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RESEARCH ARTICLE

A PROSPECTIVE OBSERVATIONAL STUDY ON PRESCRIPTION ANALYSIS OF ANTIEPILEPTIC DRUGS AT TERTIARY CARE HOSPITAL

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Abstract

The present study was aimed to analyze the prescription patterns of various uses of antiepileptic drugs (AEDs)in the strategic treatment of different types of epilepsy in a tertiary care hospital in the northern Telangana of India. A total of 157 patients were included in this study and patients with epilepsy of specific group are included. The demographic data shows a greater number of males 99 (63%) and female 58 (37%). The majority of patients were 44 (28%) belonged to 20-30 years of age group, 43 (27%) patients belonged to 30-40 years of age group. Generalized tonic clonic seizures (GTCS) were the most commonly diagnosed epilepsy (46%) and monotherapy (75%) were prescribed. Levetiracetam was the most common monotherapy (54%). Levetiracetam with clobazam was commonly prescribed two drug combinations (6%). Among polytherapy levetiracetam with sodium valproate and clobazam (2%). Levetiracetam was commonest prescribed AED as monotherapy and in combinational as well as polytherapy. The study concluded that educating patients regarding the antiepileptic drugs is necessary to avoid the medications related problems which helps in improving patient for better care.

Introduction:-

A seizure results from an excessive discharge of cortical neurons and its characterized by changes in electrical activity as measured by electroencephalogram[1]. A convulsion is a sudden violent irregular movement of the body caused by massive electrical discharge in a group of nerve cells in the brain that leads to changes in mental activities and behavior[2]. According to neurologist estimates in India 5-6 million people are active epilepsy. The prevalence of epilepsy in India is 5.59–10 per 1000 people, according to several research. In Kerala, there are 4.7 cases of active epilepsy per 1000 inhabitants[3].

A large number of drugs are used for the treatment of epilepsy. In spite of continued emergency of newer drugs like vigabatrin, gabapentin, lamotrigine, topiramate, levetiracetam, Felbamate, oxcarbazepine, lacosamide, the response to the anti-epileptic therapy is still unpredictable and unsatisfactory. The newer drugs Antiepileptic Drugs (AED's) are not found to be superior to major standard anticonvulsant drugs such as phenytoin, carbamazepine, and sodium

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valproate. They are merely serving as add on drugs. When choosing an AED, factors such as mechanism of action, ease of dosing, efficacy, long term adverse effects, neuropsychiatric profile, sedative burden, interaction with other medications, seizure types, and other comorbid conditions should be considered[4].

Whichever AED is chosen, it was given initially as monotherapy. When one AED failed to give satisfactory control of seizures at maximum tolerated dose. An alternate monotherapy was tried. Combination therapy was used when 2 or 3 different monotherapies failed to control seizures. Drugs chosen for combination therapy were based on their presumed complimentary mechanism of action as well as minimal drug to drug interaction[5].

However, adding the antiepileptic drugs reduce the symptoms and improve the quality of patients life with epilepsy and have limited range of side effects in differential diagnosed epilepsy. The current study conducted to analyze prescription patterns of AED's and their clinical characteristic, for avoidance of drugs complication by educating patients.

Materials and Methods:-

Study Site :
Department–Neurology/ Sree Badrakali Hospital, subhasnagar, mancherial chowrastha, and Chanda Neuro and Trauma center, Saheth Nagar, Karimnagar.

Study Population:
157 patients, Informed consent

Study Design :
Study through Prospective Observation.

Study Period :
Six Months.

Inclusion Criteria :
1. Individuals of any sex who are in specific age groups.
2. All epileptic patients with a history of epilepsy and newly diagnosed epilepsy.
3. Patients receiving treatment on an outpatient and inpatient basis.
4. Patient with comorbidities i.e., hypertension and diabetes mellitus.
5. Patient with prophylactic therapy of seizures.

Exclusion Criteria:
1. Epilepsy patients who are not interested in participatingin studies.
2. Pregnant and lactating women.
3. Pediatric patients.
4. Patients with past histories like CKD, Autoimmune disorder, and others.
5. Patients associated with acute conditions like paralytic shock and coma are excluded.
6. All the patients of both genders with uncertain diagnosis of epilepsy.
7. Patient with psychiatric disorders.

Parameters:
1. To determine the prescribing pattern of Antiepileptic Drugs in a tertiary care hospital.
2. To identify the people who are prone to epilepsy or seizures based on the demographic details (Age, Gender, and Area).
3. To study the clinical profile: - characteristics, etiology, and risk factor of seizures.
4. To access the trend in prescribing pattern of antiepileptic drugs.

Results:-

A Total Number of 157 cases were collected from inpatients and outpatient in both public and private hospitals. The following evaluation was made from the collected data.

Gender wise distribution:

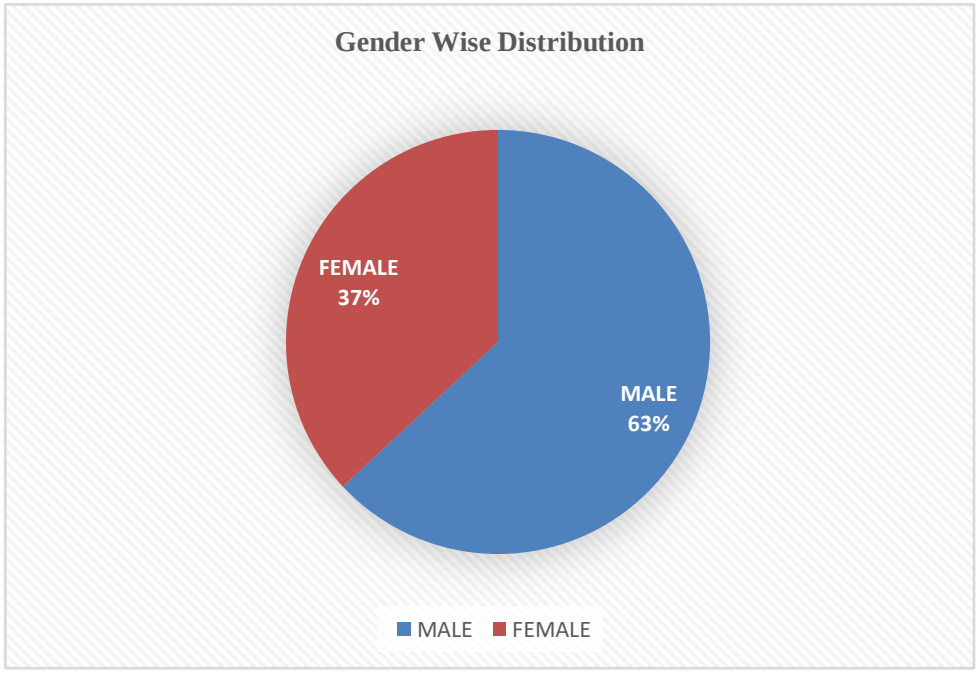

Fig 1:- Graphical presentation of patients data based on gender.

Based on above data, out of 157 patients involved in the study, 37% are female's patients and 63% are males.

Age and Sex wise distribution:

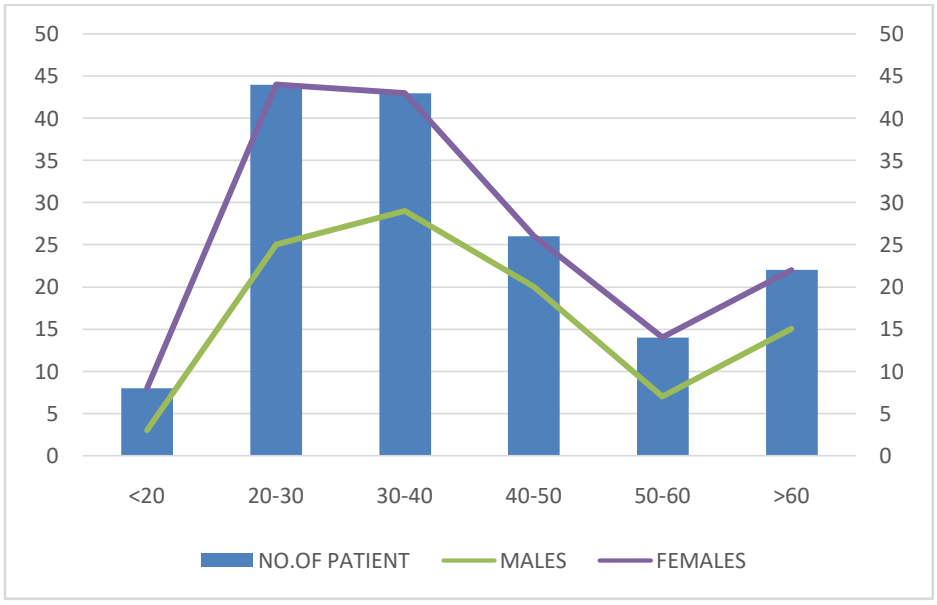

Fig 2:- Graphical presentation of patients data based on age and sex.

In the present study the epilepsy was more in the age group of 20-30 years (28%), then followed by the 30-40 years (27%), 40-50 years (17%), 50-60 years (9%), >60 years (14%), <20 years (5%) age groups.

Epidemiology:

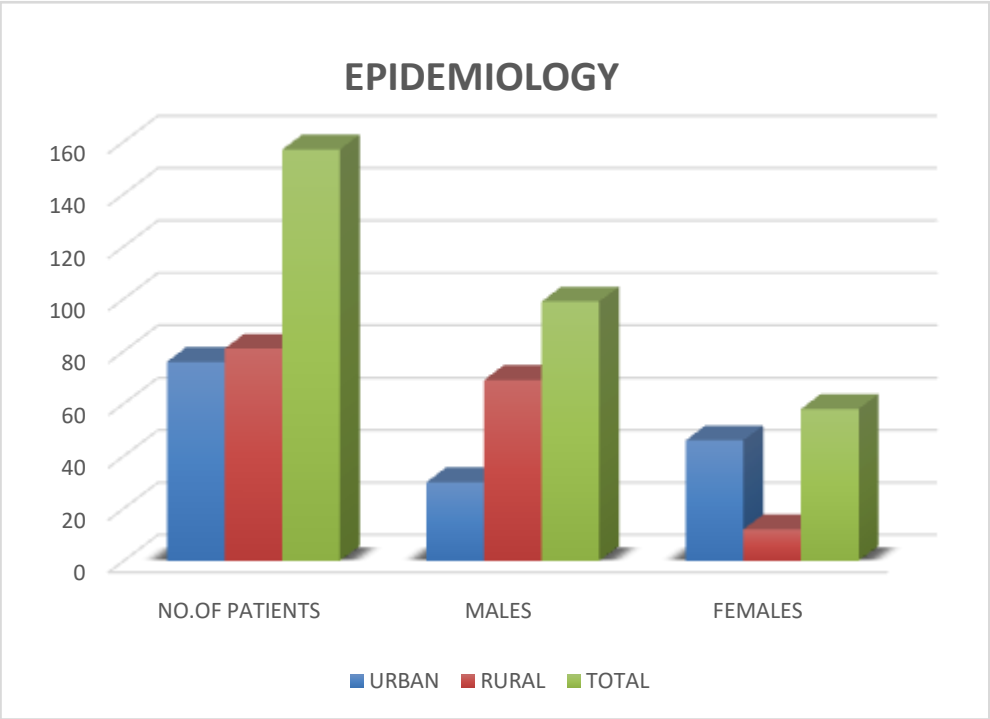

Fig 3:- Graphical presentation of patients data based on epidemiology.

Based on the above data the greater number of patients are from the urban area (48%) and rural (52%). In urban area the females (46) are more as compared to males (30) and rural accounts higher number of males (69) and lesser number of females (12).

Risk Factor :

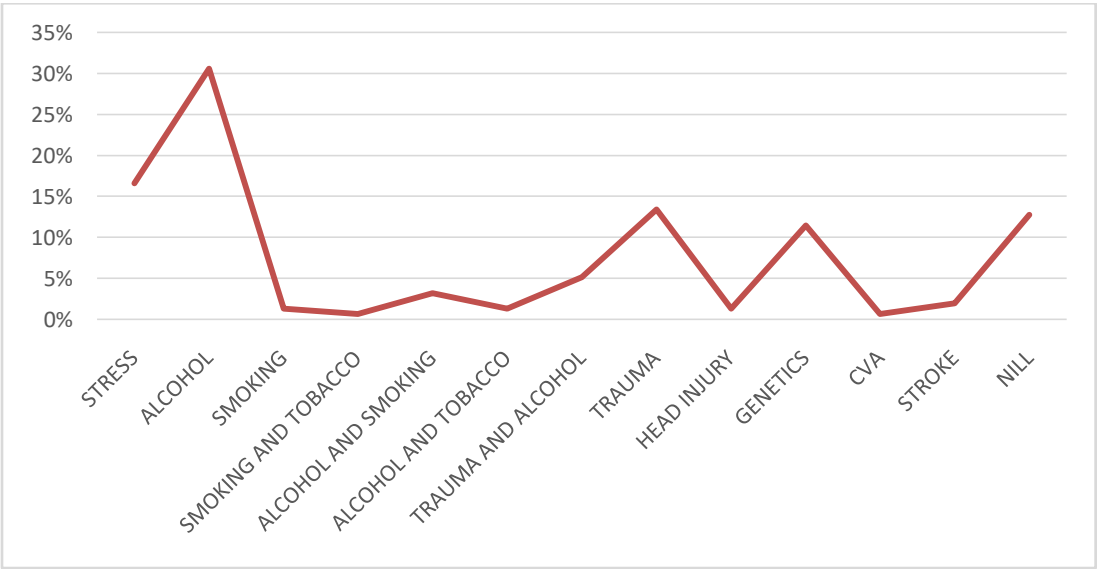

Fig 4:- Graphical presentation of patients data based on risk factors.

The factor that is more risk to causes epilepsy is alcohol (31%) and followed by other factors like stress, trauma and etc.

Clinical Manifestation:
The most common clinical feature among all the patients are others (18%) (which includes the RTA, and other related signs) followed by loss of consciousness (15%), muscle spasms (11%) and others features.

Etiological Factors:
The data collected shows that higher etiological factor is cryptogenic (51%) that is the obvious cause is unknown and followed by the others (20%) which include the Alcohol withdrawal, medications, infectious disease and etc., then followed by Trauma (18%) and Idiopathic (11%).

Diagnosis:
Out of 100%, 78%of patients are specific to disease, whereas RTA (17%) patients are not specific.

Types of Seizures:
The most frequent type of seizures are Generalized Tonic Clonic Seizures (GTCS) (46%) and Partial Seizures (11%) and followed by other types .

Treatment Strategy:
The cases of seizures (81%) are treated, and the trauma cases are given with prophylactic therapy (19%) in order to avoid the onset of seizures.

Therapeutic Plan:

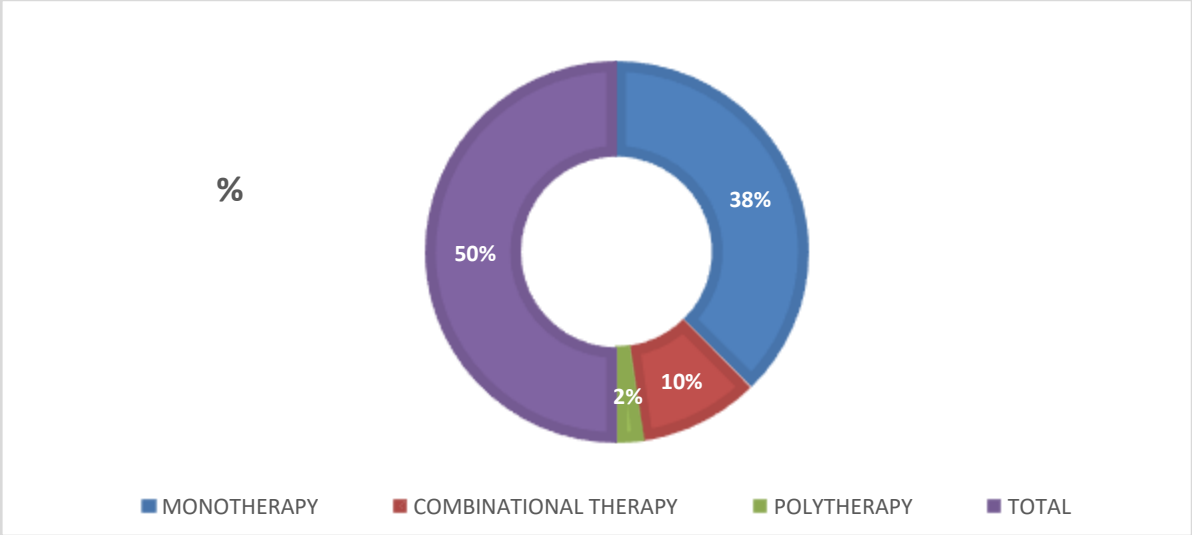

Fig 5:- Graphical presentation of patients data based on therapeutic plan.

The patients received monotherapy (75%), and followed by combinational therapy (20%), and polytherapy (4%).

Distribution of Antiepileptic Drugs among patients based on Monotherapy, Combinational therapy and Polytherapy:
In our study monotherapy was the most common therapy followed by combinational therapy, and polytherapy. Out of 157 patients, 118 are on monotherapy of patients who received levetiracetam (54%), followed by phenytoin (15%), and sodium valproate (7%). 32 patients were on combinational therapy received levetiracetam + clobazam (6%) and followed by the other combination.7 patients were managed by polytherapy received levetiracetam + sodium valproate + clobazam (2%) and followed by other combinations.

Discussion:-

The present study highlights the analysis of prescribing pattern of antiepileptic drugs, in six months period, 157 cases were observed and analyzed. This study provides the deeper understanding on exposure, epidemiology, and the prescribing pattern of antiepileptic drugs in a tertiary care hospital, it also includes the people who are prone to epilepsy based on demographics, etiology, risk factor and to educate the patients on avoidance of drug.

The primary goal of epilepsy treatment is to rid the patient of seizures completely or to reduce the frequency and severity of seizures if they cannot be completely suppressed. The standard treatment for epilepsy is to use antiepileptic drugs as effectively as possible. In this study most of them are receiving monotherapy (75%), followed by combinational therapy (20%) and polytherapy (4%). This study is similar to that of study conducted by **Telma Assis, Aroldo Bacillar, Luan Cortes, Silas Santana, Gersonita Costa, and Osvaldo Nascimenet al., 2021**[6]and also another study which is similar to our study conducted by **Shilpa B.N, Sushma H.K, Latha S and Shashikala G.H. et al., 2018**[4]**.**

In our study levetiracetam (54%) was the most commonly prescribed drug in monotherapy followed by phenytoin (15%), sodium valproate (7%). Dual therapy prescribed levetiracetam + clobazam (6%), levetiracetam + clonazepam (4%). The polytherapy was Levetiracetam + sodium valproate + clobazam (2%). This finding was contrast with study conducted by **Rupa Joshi, Manjari Tripathi, Pooja Gupta, Sheffali Gulati, Yogendra Kumar Gupta et., 2020**[7]in which sodium valproate (39.4%) is mostly prescribed as monotherapy followed by phenytoin (26.5%) and combination was phenytoin + clobazam is mostly prescribed. In another study **Arvind Narwat and Vivek Sharma et., 2018**[8]in which sodium valproate (30%) is mostly prescribed as monotherapy.

In our study, demographical data shows that (63%) were males and remaining were females (37%). The dominant age group of the study was 20-30 years (28%) followed by 30-40 years (27%). This study was similar to another study conducted by **Senthil Amudhan, Gopalkrishna Gururaj, and Parthasarathy Satish Chandra et al., 2015**[9]. This study shows prevalence in tertiary care hospitals is found to be 29.9%. Most of the patients were from rural areas (52%) and followed by urban (48%). This finding was similar to a study conducted by **R. Sridharan and B.N. Murthy et al., 1999**[10]**.**

In this study most of the patients were having alcohol risk (31%) for epilepsy followed by stress (17%) and trauma (13%). Epilepsy in elderly was the most frequent etiology were cryptogenic (51%) followed by trauma (18%). This was similar to the study conducted by **Divyani Garg et al., 2020**[11]**.** From this study we observed that most of patients were diagnosed with Generalized tonic clonic seizures (46%) and followed by partial seizures (11%). Only 40% of patients are history of epilepsy and 23% patients are having comorbidities, this was similar to the study conducted by **Monalisa Jena, Subhransu Sekhar Jena and Mrutunjay Dash et al., 2014**[12]**.**

Conclusion:-

The most epileptic seizures are controlled through drug therapy. Treatment is usually with antiepileptic drugs (AEDs) or anti- convulsant drugs. The current study was carried out to analyze antiepileptic drugs prescribing patterns and to educate patients regarding regular medications.

Based on the results we would like to conclude that we have collected the data of 157 epilepsy patients receiving the anti-epileptic drugs were observed and analyzed. We studied clinical features, etiological factors, history, risk factors, diagnosis, types of seizures, and therapy. In our study monotherapy was the most common therapy followed by combinational therapy, and polytherapy. Out of 157 patients, 118 are on monotherapy of patients who received levetiracetam (54%), 32 patients were on combinational therapy received levetiracetam + clobazam (6%), 7 patients were managed by polytherapy received levetiracetam + sodium valproate + clobazam (2%). After thorough observation and evaluation, the patient was counselled and educated regarding the drugs. It defines the role of clinical pharmacists in providing information through patient counselling.

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