnaire format and they showed high utilization of drugs.

Key words:
Epilepsy,
Utilization, Evaluation,
Antiepileptic.

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INTRODUCTION

EPILEPSY

Epilepsy is the second most basic interminable neurological condition[1]. Epilepsy implies a propensity to have seizures for example repetitive unjustifiable seizures. A seizure is a clinical occasions brought about by an irregular electrical release in mind (or) a transient unsettling influence of cerebral capacity because of an anomalous paroxysmal neuronal release in cerebrum[2]. The repeat rate after first seizure approaches 70 % during first year, most intermittent attacks happening inside month or two of first attack[3]. Epilepsy is an incessant neurological issue that influences individuals all things considered in all ages. Around 50 million individuals worldwide have epilepsy two of first attack3.Epilepsy is an incessant neurological issue that influences individuals of all ages. Around 50 million individuals worldwide have epilepsy. About 90 % of the individuals with epilepsy are found in developing regions. Epilepsy reacts to treatment 70 % of the time. Regardless of this, roughly 75 % of influenced individuals in developing regions don't get the treatment they need. Individuals with epilepsy and their families experience the ill effects of disgrace and segregation in numerous parts of the world[3] and 4.

Antiepileptic drugs for different type of seizures			
Seizure type	**First line treatment**	**Second line treatment**	
Partial seizures	**Carbamazepine,**	**Topiramate,**	**Valproate,**
	Oxcarbazepine and	**Pregabalin,**	**Phenytoin,**
	Levetiracetam	**Gabapentin,**	**Lacosamide**
			And

		Esclicarbazepine
Generalized Seizures	**Valproic acid**	**Lamotrigine**
Tonic clonic	**Carbamazepine**	**Clobazam**
Tonic	**Lamotrigine**	**Phenobarbital**
Clonic	**Ethosuximide**	**Clonazepam**
Absence	**Sodium valproic acid**	**Lamotrigine**
	Sodium valproate,	**Lamotrigine,**
Atypical absences	**Clonazepam and**	**Carbamazepine,**
Atonic	**Clobazam**	**Phenytoin,**
		Acetazolamide,
		Topiramate and
		Levetiracetam
Myoclonic	**Sodium valproate and**	**Acetazolamide and**
	Clonazepam	**Topiramate**

ANTI-EPILEPTIC DRUGS (AEDs) Classification

1.	Barbiturate	-	Phenobarbitone
2.	Deoxybarbiturate	-	Primidone
3.	Hydantoin	-	Phenytoin and Fosphenytoin
4.	Iminostilbene	-	Carbamazepine and Oxcarbazepine
5.	Succinimide	-	Ethosuximide
6.	Aliphatic carboxylic acid	-	Valproic acid
7.	Benzodiazepines	-	Clonazepam, Diazepam, Lorazepam and Clobazam
8.	Phenyltriazine	-	Lamotrigine
9.	Cyclic GABA analogues	-	Gabapentin and Pregabalin
10.	Newer drugs	-	Topiramate, Zonisamide, Levetiracetam,
			Vigabatrin, Tiagabine and Lacosamide[7, 8&9]

DRUG UTILIZATION PATTERN

The AED is prescribed for patients who are included in the study. Utilization of drugs by patient gets affected by various reasons like age, duration of therapy, expenditure on drugs etc. Hence it is important to know the extent of utilization of drugs by the patient for which a questionnaire format is prepared. Questionnaire for utilization pattern includes ten questions for which answers are obtained from the patient directly or patients' representatives. For every question each point is given so at the end of completing the format the patient will be given a score from 1 to 10 which decides the level of utilization of drugs by patient. Total scores can range from 1 to 10 and have been categorized into three levels of utilization for most utilization (score = 9 -10), modest utilization (score 7 to < 9), and slightest utilization (score < 7).

DRUG UTILIZATION PATTERN

The AED is recommended for patients who are included for the examination. Utilization of medications by patients gets influenced by different reasons like age, duration of treatment, consumption on drugs and so on. Thus it is imperative to know the degree of use of medications by the patient for which a questionnaire design is prepared.. Questionnaire for utilization pattern includes ten questions for which answers are obtained from the patient directly or patients' representatives. For every question each point is given so at the end of completing the format the patient will be given a score from 1 to 10 which decides the level of utilization of drugs by patient. Total scores can range from 1 to 10 and have been categorized into three levels of utilization for most utilization (score = 9 -10), modest utilization (score 7 to < 9), and slightest utilization (score < 7).

STUDY SITE

The study was conducted at MNR Medical Hospital, Sangareddy. It is a 560 bed's Tertiary care hospital, providing specialized health care services to all people in and around the area.

STUDY DESIGN

A questionnaire based prospective observational and cross-sectional study.

STUDY PARTICIPANTS

The subjects included in the study are 300 patients of both sexes receiving at least one AEDs in various departments. This was eligible for in patients during the entire study period. Patients who met the study protocol criteria were included and the required data were collected for in patients from case sheets and prescriptions, respectively.

SELECTION OF SUBJECTS

Inclusion criteria

- Patients of any age group including both sexes.
- Patients receiving at least one antiepileptic drug[11].

Exclusion criteria

- Pregnant women and neonates were excluded.
- Patients with liver complications are not involved in the study.

SOURCE OF DATA

Data was collected using a well-designed patient data collection form and by reviewing the patient's case sheets, treatment charts and also by questionnaire format.

Preparation of data collection form

Information extracted from the case files included.

Demographic data, chief complaints, if he/she is a known case of epilepsy, habits (smoker, alcoholic, toddy), past medical history, past medication history, family history, laboratory tests and diagnosis (provisional and confirmatory).

Treatment: AEDs prescribed and prescription of AEDs by generic names. The recommended dosages of the AEDs were obtained from patient case profiles and discharge summary. The data regarding the brand of the drug used by patient is obtained. The utilization of drugs by patient is obtained by preparing a questionnaire format from which we can evaluate the level of utilization of drugs by patient.

STUDY PROCEDURE

After the approval from the institutional ethics committee, the study will be conducted by preparing a standard data collection form and also designing a questionnaire format for medication adherence to obtain specific information. Basic demographic information will be extracted from the case sheets and prescriptions and noted in data collection forms which contain the following information

Socio-demographic variables

- Age
- Sex
- Social status
- Marital status
- Number of AEDs used
- AEDs dose at initial visit and at every follow up
- AEDs dose range
- Changes in seizure frequency[23].

AEDS utilization pattern include

- Number of AEDs prescribed per patient during study.
- Class of AEDs more prescribed.
- Number of AEDs prescribed using generic or brand names.
- Condition for usage of drug.
- Dosage regimen and frequency.

RESULTS AND DISCUSSION

The drug utilization evaluation was done from January to June 2017 in Government semi funds trustee hospital, Sangareddy. 200 patients were included in the prospective observational study. The demographic data revealed that number of male and female patients were 70% (210) and 30% (90), respectively.

Patient Demographic Data

Total no of Patients in this Study=300

Ratio Male/Female

a. No. Of Male Patients=210(70%)

a) No. Of Female Patients=90 (30%)

Ratio = Male/Female=210/90=2.333

TABLE NO. 2: Distribution of age groups in patients
Distribution of Age Groups

Age in years	Total (%)	Male (%)	Female (%)
1-10	6(2)	3 (1.42)	3 (3.33)
11-20	59 (19.6)	32 (15)	2 7(30)
21-30	75 (25)	53 (25)	22 (25)
31-40	55 (18.3)	43 (20.71)	12 (13.33)
41-50	39 (13)	27 (12.85)	12 (13.33)
51-60	42 (14)	30 (14.28)	12 (13.33)
61–70	18 (6)	16 (7.85)	2 (1.66)
71-80	6 (2)	6 (2.85)	0 (0)

Categorization of different patients prescribed with AED:

TABLE NO. 3: Overall AEDs utilization

Therapy	Total (N = 300)	%
Monotherapy	163	54.5
Dual therapy	116	38.5
Triple therapy	19	6.5
Polytherapy	2	0.5

AVERAGE NUMBER OF AEDS PRESCRIBED PER PATIENT

It is obtained by using a formula that is Avg no. of AEDs prescribed/patient=464 / 300=1.54

AED USE PROFILE

From the 300 prescriptions analyzed, phenytoin was the most common drug prescribed 223 (47.89%) for the treatment, followed by lorazepam 89 (19.09%) and sodium valproate 40 (8.73%), levetiracetam 33 (7.11 %), diazepam 24 (5.17%), clonazepam 19 (4.20 %), carbamazepine 16 (3.55%), clobazam 8(1.61%), topiramate 6 (1.29%), phenobarbitone 6 (1.29 %).

TABLE NO. 4: Graphical representation age specific distribution of AEDs

Age in years	PHY	LOR	DIA	LEVE	VAL	CLON	PHB	CBZ	TOP	CLOB
1 - 10	6	2	1	0	1	0	0	0	0	1
11-20	42	15	3	3	18	1	5	5	0	3
21-30	49	21	3	15	9	11	0	5	0	2
31-40	42	21	5	6	3	6	0	4	5	0
41-50	29	13	6	5	5	0	0	1	1	2
51-60	32	13	5	2	4	1	1	1	0	0
61-70	18	4	1	1	0	0	0	0	0	0
71-80	4	0	0	1	0	0	0	0	0	0

TABLE NO. 5: Gender specific distribution of AEDs

Drugs	Total	Percentage	Male	%	Female	%
Phenytoin	223	47.89	157	49.52	66	44.44
Lorazepam	89	19.09	60	19.04	29	19.99
Diazepam	24	5.17	15	4.76	9	6.06
Levetiracetam	33	7.11	24	7.61	9	6.06
Sodium valproate	40	8.73	19	6.19	21	14.14
Clonazepam	19	4.2	12	3.8	10	5.05
Phenobarbitone	6	1.29	5	1.42	1	1.01
Carbamazepine	16	3.55	13	4.28	3	2.02
Topiramate	6	1.29	6	1.9	0	0
Clobazam	8	1.61	6	1.42	2	2.02

MOST FREQUENT COMBINATIONS OF AEDS

In epileptic patients most frequently prescribed monotherapy drugs are phenytoin followed by lorazepam. In dual combinations of AEDs were lorazepam/phenytoin (11.4%) and levetiracetam/phenytoin (10.5%). In triple AEDs regimen most common AEDs combination was levetriacetam/lorazepam/clonazepam.

TABLE NO. 6: specific distribution of mono therapy AEDs

DRUGS	TOTAL	%
Phenytoin	121	75.7
Diazepam	1	0.93
Levetiracetam	3	1.86
Clonazam	1	0.93
Carbamazepine	1	1.86
Sodium valproic acid	15	8.411
Lorazepam	18	10.28

TABLE NO. 7:Gender specific distribution of dual therapy AEDs

DRUGS	TOTAL	%	Male	%	Female	%
Phenytoin + Lorazepam	36	30	21	28	15	33.33
Phenytoin + Sodium valproic acid	6	5	5	6	1	3.33
Phenytoin + Clonazepam	5	3.75	3	4	2	3.33
Phenytoin + Phenobarbitone	1	1.25	0	0	1	3.33
Sodium valproic acid + Lorazepam	10	8.75	6	8	4	10
Carbamazepine + Levetiracetam	1	1.25	0	0	1	3.33
Lorazepam + Topiramate	3	2.5	3	4	0	0
Lorazepam + Diazepam	1	1.25	1	2	0	0

Phenytoin + Levetiracetam	15	12.5	14	18	1	3.33
Levetiracetam + Clonazam	3	2.5	2	2	1	3.33
Phenytoin + Carbamazepine	3	2.5	3	4	0	0
Phenytoin + Diazepam	13	11.25	10	14	3	6.66
Lorazepam + Clonazam	6	5	1	2	5	10
Phenytoin + Clobazam	5	3.75	4	4	1	3.33
Sodium valproic acid + Carbamazepine	1	1.25	0	0	1	3.33
Sodium valproic acid + Diazepam	5	3.75	1	2	4	6.66
Sodium valproic acid + Levetiracetam	1	1.25	0	0	1	3.33
Carbamazepine + Topiramate	1	1.25	1	2	0	0
Levetiracetam + Phenobarbitone	1	1.25	0	0	1	3.33

TABLE NO. 8: Gender specific distribution of triple therapy AEDs

DRUGS	TOTAL	%	Male	%	Female	%
Phenytoin + Sodium valproic acid +Lorazepam	1	8.33	0	0	1	25
Phenytoin + Carbamazepine + Clobazam	1	8.33	1	12.5	0	0
Phenytoin + Carbamazepine + Lorazepam	1	8.33	1	12.5	0	0
Phenytoin + Clobazam + Lorazepam	1	8.33	1	12.5	0	0
Phenytoin + Sodium valproic acid +Levetiracetam	1	8.33	1	12.5	0	0
Phenytoin + Lorazepam + Clonazam	1	8.33	1	12.5	0	0
Phenytoin + Levetiracetam + Diazepam	1	8.33	0	0	1	25
Carbamazepine + Lorazepam + Phenobarbitone	1	8.33	1	12.5	0	0
Phenytoin + Lorazepam +Phenobarbitone	1	8.33	0	0	1	25
Phenytoin + Lorazepam + Diazepam	1	8.33	0	0	1	25
Levetiracetam + Lorazepam + Clonazam	3	16.66	3	25	0	0

TABLE NO. 10: Gender specific distribution of medication adherence

Groups	High Adherence (%)	Medium Adherence (%)	Low Adherence (%)	Total (%)
Male	125(59.28)	72(34.28)	13(6.42)	210(70)
Female	60(66.66)	24(26.66)	6(6.66)	90(30)
Total	185(61.5)	96(32)	19(6.5)	300

TABLE NO. 13: Gender specific distribution of drug utilization

Groups	Foremost Utilization (%)	Modest Utilization (%)	Slightest Utilization (%)	Total (%)
Male	176(80.13)	35(15.75)	9(4.1)	220(73)
Female	71(87.03)	8(11.11)	1(1.85)	80(27)
Total	247(82)	43(14.5)	10(3.5)	300

CONCLUSION

Epilepsy is the most well-known neurological issue, and it is described by an unconstrained affinity for intermittent and unmerited seizures. The AEDs of decision must be made cautiously. In contrast to different examinations, it is probably explaining the unique drug utilization pattern. Monotherapy was most frequently utilized in a wide range of seizures. The most usually endorsed AEDs was phenytoin, followed by lorazepam, sodium valproate for epilepsy. Most patients were viably managed with the conventional oral AEDs.

REFERENCE

1. Nicholasa. Boon, Nicki R. Colledge, Brian Walker, Hunter Davidson's Principles Practice Of Medicine. 20thed. Edinburgh: Churchilllivingstone, 2006; 1167-1168.
2. Pradeep et al. STUDY ON ANTIEPILEPTIC DRUGS, World Journal of Pharmaceutical Research Vol-8 Issue-13(November 2019) 2277– 7105.DOI: 10.20959/wjpr201913-15905.
3. S. Pradeep Kumar Reddy & G.V Nagaraju., Saudi J. Med. Pharm. Sci., Vol-4, Iss-9 (Sept, 2018): 1075-1088. DOI: 10.21276/sjmps.2018.4.9.14.
4. Dr. S. Pradeep Kumar et al. Drug Utilization Evaluation of Antiepileptic Drugs European Journal of Pharmaceutical and Medical Research Vol-6 Issue -6 (June, 2019): 2394- 3211.