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Original Article

Clinical Profile of Patients with Seizure in Kathmandu Medical College Teaching Hospital.

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Abstract

Background

Seizure is a common clinical condition. It represents a majority of patients visiting neurology OPD as well as inpatient department in Kathmandu Medical College Teaching Hospital. While the number of patients with seizure is increasing in Nepal, data on the clinical profile of patients with seizure is scarce. Thus, this study aims to find out the relative frequency of seizure in different age and sex groups. It also aims to find out the common causes of seizure in our Nepalese population.

Materials and Methods

A descriptive cross sectional study was carried out in patients attending outpatient and inpatient of Neurology department of Kathmandu Medical College Teaching Hospital between periods of July 2018 to December 2018. Demographic characteristics, radiographic findings, EEG findings and drugs taken by patients were recorded according to the proforma.

Results

Data from one hundred patients were collected and analyzed. Most of the patients were less than 41 years of age. Most of the patients were male. The prime cause of seizure was found to be neurocysticercosis (25%). Majority of the patients were on monotherapy.

Conclusion

Our data regarding the frequency of seizure in different age and sex groups is comparable to data in South East Asia region whilst, different from the western data. In our population, neurocysticercosis was the most common cause of seizures. Also, most seizures were controlled with monotherapy.

Keywords: *Encephalitis, Epilepsy, Seizure*

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Introduction

The definition of seizure as given in 2005 is a "transient occurrence of signs and/or symptoms due to abnormal excessive or synchronous neuronal activity in the brain [1]." In 2014, epilepsy was defined by ILAE as a disease and not a disorder. Epilepsy is defined as a condition in which two or more unprovoked seizures occur more than 24 hours apart. Epilepsy can also be defined as the occurrence of one unprovoked seizure and a probability of further seizures similar to the general recurrence risk after two seizures occurring over the next 10 years [2].

Epilepsy is a common non-communicable disease. There are more than 50 million people in the world living with epilepsy. Out of those people, around 80% live in low and middle income countries. This is because of the infectious causes of epilepsy seen in this area and head injuries are also common in developing countries. There is also a lot of stigma regarding epilepsy in developing countries. Many patients don't consult the doctor for the problem and they don't get treatment [3].

Every year, around 2.4 million new people are diagnosed with epilepsy. Data from developed countries show that there are annually between 30 and 50 per 100 000 people new cases [3]. Since, we have a small number of studies regarding seizures in Nepalese population; therefore our study aims to find out the demographic characteristics of seizure in Nepalese population. We also aim to find out the common causes of seizure in our cohort.

Materials and Methods

A descriptive cross-sectional study conducted in Kathmandu Medical College Teaching Hospital from July 2018 to December 2018. The ethical approval was taken from Kathmandu Medical College Institutional Review Committee. Informed consent was taken from patients who took part in the study. Inclusion criteria was all patients of fourteen years of age and older who were diagnosed to have seizure and who were willing to participate in the study.

The calculated sample size was 96 and convenient purposive sampling method was used. However, sample size 100 was taken for the study as we had collected more cases. The sample size was calculated by the formula $N = Z^2pq/d^2$ where Z is the standard normal deviation (usually set as 1.96), d = degree of accuracy required (we take at 10 % error), p= proportion in the target population estimated to have a particular characteristic (since there is no reasonable estimation done in KMCTH, we use 50%) and q=

1-p. Exclusion criteria was age group less than fourteen years of age. Data was collected accordingly to pre-devised proforma. Data was entered in SPSS 20.0 software and analyzed. Descriptive data was presented in the form of tables and charts.

Results

Out of total 100 patients included in the study, most of them belonged to the age group of 21 to 40; 64% being less than 41 years of age. The age distribution of patients is shown in the following Table.

Table 1: Frequency of seizure in different age group (in years)

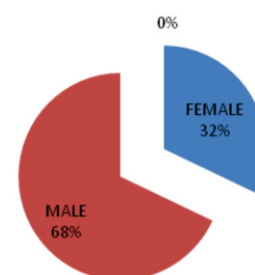| Age in years	Frequency	Percent
<or equal to20	19	19.0
21-40	45	45.0
41-60	16	16.0
>60	20	20.0
	100	100.0

Chart 1: Sex distribution of patients with seizure

Table 2: Demographic characters of patients with seizure

Demographic characters		Number	Percentage
Religion	Hindu	93	93.0
	Other religion	7	7.0
Marital status	Married	61	61.0
	Unmarried	39	39.0
Address	Kathmandu	61	61.0
	Outside Kathmandu	39	39.0

The frequency of different characteristics is shown in the following table.

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Table 3: Other characters of patients with seizure

Other characters		Number	Percentage
Pregnancy	Yes	2	2.0
	No	98	98.0
Status Epilepticus	Yes	7	7.0
	No	93	93.0
Adverse drug reaction	Yes	6	6.0
	No	94	94.0

Seizure was classified into focal onset aware, focal onset with impaired awareness, focal to bilateral tonic clonic and generalized seizures. The frequency of different types of seizure is shown in the following chart.
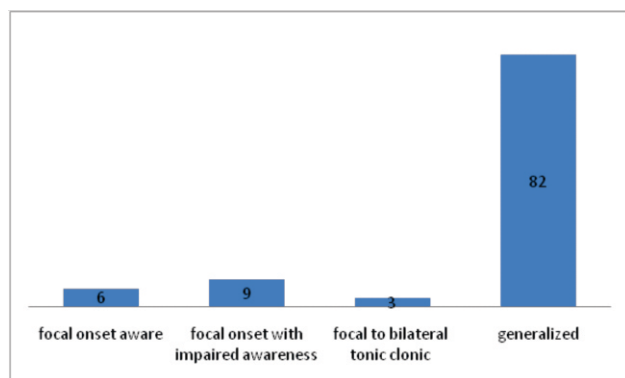

Chart 2: Distribution of seizure types

Radiographic evidence in the form of CT imaging or MRI was done in all the patients; EEG records were also obtained as either normal or abnormal. All the causes of seizure from the imaging findings are tabulated in the following table.

Table 4: Causes of seizure from the imaging findings

Causes of seizure	Number	Percentage
Neurocysticercosis	25	25.0
Post-stroke seizure	11	11.0
Sinus thrombosis	4	4.0
Tuberculoma	4	4.0
Other causes	10	10.0
Normal CT/MRI	46	46.0

Other causes of seizure included autoimmune encephalitis in 2 patients, infectious encephalitis in 2, calcified granuloma in 4 and cavernoma in 2 patients. EEG was abnormal in 42 patients and normal in 58 patients. The precipitants of seizure are tabulated in the following table

Table 5: Precipitants of seizure

Precipitants	Number	Percentage
Decreased sleep	15	15.0
Alcohol	5	5.0
Stress	4	4.0
Fever	10	10.0
Bright lights	4	4.0
Electrolyte abnormalities	1	1.0
Missed dose	4	4.0
None	57	57.0

Patients were on one, two, three or four antiepileptic drugs. The proportion of patients is given in the following table.

Table 6: Proportion of patients on one, two, three or four antiepileptic drugs

Number of antiepileptic drug	Number	Percentage
One	73	73.0
Two	22	22.0
Three	5	5.0

Discussion

This study showed that most of the patients with seizure were in the productive age group i.e. 64% of patients was in the age group less than 41. In contrast to the West, the mean age of patients with seizure amongst Asians remain young. Many epidemiological studies in Asia shows peak age amidst children and young adults [4], however there is only one study from Shanghai [5] that follows a bimodal distribution with first peak in childhood and another in elderly as in the Western developed countries. Seizure is seen more in young people in developing nations due to the fact that infectious causes of seizure like neurocysticercosis are more common in developing countries. Degenerative and neoplastic causes of seizures are more common in developed countries and infectious causes are rare.

Epilepsy is slightly more common in men than in women but the sex-specific prevalence is not significantly different in general [6-9]. Our study showed that 68% of patients with seizure were male. The root cause being the need for the patriarchal member of the household to work outside of his home every day and being subjected to environmental factors like cysticercosis, infections and head injuries compared to their female counterparts. Studies in Asia have shown that the percentage of patients with generalised seizures was 50–69, while 31–50% had partial seizures [11-12]. Our study on other hand

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showed that 82% of patients had generalized type of seizure. There are very few studies on the causes of epilepsy conducted in the Asian population. From whatever is available, causes seem to be dictated by head injury, birth trauma, and intracranial infections, such as neurocysti-cercosis or meningoencephalitis.

During 1980s in China, brain injury, intracranial infection, and cerebrovascular disease, in that order, were the leading putative causes of epilepsy [13]. While in Hong Kong, the commonest causes were cerebrovascular disease (26·2%), a history of CNS infection (26·0%), head trauma (11·4%), perinatal insult (9·7%), congenital brain malformation (7·4%), hippocampal sclerosis (5·9%), and intracranial neoplasm (5·6%) [14]. Similarly, 300 incident cases of epilepsy in Nepal 47% were caused by neurocysticercosis, 9% by tumour, 4% by vascular disease, and 2% by head injury [9]. In our study, 25% of cases were caused by neurocysticercosis followed by Post-stroke seizures in 11% of the total cases, whereas imaging was normal in 46% of patients.

A study done by Aird and Gordon classified precipitating factors into seizure inducing and seizure triggering factors [15]. We looked at the seizure triggering factors only in this study. In a study conducted in All India Institute of Medical Sciences, 89% of the participants reported at least one trigger factor. The most common trigger factors reported by the patients (in descending order) were found to be: missing medication (40.9%), emotional stress (31.3%), sleep deprivation (19.7%), fatigue (15.3%), missing meals (9.1%), fever (6.4%), and smoking (6.4%) [16]. In our study, the most common trigger factor was decreased sleep (15%) followed by fever (10%) and alcohol intake (5%). Missed dose was present in only 4% of patients. We use first generation as well as newer gene- ration antiepileptic drugs to treat seizures in our settings either alone or in combination. A study done in tertiary teaching hospital in Sri Lanka showed that monotherapy was used on 70.8% of subjects [17]. In our study, monotherapy was seen in 73% of patients, only 22% of patients were on two drugs and merely 5% on three drugs.

Conclusion

This study showed that epilepsy is more common in the age group range of 21 to 40 years and with more occurrences in male. Neurocysticercosis was the most common cause and decreased sleep was the most common trigger factor. Lastly, most of the patients with seizure in this study were controlled with single antiepileptic drug.

References

[1] Fisher RS, Van Emde Boas W, Blume W, Elger C, Genton P, Lee P, Engel J Jr, Epileptic seizures and epilepsy: definitions proposed by the International League Against Epilepsy (ILAE) and the International Bureau for Epilepsy (IBE),Epilepsia. 46:4 (2005) 470–472. PMID: 15816939

[2] Fisher RS, Acevedo C, Arzimanoglou A, ILAE official report: a practical clinical definition of epilepsy, Epilepsia. 55:4 (2014) 475–482. PMID: 24730690

[3] World Health Organization, Epilepsy fact sheet. Available at: http://www.who.int/ media centre/ factsheets/fs999/en/index.html (accessed 15.07.2018).

[4] Mac TL, Tran DS, Quet F, Odermatt P, Preux PM, Tan CT, Epidemiology, aetiology, and clinical management of epilepsy in Asia: a systemic review, Lancet Neurol. 6 (2007) 533-43.PMID: 17509488

[5] Huang M, Hong Z, Zeng J, Rong X, Sheng Y, LuC, The prevalence of epilepsy in rural Jinshan in Shanghai, Zonghua Liu Xing Bing XueZaZhi.23 (2002) 345-6.PMID: 12482363

[6] Fong GCY, Mak W, Cheng TS, Chan KH, Fong JK, Ho SL, A prevalence study of epilepsy in Hong Kong, Hong Kong Med J. 9 (2003) 252–57.PMID: 12904612

[7] Mani KS, Rangan G, Srinivas HV, Kalyanasundaram S, Narendran S, Reddy AK, The Yelandur study: a community-based approach to epilepsy in rural South India— epidemiological aspects, Seizure.7 (1998) 281–88.PMID: 9733402

[8] Tran DS, Odermatt P, Le TO, Huc P, Druet-Cabanac M, Barennes H, Strobel M, Preux PM, Prevalence of epilepsy in a rural district of central Lao PDR, Neuro-epidemiology. 26 (2006) 199–206. PMID: 16569936

[9] Rajbhandari KC, Epilepsy in Nepal, Can JNeurolSci. 31 (2004) 257-260 PMID: 15198454

[10] Ng KK, Ng PW, Tsang KL, Clinical characteristics of adult epilepsy patients in the 1997 Hong Kong epilepsy registry, Chin Med J (Engl). 114 (2001) 84–87.PMID: 11779444

[11] Kwong KL, Chak WK, Wong SN, So KT, Epidemiology of childhood epilepsy in a cohort of 309 Chinese children, Pediatr Neurol. 24 (2001) 276–82.PMID: 11377102

[12] Manonmani V, Tan CT, A study of newly diagnosed epilepsy in Malaysia, Singapore Med J. 40 (1999) 32–35.PMID: 10361483

[13] Li SC, Schoenberg BS, Wang CC, Cheng XM, Zhou SS, Bolis CL, Epidemiology of epilepsy in urban areas of the People's Republic of China,Epilepsia.26 (1985) 391–94.PMID: 4043008

[14] Hui AC, Kwan P, Epidemiology and management of epilepsy in Hong Kong: an overview, Seizure.13 (2004) 244–46.PMID: 15121133

[15] Aird RB, Gordon NS, Some excitatory and inhibitory factors involved in the epileptic state, Brain and Development. 15 (1993) 299–304.PMID: 8250154

[16] Balamurugan E, Aggarwal M, Lamba A, Dang N, Tripathi M, Perceived trigger factors of seizures in persons with epilepsy, Seizure. 22 (2013) 743–747PMID: 23806632

[17] Kariyawasam SH, Bandara N, Koralagama A, Senanayake S, Challenging epilepsy with antiepileptic pharmacotherapy in a tertiary teaching hospital in Sri Lanka,Neurol India.52 (2004) 233–37.PMID: 15269479