Clinical Profile of Patients with Recurrent Seizure in Tertiary Care Hospital in Nepal

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ABSTRACT

Background

Epilepsy is a common and diverse disorder with many different causes. Outcomes are varied with 60—70% of newly diagnosed people rapidly entering remission after starting treatment and 20—30% developing a drug-resistant epilepsy with consequent clinical and psychosocial distress. About one third of patients with a first unprovoked seizure will have further seizures within five years, and about three quarters of those with two or three unprovoked seizures have further seizures within four years.

Objective

The aim of the study was to find out those factors which were associated with recurrence of seizure in Nepalese population.

Method

It is a Descriptive Cross-sectional study which was conducted in Tribhuvan University Teaching Hospital from January 2013 to January 2014.

Result

A total of 150 patients participated in the study. Neuroimaging was normal in 65(43.3%) patients. 48(32%) patients had neurocystercosis in their brain imaging, neuroinfection in 12(8%) of cases, cerebral infarction in 12(8%), Cerebral atrophy in 5(3.3%) patients, brain tumor in 4(2.7%), Mesial temporal sclerosis in 2(1.3%), tuberous sclerosis in 1(0.7%) and hypoxic brain injury in 1 (0.7%) patient. 14(9.3%) patients reported having a family history of epilepsy in first degree relative. There was statistically significant association between higher number of seizures before starting medication and increased frequency of seizure after starting medication ($p<0.001$).

Conclusion

Most of the patients with recurrent seizure had identifiable cause. Neurocysticercosis was the most common cause. Higher number of seizure before starting medication was associated with increased frequency of seizure after starting medication.

KEY WORDS

Epilepsy, neurocysticercosis, recurrent seizure

INTRODUCTION

Epilepsy is a disorder of the brain that is characterized by an enduring predisposition to generate seizures and by its neurobiological, cognitive, psychological, and social consequences.[1] WHO estimates that eight people per 1000 worldwide have this disease.[2] The prevalence of epilepsy in developing countries is usually higher than in developed countries.[3-5]

Epilepsy is a common and diverse disorder with many different causes. Outcomes are varied with 60—70% of newly diagnosed people rapidly entering remission after starting treatment, and 20—30% developing a drug-resistant epilepsy with consequent clinical and psychosocial distress.[6] Treatment for most patients is with antiepileptic drugs, which carry risks of acute idiosyncratic reactions, dose-related and chronic toxic effects, and teratogenicity. About one third of patients with a first unprovoked seizure will have further seizures within five years, and about three quarters of those with two or three unprovoked seizures have further seizures within four years.[7]

Although substantial economic development and improvement of health services have occurred, Asia is a heterogeneous and resource-constrained continent. Although much research is done in Asia, information about the recognition of the burden created by the disease is scarce. In 1997, Jallon reviewed studies from Asia,[8] mostly done in the 1980s, and showed a prevalence varying from 1.5 per 1000 in Japan to 10.0 per 1000 in Pakistan.

Among 50 million people with epilepsy worldwide, 90% of them are found in developing Countries and 90% of these patients are not receiving adequate treatment.[9] They could live normal lives if treated. This huge treatment gap may be due to the limited knowledge, poverty, cultural beliefs, stigma, poor health delivery infrastructure like inadequate supplies of antiepileptic drugs, and shortage of trained health care workers. The prevalence and incidence of epilepsy in Asia is similar to the West but reversible etiologies such as head trauma, infections, stroke, obstetric care are probably more important in Asia.[10] Nepal is one of the poorest countries in the world and it is not uncommon to see huge untreated epilepsy patients in our country. The prevalence rate of epilepsy in Nepal is 7.3 per 1000 population with the treatment gap of over 80%.[11] People with low socioeconomic status mostly living in the rural areas are found to be more affected.[12] Studies have shown that neurocysticercosis and calcified lesions are the commonest radiological findings.[13,14] People suffering from epilepsy in our country do not have good quality of life because of their poor epilepsy control.

In practice, there has been no agreement on an absolute number of seizures required for them to be considered recurrent. A few researchers have defined the term “epilepsy” to include patients with a single seizure and a few have required three unprovoked seizures.[15,17-19] Most recent clinical and epidemiologic studies have required two unprovoked seizures as a minimal criterion for the diagnosis.[12] The present study was undertaken to identify those factors which were associated with recurrence of seizure in patients from Nepal.

METHODS

It is a Descriptive Cross-sectional study which was conducted in Tribhuvan University Teaching Hospital from January 2013 to January 2014.

Inclusion Criteria

All the patients attending to neurology outpatient department and those patients admitted to neurology ward and ICU with recurrent seizure.

Exclusion Criteria

1. Patients presenting with a history of single seizure.
2. Patients presenting with a history of multiple seizures within 24 hours without past history of seizure.
3. Those who refused to participate in the study.

Statistical Analysis

Data were entered on the computer by using the SPSS Statistical Software (Version 16; SPSS; Chicago, IL) and were analyzed on the same software. Wherever applicable, the data were presented using both the tabular method and descriptive statistics. The strength of associations had been estimated by linear regression analysis and t- test which were used as appropriate. P value of less than 0.05 was considered statistically significant.

RESULTS

The demographic profile of the patients and the clinical characteristics of their seizure are presented in the following table 1.

14 (9.3%) patients reported having a family history of seizure while 136 (89.7%) patients did not have a family history of epilepsy. Aura was reported by 32(21.3%) of patients. The aura commonly reported by them was: fear, anger, dizziness, flashes of light, hallucination, tingling sensation and heaviness in head.

EEG was normal in 79 (52.7%) patients and abnormal in 71 (47.3%) patients. Physical Examination revealed abnormal finding in 36 (24%) patients. Status epilepticus was seen in 24 (15.7%) patients.

Either CT scan or MRI was done in all patients presenting with seizure. Neurocysticercosis was diagnosed on finding either the vesicular or colloidal or nodular stages or calcification on neuroimaging as reported by the radiologist. Neuroinfection was confirmed by lumber puncture and CSF analysis. Similarly other causes of seizure were documented based on neuroimaging finding.

Table 1. Demographic profile of the study population Baseline Data (n=150)

Men	76 (50.7%)
Women	74 (49.3%)
Age of patients(Year)	30±15.36
Seizure type (Focal+ secondarily generalized)	44(29.3%)
Seizure type (Generalized)	106(70.7%)
Duration of seizure before starting treatment(Year)	2.26±3.5 years
Number of seizures before starting treatment	24±32.92
Family history of epilepsy	14 (9.3%)
History of status epilepticus	24 (15.7%)
History of febrile convulsion	12 (7.8%)
History of neurological illness	36 (24%)
History of aura	32 (21.3%)
Documented precipitant for seizure	15 (9.8%)
Medication	
Monotherapy	131 (87.3%)
Polytherapy	19 (12.7%)
Compliance with medication	
Regular	130 (87 %)
Irregular	20 (13%)
EEG	
Normal	79 (52.7%)
Abnormal	71 (47.3%)
Neuroimaging (CT or MRI)	
Normal	63 (42%)
Abnormal	87 (58%)

Table 2. Age distribution of study population (years)

Age distribution of study population(years)	Number
≤20	40(26.7%)
21-40	80(53.3%)
41-60	21(14%)
>60	9(6 %)

Table 3. Age of seizure onset

Age of onset of seizure (in Years)	Number of patients
≤10	27 (18%)
11-20	56 (37.3%)
21-30	33 (22%)
31-40	8 (5.3%)
41-50	11 (7.3%)
51-60	4(2.7%)
>60	11 (7.3%)

130 (87%) patients reported taking their medications regularly, while 20 (13%) patients were taking medicine irregularly. Most of the patients were taking phenytoin or carbamazepine or valproic acid for their seizures. Some patients were maintained on lamotrigine, oxcarbamazepine or levetiracetam. 3 patients reported rash with carbamazepine. 2 patients developed Stevens Johnsen syndrome with phenytoin. 1 patient developed hepatitis while on valproic acid.

30 (20%) patients reported having one or more precipitants for their seizure. The precipitants in decreasing order were sleep deprivation, alcohol intake, emotional stress, fatigue and hunger. The presence of precipitants was significantly associated with seizure frequency (p=0.004)

Table 4. Seizure Frequency at presentation to hospital

Seizure frequency	Number of patients
≥1 seizure per day	23(15.3%)
≥1seizure per week	15(10%)
≥1seizure per month	44(29.3%)
≥1 seizure in 6 month	48(32%)
≥1seizure per year	14(9.4%)
Seizure recurring at more than 1 year interval	6(4%)

Table 5. Duration of seizure before first starting medication

Duration of seizure before starting medication	Number of Patients
Less than 1 week	31(20.7%)
1 week to 1 month	18(12%)
More than 1 month to less than 6 months	16(10.7%)
More than 6 months to less than 1 year	15(10%)
More than 1 year	70(46.7%)

Table 6. Seizure types

Seizure types	Number of patients
Generalised tonic clonic seizure	76(49.7%)
Focal seizure(Simple and complex partial)	25(16.3%)
Focal seizure with secondary generalization	19(12.4%)
Tonic seizure	11(7.2%)
Myoclonic seizure	9(5.9%)
Absence seizure	6(3.9%)
Atonic seizure	4(2.6%)

Table 7. Causes of recurrent seizure by disease type

Neuroimaging findings	Number of patients
Normal	65(43.3%)
Neurocysticercosis	48(32%)
Cerebral infarction	12(8%)
Neuroinfection	12(8%)
Cerebral atrophy	5 (3.3%)
Brain Tumor	4 (2.7%)
Others (Tuberous sclerosis etc.)	4(2.7%)

Table 8. Medication

Number of antiepileptic drugs	Number of patients
1	131(87.3%)
2	17(11.4%)
3	2(1.3%)

Table 9. Precipitants of seizure

Precipitants	Seizure type	Number of patients
Sleeep deprivation	GTCS Myoclonic seizure Absence seizure	6 4 4
Alcohol intake	GTCS Partial seizure	6 6
Emotional stress	Tonic seizure	2
Fatigue	Atonic seizure	1
Hunger	Myoclonic seizure	1

DISCUSSION

The result from our study showed that the frequency of seizure after starting treatment increased if the number of seizure before starting medication was high. This finding may be because those patients with higher frequency of seizure may have developed intractable drug resistant seizure. This resulted in patients having further seizure despite beginning medication. The relatively low risk of further seizures among persons with a single unprovoked seizure contrasts sharply with the higher risk after two or more unprovoked seizures.

In practice, there has been no agreement on an absolute number of seizures required for them to be considered recurrent. A few researchers have defined the term "epilepsy" to include patients with a single seizure and a few have required three unprovoked seizures.[15-19] Most recent clinical and epidemiologic studies have required two unprovoked seizures as a minimal criterion for the diagnosis. History of febrile convulsion was associated with higher seizure frequency. However we did not find any association between a history of status epilepticus and seizure frequency.

We did not find any association between Abnormal EEG or having a family history of epilepsy with higher seizure frequency. In our study, the precipitants in decreasing order were sleep deprivation, Alcohol intake, emotional stress, fatigue and hunger. The above factors have been found to lower the seizure threshold. Sleep deprivation has been particularly known to precipitate seizure like juvenile myoclonic epilepsy. Similarly chronic alcoholic may develop seizure during bout of alcohol intoxication which causes lowering of seizure threshold. However they more often develop acute symptomic seizure during period of alcohol withdrawal.

Majority of our patients reported taking their medications regularly. Patients who were noncompliant to medication had significantly higher seizure frequency than those patients who were compliant to their medication. Those patients who took their medicines irregularly often had their drug level in the sub-therapeutic level thus precipitating seizure in them.

Unlike study done by Rajbhandari in Nepal,[11] our study showed slightly different percentage for causal factors of seizure probably because our study was done in patients with recurrent seizure unlike the former study which included patients with first and recurrent seizure. Both the studies however found neurocystercosis to be the most common identifiable cause of seizure. The presence of abnormal neuroimaging was not significantly associated with increased seizure frequency. The cause of seizure did not predict higher seizure frequency. Few patients developed adverse effect requiring them to change their antiepileptic medication.

CONCLUSION

Most of the patients with recurrent seizure had identifiable cause. Neurocysticercosis was the most common cause found on neuroimaging. Cerebral infarction, neuroinfection eg. Tubercular meningitis and encephalitis were also common causes of recurrent seizure. Increased number of seizure before starting medication, history of febrile convulsion, noncompliance with medication, presence of precipitants and abnormal finding on physical examination were associated with increased frequency of seizure.

REFERENCES

1. Fisher RS, Van EBW, Blume W, et al. Epileptic seizures and epilepsy: definitions proposed by the International League Against Epilepsy (ILAE) and the International Bureau for Epilepsy (IBE). *Epilepsia* 2005; 46: 470–72.
2. World Health Organization: epilepsy: epidemiology, aetiology and prognosis. WHO Factsheet, 2001: number 165.
3. Commission on Tropical Diseases of the International League Against Epilepsy. Relationship between epilepsy and tropical diseases. *Epilepsia* 1994; 35: 89–93.
4. Burneo JG, Tellez-Zenteno J, Wiebe S. Understanding the burden of epilepsy in Latin America: a systematic review of its prevalence and incidence. *Epilepsy Res* 2005; 66: 63–74.
5. Preux PM, Druet-CM: Epidemiology of epilepsy in sub-Saharan Africa. *Lancet Neurol* 2005; 4: 21–31.
6. Kim LG, Johnson TL, Marson AG et al. Prediction of risk of seizure recurrence after a single seizure and early epilepsy: further results from the MESS trial. *Lancet Neurol* 2006; 5: 317-22.
7. Hauser WA, Stephens S. Rich, Lee Ju RJ et al. Risk of recurrent seizure after two unprovoked seizures. *N Engl J Med* 1998;338:429-34
8. Jallon P. Epilepsy in developing countries. *Epilepsia* 1997;38:1143–51.
9. World Health Organization. Epilepsy fact sheet. Available at: http://www.who.int/ mediacentre/ factsheets/fs999/en/index.html.

10. Chong-TT. Differences in epilepsy and seizures between Asia and the West. *Neurology Asia* 2007; 12 :59 – 60

11. Rajbhandari KC. Epilepsy in Nepal. *Neurol J Southeast Asia* 2003; 8: 1-4.

12. Usman S, Chaudhry H R, Asif A, et al. Demographic profile of patients with epilepsy in a community clinic. *Pak J Med Sci,* 2007;23 part II (6):873-6

13. Oscar H. Brutto D, CT findings in neurologically normal adults with a single generalized seizure. *Journal of Epilepsy* 1994;7 (1):38-40.

14. Ocana GS, Sablon JCO, Tamayo IO et al. neurocysticercosis in patients presenting with epilepsy at St Elizabeth's Hospital,Lusikisiki. *South African Medical Journal* 2009;99 (8):588-91.

15. Placencia M, Sander JW, Roman M, et al. The characteristics of epilepsy in a largely untreated population in rural Ecuador. J *Neurol Neurosurg Psychiatry* 1994;57:320-5.

16. Sander JWA, Hart YM, Johnson AL, Shorvon SD. National General Practice Study of Epilepsy: newly diagnosed epileptic seizures in the general population. *Lancet* 1990;336:1267-71.

17. Annegers JF, Hauser WA. Epidemiologic measures of occurrence and association for the study of convulsive disorders. In: Porter RJ, Mattson RH, Ward AA Jr, Dam M, eds. Advances in epileptology: the XVth Epilepsy International Symposium. New York*: Raven Press*, 1984:521-9.

18. Beran RG, Hall L, Michelazzi J. An accurate assessment of the prevalence ratio of epilepsy adequately adjusted by influencing factors. *Neuroepidemiology* 1985;4:71-81

19. Hauser WA, Hesdorffer DC. Epilepsy: frequency, causes and consequences.New York: *Demos*, 1990.