

To study different types of epileptic seizures and their treatment in a Superspeciality Hospital Jalandhar, Punjab, India

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Introduction: Epilepsy is a neurological disorder characterized by recurrent and unpredictable seizures, which are abnormal bursts of electrical activity in the brain. These seizures can vary in intensity and manifestation, causing a range of physical and cognitive effects. Epilepsy affects people of all ages and backgrounds, with over 65 million individuals' worldwide living with the condition. Seizures in epilepsy can manifest in different ways, from convulsive jerking motions to momentary lapses in awareness. They can be triggered by various factors, including sleep deprivation, stress, flashing lights, or underlying brain conditions. Diagnosing epilepsy involves a comprehensive evaluation of a person's medical history, symptoms, and often electroencephalogram (EEG) tests to monitor brain activity. Treatment options for epilepsy aim to reduce the frequency and severity of seizures. This can include medication, which helps stabilize brain activity and prevent excessive electrical discharges. **Objective:** The objective of this study was to study different types of epileptic seizures and their treatment in a Superspeciality Hospital Jalandhar, Punjab, India. **Methodology:** This was a prospective, observational study investigating 90 patients with epileptic seizure in NASA AND HUB SUPERSPECIALITY HOSPITAL (NHS) located in Jalandhar Punjab for over a period of 4 months. This study revealed the treatment strategies used by physicians and correlation among treatment, control and complications of Epilepsy within the Indian context. This study eventually helped to develop person-centered care and facilitate public health agencies to invest appropriate resources in the management of Epilepsy in the health care system. **Results:** While studying about the gender wise distribution of patients, It was found that total number of patients at Nasa And Hub Superspeciality Hospital were 90, in which male patients were 60 accounting for 66.7% of study population, whereas the female patients were 30 accounting for 33.3% of total study population. **Conclusion:** The aim of the study was carried out to get the better awareness regarding epileptic seizures and to focus on the correct diagnosis for better treatment. The study focus on the most number of patients admitted at hospital with different types of seizures and the antiepileptic drugs to treat seizures. The study was done to differentiate between various groups of patients with epilepsy, of either sex or age.

Keywords: Epilepsy, Phenytoin, valproate.

Introduction

Epilepsy is a neurological disorder characterized by recurrent and unpredictable seizures, which are abnormal bursts of electrical activity in the brain. These seizures can vary in intensity and manifestation, causing a range of physical and cognitive effects. Epilepsy affects people of all ages and backgrounds, with over 65 million individuals worldwide living with the condition [1-10]. Seizures in epilepsy can manifest in different ways, from convulsive jerking motions to momentary lapses in awareness. They can be triggered by various factors, including sleep deprivation, stress, flashing lights, or underlying brain conditions. Diagnosing epilepsy involves a comprehensive evaluation of a person's medical history, symptoms, and often electroencephalogram (EEG) tests to monitor brain activity. Treatment options for epilepsy aim to reduce the frequency and severity of seizures [10-15]. This can include medication, which helps stabilize brain activity and prevent excessive electrical discharges. In some cases, lifestyle modifications like managing stress, maintaining a regular sleep schedule, and avoiding triggers can also help. For individuals with drug-resistant epilepsy, surgical procedures such as brain resection or implantation of neurostimulation devices might be considered [15-20]. Living with epilepsy can present challenges, including the potential for physical injury during seizures, restrictions on certain activities, and the social stigma that can accompany the disorder. Education and awareness play crucial roles in dispelling myths and misconceptions about epilepsy and fostering a supportive environment for those affected [20-25]. In recent years, research into epilepsy has advanced our understanding of its underlying mechanisms, leading to improved treatments and potential new therapies. While epilepsy may not yet be curable, ongoing efforts in medical science and advocacy continue to enhance the quality of life for individuals living with the condition, offering hope for better management and increased public understanding [25-30].

Objective

The objective of this study was to study different types of epileptic seizures and their treatment in a Superspeciality Hospital Jalandhar, Punjab, India.

Methodology

This was a prospective, observational study investigating 90 patients with epileptic seizure in NASA AND HUB SUPERSPECIALITY HOSPITAL (NHS) located in Jalandhar Punjab for over a period of 4 months. This study revealed the treatment strategies used by physicians and correlation among treatment, control and complications of Epilepsy within the Indian context. This study eventually helped to develop person-centered care and facilitate public health agencies to invest appropriate resources in the management of Epilepsy in the health care system. Permission was obtained from the concerned authorities of the hospital. Informed consent was taken from the respondent's prior data collection. The data was collected with the help of prescriptions in which information about patient and the medication is acquired. In this work we collected all the relevant information about the patients such as name, age, gender, address and most importantly past medical history and so on. All the detailed information about drug included its name, class and combination of medicines, route of drug administration and dosage form. The finalized data was documented and its analysis will be carried out with the help of suitable statistical method.

Results

Gender wise distribution of epileptic patients

While studying about the gender wise distribution of patients, It was found that total number of patients at Nasa And Hub Superspeciality Hospital were 90, in which male patients were 60 accounting for 66.7% of study population, whereas the female patients were 30 accounting for 33.3% of total study population (Table 1). Hence, we can say that gender wise distribution of epileptic patients were more in males as compared to females.

S.NO.	Males	Females	Total
1	60(66.7%)	30(33.3)	90

Table 1. Gender wise distribution of epileptic patients

Age Wise Distribution of Epileptic Patients

Out of 90 patients, 4(4.44%) patients were from age group of 0-14 years, 11(12.22%) patients were from age group of 15-25 years, 6(6.66%) patients were from age group of 26- 35 years, 8(8.88%) patients were from age group 36-50 years, 33(36.66%) patients were from age group of 51-65 years, 22(24.44%) patients were from age group of 66-75 years, 6 (6.66%) patients were from age group >76 years. It was observed that in all groups of age range, males were always in greater number than the females. In which patients from the age group of 51-65 years were highest in number, while distribution of epileptic patients were lowest in age group of 0-14 years (Table 2).

S.NO.	Age Group (years)	Number of Patients (%)		Total No. of Patients (%) (n =90)
		Male	Female	
1	0 -14	3(3.33)	1(1.11)	4(4.44)
2	15-25	6(6.66)	5(5.55)	11(12.22)
3	26-35	4(4.44)	2(2.22)	6(6.66)
4	36-50	6(6.66)	2(2.22)	8(8.88)
5	51-65	23(25.55)	10(11.11)	33(36.66)
6	66-75	13(14.44)	9(10)	22(24.44)
7	>76	5(5.55)	1(1.11)	6(6.66)

Table 2. Age Wise Distribution of Epileptic Patients

Different Types of Epileptic Seizures

In this study out of 90 patients 18 patients had simple partial seizure ,19 patients had complex partial seizure, 4 patients had absence seizure, 28 patients had tonic clonic seizure, 10 patients had myoclonic seizure, 5 patients had atonic seizure and 6 patients had unknown seizure (Figure 3).

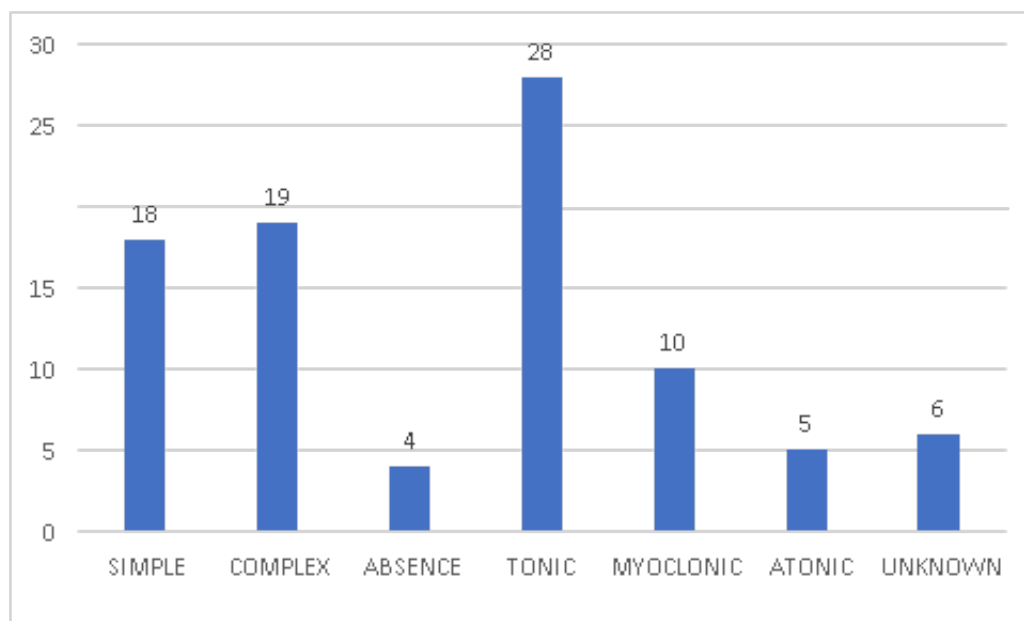


Figure 1. Patients with different types of epileptic seizures

Prescription of Patients

A total of 90 prescriptions of epileptic seizure patients were selectively chosen for study. From Table and Figure below it was shown that a total of 11 drugs were prescribed through 90 prescriptions, in which two or three drugs were prescribed per prescription. In which Tab Clobazam was prescribed to 30 patients, Tab Divalproex was prescribed to 3 patients, Sodium valproate (inj./tab) was prescribed to 36 patients, Tab Phenytoin was prescribed to 51 patients, Tab Gabapentin was prescribed to 6 patients, Tab Levetiracetam was prescribed to 12 patients, Tab Frisium was prescribed to 6 patients, Inj. Fosphenytoin was prescribed to 15 patients, Tab Oxcarbazepine was prescribed to 9 patients, Tab Clonazepam was prescribed to 3 patients and Tab Lacosamide was prescribed to 3 patients (Table 3).

Medication	No.of patients
Clobazam	30
Tab Divalproex	3
Sodium valproate (inj./tab)	36
Tab Phenytoin	51
Tab Gabapentin	6
Tab Levetiracetam	12
Tab Frisium	6
Inj. Fosphenytoin	15
Tab Oxcarbazepine	9
Tab Clonazepam	3
Tab Lacosamide	3

Table 3. Prescription of Patients

Discussion

Epileptic seizures encompass a spectrum of neurological events, each characterized by distinct clinical features, triggers, and responses to treatment. Understanding the various types of seizures is paramount for implementing effective interventions tailored to the specific needs of individuals with epilepsy. The **Generalized Tonic-Clonic Seizure (Grand Mal)**, arguably the most widely recognized seizure type, engages the entire brain [30-35]. It unfolds in two distinct phases: the tonic phase, marked by sudden muscle stiffness, and the clonic phase, featuring rhythmic jerking movements. The primary objective in managing generalized tonic-clonic seizures is the administration of antiepileptic drugs (AEDs). Commonly prescribed medications include phenytoin, valproic acid, and levetiracetam, aimed at preventing the recurrence of these intense and potentially life-threatening seizures [35-40].

Absence Seizures (Petit Mal) present a different clinical picture. These seizures are characterized by brief lapses in consciousness and a vacant stare, often observed in children. Ethosuximide, valproic acid, and lamotrigine are among the AEDs frequently employed to manage and mitigate the impact of absence seizures, with the goal of minimizing disruptions in daily activities [40-45]. **Complex Partial Seizures** have their origin in specific regions of the brain, often involving altered consciousness and peculiar behaviors. Medications such as carbamazepine, phenytoin, and lacosamide are commonly utilized to control complex partial seizures. The objective is to prevent the spread of abnormal electrical activity within the brain, thereby reducing the severity and impact of these complex events on an individual's life [45-50].

Contrastingly, **Simple Partial Seizures** are focal events affecting only a specific area of the brain. Importantly, consciousness remains intact during these seizures. AEDs like levetiracetam or oxcarbazepine are often prescribed to manage simple partial seizures, aiming to reduce their frequency and impact on daily life without compromising overall cognitive function. **Myoclonic Seizures** manifest as sudden, brief muscle jerks, affecting motor coordination and daily activities. Valproic acid, levetiracetam, and clonazepam are commonly employed AEDs to mitigate the

occurrence and impact of myoclonic seizures, with the goal of improving overall motor control and quality of life. **Atonic Seizures**, also known as drop attacks, entail a sudden loss of muscle tone, leading to falls [50-55]. The treatment of atonic seizures often involves AEDs such as lamotrigine, valproic acid, or rufinamide. The aim is to prevent the abrupt loss of muscle control, reducing the risk of injuries associated with falls and improving overall safety [56].

Febrile Seizures, common in childhood, are provoked by fever. Unlike other seizure types, the primary focus in treating febrile seizures lies in addressing the underlying cause, typically an infection. In many cases, AEDs may not be prescribed unless the seizures recur or become more severe, emphasizing the importance of managing the fever and its source. In situations of prolonged seizures without recovery, a condition known as **Status Epilepticus**, immediate and aggressive intervention is imperative. The treatment typically involves the rapid administration of antiepileptic medications like lorazepam, diazepam, or midazolam to halt the prolonged seizure activity. Status epilepticus is a medical emergency that requires swift and decisive action to prevent potential long-term consequences and mitigate the associated risks [56-60].

Certain individuals with epilepsy may experience seizures triggered by visual stimuli, a condition known as **Photosensitive Epileptic Seizures**. Management involves avoiding known triggers such as flickering lights or visual patterns. Additionally, AEDs like valproic acid or lamotrigine may be prescribed to help control photosensitive seizures, preventing their occurrence in situations where triggers cannot be entirely avoided. For some individuals, standard medication may prove ineffective. In such cases, alternative treatments come into play. The **Ketogenic Diet** is a high-fat, low-carbohydrate diet that has demonstrated efficacy in reducing seizures, particularly in children. The diet induces a state of ketosis, altering the brain's energy metabolism and reducing the frequency of seizures [60-65]. Another alternative is **VagusNerve Stimulation (VNS)**, a surgical intervention where a device is implanted to stimulate the vagus nerve, helping to regulate abnormal electrical activity in the brain. VNS is often considered for individuals who do not respond well to traditional medications, providing an additional avenue for seizure control. The treatment landscape for epilepsy is multifaceted, reflecting the diverse manifestations of epileptic seizures [65-70]. While antiepileptic medications remain the cornerstone of treatment, the choice of medication depends on the specific seizure type, individual patient characteristics, and potential side effects. For certain cases, alternative interventions such as dietary modifications or surgical procedures may be considered to optimize seizure control [70-75]. It is crucial for individuals with epilepsy to work closely with healthcare professionals to develop a comprehensive and personalized treatment plan that addresses their unique needs, enhances overall quality of life, and minimizes potential risks. Regular monitoring and adjustments to the treatment plan may be necessary to achieve the best possible seizure control with minimal side effects. Patient education, lifestyle modifications, and seizure safety measures play crucial roles in the holistic management of epilepsy, emphasizing the importance of a collaborative and multidisciplinary approach to care [75-81].

Conclusion

The aim of the study was carried out to get the better awareness regarding epileptic seizures and to focus on the correct diagnosis for better treatment. The study focus on the most number of patients admitted at hospital with different types of seizures and the antiepileptic drugs to treat seizures. The study was done to differentiate between various groups of patients with epilepsy, of either sex or age.

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