IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 15, Issue 5 Ver. IX (May. 2016), PP 98-102
www.iosrjournals.org

The Clinical Profile of Seizures in Emergency Setting

Vivek Chhabra[*], Sunil Kumar Gothwal[**], Dalip Gupta[#], Sudhir Sharma[##], Pargati Bajaj[###], Abhishek Saini[*]

[*]Senior Resident, Medicine M.A.M.C., Agroha, Hisar, Haryana
[**]Assistant Prof. ,Medicine, M.A.M.C. , Agroha, Hisar, Haryana
[#]Prof., Medicine, I.G.M.C., Shimla
[##]Assistant Prof., Medicine, I.G.M.C., Shimla
[###]Resident, S.N.M.C., Jodhpur

Abstract
Introduction*: seizures account for around 0.7-1.2 % of all the emergency department visits. The epidemiological presentation of seizure in emergency setting in hilly state of Himachal Pradesh has not been studied. The aim of the study was to characterize emergency department visits for seizure in large representative Himachal population.*
Methods*: Seizure visits in emergency department of Indira Gandhi Medical College from 1 july 2013 to 31 june 2014 were analysed and demographic factors associated with presentation, laboratory investigations and neuroimaging were studied.*
Results*: seizures accounted for 0.51% of total emergency visits. Majority of patients were of middle age group. Generalized tonic clonic seizure was the most common type accounting for 87.19% cases. Majority of patients do not have prior history of seizure. Status epilepticus was present in 8.54% of patients. Poor antiepileptic drug compliance was most common precipitating factor for seizure.*
Conclusion*: seizures are important cause of emergency department visit. The clinical profile of such patients in Hilly area of Himachal Pradesh is somewhat different from other areas. Patient education regarding compliance of antiepileptic drugs is important.*
Keywords*: seizures, emergency* department, himachal Pradesh, neuroimaging, antiepileptic drugs

I. Introduction

Seizure can be presented at the Emergency Department (ED) in about 0.7-1.2% of all conditions.[1,2] The incidence rate of epilepsy in developed countries is 24-53 cases per 100,000 person-year.[3] In developing countries, the incidence rate of encephalitis[4], cerebral malaria[5], cysticercosis[6], and head injury[7] are higher than developed countries. Himachal Pradesh is a hilly state of Himalayan region of northern part of our country situated at an altitude ranging from 350 meters to 7000 meters from sea level with comparatively different geographic and demographical pattern. We undertook this study to evaluate the incidence, clinical manifestation, optimum and appropriate treatment and outcome of seizure in the emergency department in a population group in such different altitude of environmental and geographical distribution.

II. Material And Method

We reviewed all charts of patients who visited the emergency of Indira Gandhi Medical College and Hospital, Shimla from 1 July 2013 to 31 june 2014. The study protocol was reviewed and accepted by the Ethical Committee of Himachal Pradesh University. We studied patients who presented with seizure (diagnosed by clinical manifestation of seizure such as tonic-clonic seizure with or without bowel bladder incontinence observed by a witness). The patient's characteristics, seizure pattern and frequency, underlying diseases, physical examination, laboratory results, radiological investigations and treatment were recorded.

III. Results

There were 54913 patients in all who attended the emergency during the study period, 281 (0.51%) patients were found to have seizures. Male were majority of patients (173 cases (61.56%). Majority of patients were in the age group 35-55 years. Age distribution is shown in figure 1. There was rural predominance in our study with 172 patients (62.21%) belonging to rural background.

Generalized seizure was the most common type (245 patients (87.19%) while focal seizures found in 36 patinets (12.81%). In about two-third of cases (61.57%), it was their first experience of seizure and 24 patients (8.54%) were diagnosed to have status epilepticus. Regarding risk factor for seizures, 108 patients (38.43%) had past history of seizure, 13 patients (4.63%) had history of head injury, 116 patients (41.28%) had history of alcohol drinking and 5 patients (1.77%) had history of developmental delay. Poor antiepileptic drug

compliance (20.64%), alcohol withdrawal (14.23%) and fever (8.54%) were the three most common precipitating factor of seizure.

Abnormal neurological examination was found in 140 patients (49.82%). Biochemical profile of the patients in our study revealed 3 (1.07%) patients had hypoglycemia, 26 (9.25%) patients had hyperglycemia, 34 (12.10%) patients had hypocalcaemia, 24 (8.54%) patients had renal dysfunction and 34 (12.10%) patients had hepatic dysfunction as biochemical abnormality. This is shown in Table 1. ECG done in patients where indicated showed 2 patients (1.18%) had complete heart block, 6 patients (3.35%) had prolonged QTc interval. Computed tomography of brain was done in 96.09% patients. It was normal in 158 patients (56.28%). Out of abnormal CT scans, calcified granuloma was the most common anamoly (14.59%) (Table 2).

As far as etiology is concerned, in our study , idiopathic epilepsy was the commonest cause (31.67%), followed by calcified granuloma (14.59%), alcohol withdrawal (14.23 %), acute neuroinfection (8.54%), post stroke seizure (8.18%). Other important causes in our study include primary or secondary brain tumors, obstetrical causes (PRES, eclampsia) and metabolic (hypoglycemia, hypocalcaemia). Two interesting cases of tuberous sclerosis and central nervous system lupus presenting with seizure came across during the study period. Two patients of complete heart block presented with seizure (Table 3).

Intravenous phenytoin was the most common drug given for control of status epilepticus. 271 (96.44%) patients were prescribed anti epileptic drugs for control of seizures. Phenytoin (46.62%) was the most commonly prescribed drug for the control of seizure during their in hospital stay or during their discharge followed by carbamezipine in 32 (11.39%) patients, sodium valproate in 57 (20.29%) patients. Chlordiazepoxide was prescribed for alcohol withdrawal seizure in 40 (14.23%) patients.

14 patients (4.98%) died during course of their hospital stay. Out of these 9 (3.20%) patients were having status epilepticus. 105 (37.37%) patients could have been followed up for three months where 15 (10.90%) patients had recurrence of seizure and all of them were found to have non compliance with AEDs.

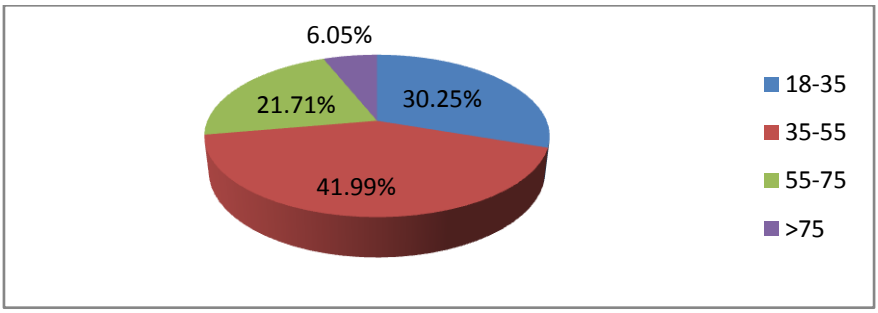


Figure 1: AGE DISTRIBUTION OF PATIENTS

Table 1 : Laboratory Investigations

Laboratory test	Abnormal, N (%)	Cause of seizure, N (%)
CBC	58 (20.64)	0
BUN	24 (8.54)	0
Glucose	29(10.32)	3 (1.07)
Calcium	34 (12.10)	2 (0.71)
Sodium	79 (28.11)	0

Table 2: Ncct Head In Patients

CT abnormality	Total patients	Percentage
Cerebral atrophy	7	2.49
Infarct	4	1.42
Hemorrhage	19	6.76
Calcified granuloma	41	14.59
Gliosis/scarring	6	2.14
Multiple heterogenous masses – likely metastasis	7	2.49
Solitary heterogenous masses – likely malignant	18	6.41
Normal	158	56.28
Cortical malformations	1	0.36
Calcified subependymal nodules	1	0.36
Hypodensity in bilateral occipital region	2	0.72
Hyperdensity in dural sinus with hemorrhagic infarct	3	1.07

Hydrocephalus	3	1.07
Not done	11	3.91

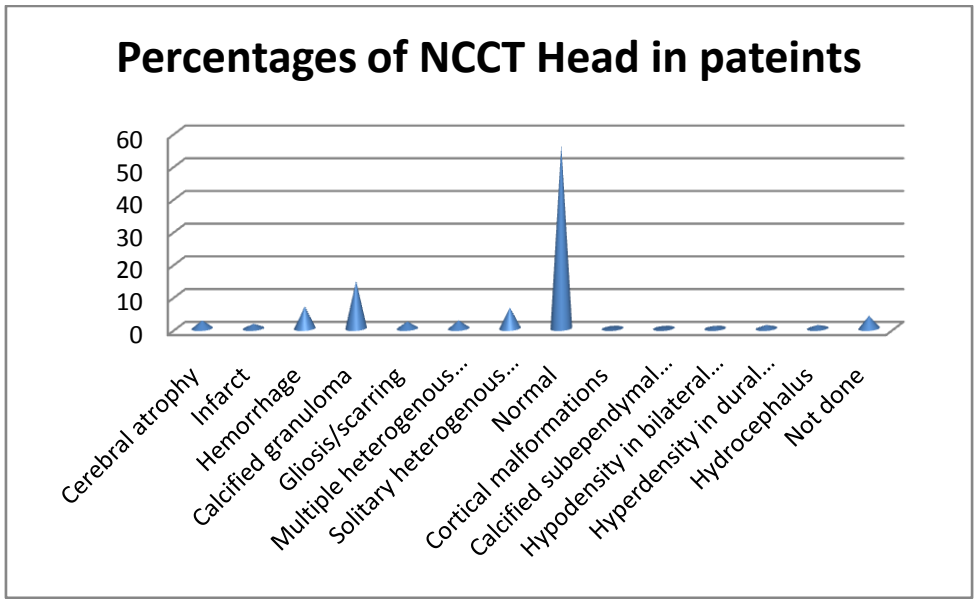
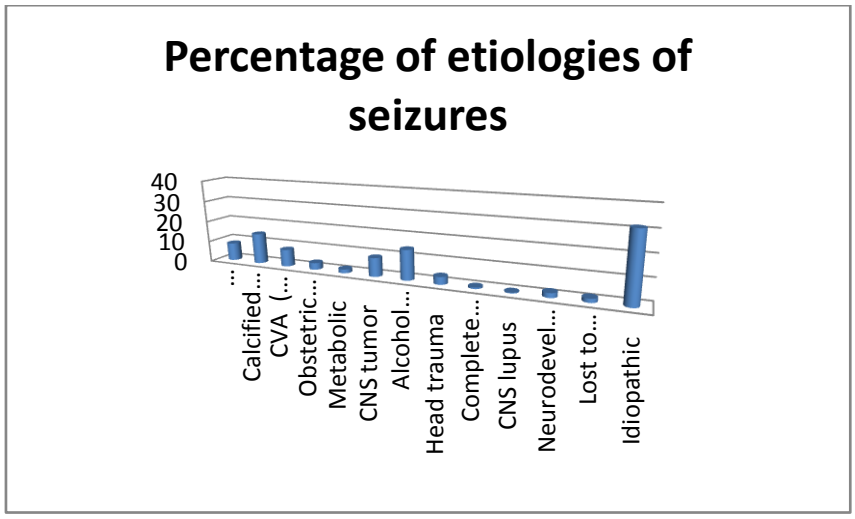


Table 3: Etiologies Of Seizures

Etiology	No. of patients	Percentage
Neuroinfection		
encephalitis/ meningo-encephalitis	24	8.54
Calcified granuloma	41	14.59
CVA		
infarct	4	1.42
hemorrhage	19	6.76
Obstetric causes (PRES, CVT, eclamplsia etc)	9	3.20
Metabolic		
hypoglycemia	3	1.07
hypocalcemia	2	0.71
hyponatremia	0	0
hyperglycemia	0	0
CNS tumor	25	8.90
Alcohol withdrawal	40	14.23
Head trauma	10	3.56
Complete heart block	2	0.71
CNS lupus	1	0.36
Neurodevelopmental disorders	6	2.14
Lost to follow up	5	1.78
Idiopathic	89	31.67



IV. Discussion

Seizure is still an important problem in the ED in several aspects, such as diagnosis, laboratory investigation, and treatment. In the present study, the incidence rate was 0.51%, which was lower than previous reports (0.7-1.1%). [1,2]

In the present study, in majority of cases, age group of patients was between 35 and 55 years of age. There is rising trend of seizure been presenting with advancing age.[8] However there is no concensus on this issue as different trends have been observed across different countries.[9]

Most similar studies have reported that males are more frequently affected than females.[10,11] However, this is seldom significant statistically. Our study also showed male preponderance of seizures (61.56%). There is also rural preponderance in our study (62.21%). The literature review reveals that rural people are at increased risk of having epileptic seizure, a trend which is shown by our study. [12,13]

In the present study, we report that generalized seizures (87.19%) are more frequent as compared to focal seizure which is comparable to various Indian studies. In various Indian studies, generalized seizures constitute more than 70% of the cases[14]. Partial seizure had a lower incidence but it suggested intracranial lesion.Alcoholism is an independent risk factor for first generalized tonic-clonic seizure, and has been implicated in up to one third of seizures(41.28%). Similar trend is found in some other studies.[15,16] It would seem prudent to measure breath alcohol level in the ED as this may give a clue as to etiology.

Poor compliance with antiepileptic drugs was found to be the most common precipitating factor in recurrence of seizure. This may reflect how much the patients understand their disease. We can prevent poor drug compliance by giving more imformation to patients about how to treat and control their seizures.

Many laboratory investigations such as complete blood count, plasma glucose, and blood chemistry did done in most cases but the results did not defined the cause of seizure in majority of cases. Laboratory tests should be ordered based on individual clinical circumstances that include suggestive historical or clinical findings such as vomiting or diarrhea, or failure to return to baseline alertness.

An electrocardiogram (ECG) is a cheap and non-invasive test which can detect causes of collapse other than seizure, such as cardiac arrhythmia or Wolff-Parkinson-White syndrome. Long-QT syndrome, which can present as a seizure, may also be detected.[17,18]

Non contrast Computed Tomography of the patients done in emergency found to abnormal in 43.72% patients with calcified granuloma the most common finding. The timing and indications for neuroimaging in patients with a first seizure are controversial. Many studies have shown that neuroimaging is helpful in making or excluding specific diagnoses, quantifying risk of seizure recurrence and guiding management.[15,19] We recommend head CT scan be performed in the ED in patients with first seizure whenever an acute intracranial process was suspected. Patients with a history of acute head trauma, malignancy, immunocompromise, or anticoagulation, or patients with a fever, persistent headache, a new focal neurological deficit on examination, or focal onset before generalization, or patients older than 40 years, were specifically noted to be at greater risk of life-threatening lesions.

The initial management in patients with status epilepticus was mostly appropriate. Intravenous loading of phenytoin should be used in these patients. However, in patients without status epilepticus, majority of patients were prescribed anti epileptic drugs during hospital stay or during discharge even without any indication (like first seizure without any risk factor for seizure recurrence). The decision to initiate antiepileptic AEDs in the emergency department must be based on the predicted risk for seizure recurrence. Determining this often requires the results of a neuroimaging study and an EEG, information that is rarely available before ED

discharge. In addition, risk of recurrence must be balanced against the consequences of a second seizure to the patient, and the risk of AED toxicity.[20]

In conclusion, seizures in emergency setting has somewhat different clinical pattern in himachal pradesh. Furthermore , patient education must be implemented regarding importance of maintaining compliance of antiepileptic drug.

References

[1]. Krumholz A, Grufferman S, Orr ST, Stern BJ. Seizures and seizure care in an emergency department.
[2]. Epilepsia 1989; 30: 175- 81.
[3]. Huff JS, Morris DL, Kothari RU, Gibbs MA. Emergency department management of patients with
[4]. seizures: a multicenter study. Acad Emerg Med 2001; 8: 622- 8.
[5]. Sander JWAS, Sillanpaa M. Natural history and prognosis. In: Engel JJY, Pedley IA,editors. Pedley IA. Philadelphia: Lippincott-Raven; 1997: 69-86.
[6]. Igarashi A. Epidemiology and control of Japanese encephalitis. World Health Stat Q 1992; 45: 299-305.
[7]. Vannaphan S, Saengnetswang T, Suwanakut P, Kllangbuakong A, Klinnak W, Rungmatcha P, et al. The epidemiology of patients with severe malaria who died at the Hospital for Tropical Diseases, 1991-2004. Southeast Asian J Trop Med Public Health 2005; 36: 385-9.
[8]. Rajshekhar V, Joshi DD, Doanh NQ, van De N, Xiaonong Z. Taenia solium taeniosis/cysticercosis in Asia: epidemiology, impact and issues. Acta Trop 2003; 87:53-60.
[9]. Kasantikul V, Ouellet JV, Smith TA. Head and neck injuries in fatal motorcycle collisions as determined by detailed autopsy. Traffic Inj Prev 2003; 4: 255-62.
[10]. Senanayake N. Classification of epileptic seizures: a hospital based study of 1250 patients in a developing country. Epilepsia 1993; 34: 812-8.
[11]. osuntokun BO, Adeuja AOG, Nottidge VA. Prevalence of the epilepsies in Nigerian Africans: a community based study. Epilepsia 1987; 28: 272-9.
[12]. Hopkins A, Garman A, Clarke C. The first seizure in adult life. Value of clinical features, electroencephalography, and computerised tomographic scanning in prediction of seizure recurrence. Lancet 1988; 1(8588):721-6.
[13]. van Donselaar CA, Schimsheimer RJ, Geerts AT, Declerck AC. Value of the electroencephalogram in adult patients with untreated idiopathic first seizures. Arch Neurol 1992; 49(3):231-7.
[14]. Grannieri E, Rosati G, Tola R, Pavoni M, Paolino E, Pinna L et al. A descriptive study of epilepsy in the district of Copparo, Italy 1964–1978. Epilepsia 1983;24:502–14.
[15]. Sridharan R, Murthy BN. Prevalence and pattern of epilepsy in India. Epilepsia 1999;40(5);631-6.
[16]. Tiamkao S, Paowana W, Chaiyakum A, Phuttharak W, Phunikhom K, Vannaprasaht S et al. Seizure presenting to the emergency department, Srinagarind Hospital. Journal of the Medical Association of Thailand 2006; 89(3): 362-7.
[17]. Morrison AD, McAlpine CH. The management of first seizures in adults in a district general hospital. Scott Med J 1997; 42(3):73-5.
[18]. Edmondstone WM. How do we manage the first seizure in adults? J R Coll Physicians Lond 1995; 29(4):289-94.
[19]. Dunn MJ, Breen DP, Davenport RJ, Gray AJ. Early management of adults with an uncomplicated first generalised seizure. Emerg Med J 2005; 22(4):237-42.
[20]. Pacia SV, Devinsky O, Luciano DJ, Vazquez B. The prolonged QT syndrome presenting as epilepsy: a report of two cases and literature review. Neurology 1994; 44(8):1408-10.
[21]. Rosenthal RH, Heim ML, Waeckerle JF. First time major motor seizures in an emergency department. Ann Emerg Med 1980; 9(5):242-5.
[22]. First Seizure Trial Group (FIR.S.T.Group). Randomized clinical trial on the efficacy of antiepileptic drugs in reducing the risk of relapse after a first unprovoked tonic-clonic seizure. Neurology 1993; 43(3 Pt 1):478-83.