

## Clinical and socio-economic factors among epileptic patients in Nepal: A big challenge

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### Abstract

Epilepsy is commonly found neurological disorder in developing countries where huge treatment gap exists. Amongst many etiologies, neuroinfection is found to be prevalent in developing countries. We designed a self-structured goal directed questionnaire and interviewed 20 consecutive patients with epilepsy. We also collected their clinical symptoms and neuroimaging reports. 70 % were males. Majority (30%) had neuroinfection (20% neurocysticercosis and 10% meningitis). Eighty percent of patients had a belief on traditional healer. Epilepsy in Nepal still remains a big challenge. Public awareness to reduce infections may help in reducing seizure incidence and prevalence in developing countries like ours.

**Key words:** Epilepsy, neuroinfection, treatment gap.

### Introduction

Epilepsy is one of the world's most prevalent common non-communicable diseases and accounts for 0.5% of the whole burden of diseases in the world. Among 50 million people with epilepsy worldwide, 90% of them are found in developing countries<sup>1</sup> and 90% of these patients are not receiving adequate treatment. 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.<sup>2</sup> Epilepsy knows no geographic, social, or racial boundaries and occurs in men and women and affects all ages, but is more frequently diagnosed in infancy, adolescence, and old age. 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%.<sup>3</sup> People with low socioeconomic status mostly living in the rural areas are found to be more affected.<sup>4</sup> Studies have shown that neurocysticercosis and calcified lesions are the commonest radiological findings.<sup>5,6</sup> People suffering from epilepsy in country like ours do not have good quality life because of their poor epilepsy control. This study was done amongst patients attending for neurological care in College of

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Medical Sciences-Teaching Hospital, a tertiary care center to explore the clinical and socioeconomic factors and patients belief towards epilepsy.

### Materials and methods

This study was conducted in CMS-TH from 25th Nov, 2009 to 9th Dec, 2009 for a period of one month, after ethical clearance from the institute. A self-structured goal directed questionnaire was prepared and tested in five individuals for the validity. Then, 20 consecutive patients of epilepsy who attended the CMS-TH Neurology clinic and ward were interviewed and details were collected including their neuroimaging reports. The data were then analyzed.

### Results

Among 20 patients presenting with seizure, 14 (70%) were males and 6 (30%) were females [M:F=2.3:1]. Age ranged from 10- 80 years. Thirteen (75%) were involved in agriculture, 4 (20%) were students, 3 (15%) were housewives. 13 (65%) patients had formal education, 9 (69.23%) were males and 4 (30.77%) were females. Only 5 (38.46%) out of 13 patients, 3 (60%) males and 2 (40%) females, had education of class 10 or above.

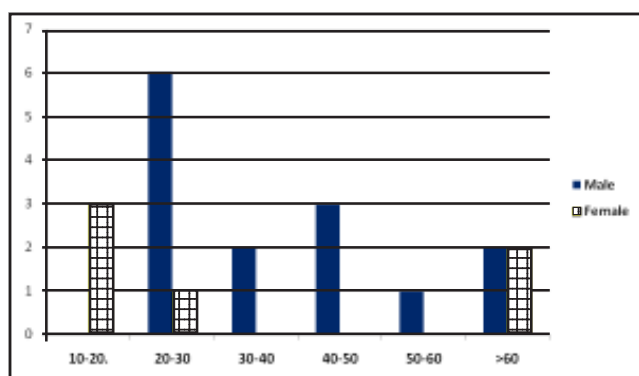


Figure 1: Age and gender distribution

Highest number of patients suffering from the disease was in the age group of 20-30 years (35%) and the sufferers were found to be less with increasing age.

Generalized seizures was found in 15 (75%) and 3 (15%) had simple partial seizures.

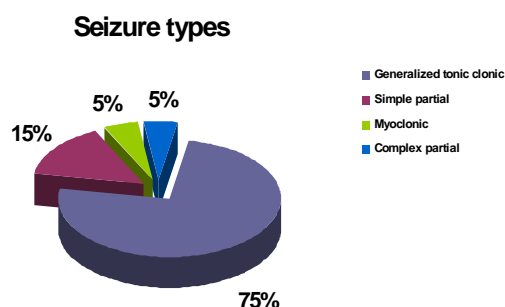


Figure 2: Types of seizure

The common attributable causes for the seizure were head injury and neuroinfection. Five patients (25%) had head trauma, 4 (20%) cases had neurocysticercosis, 2 (10%) cases had stroke, 2 (10%) cases had meningitis.

Hypertension was associated in 8 (40%) cases and diabetes in 4 (20%) cases. 8 (40%) of them were ex- or active smokers and 8 (40%) of them were active alcoholic. On CT scan, neurocysticercosis were found in 4 (20%), cortical atrophy in 5(25%) and 2 (10%) cases had infarct. Headache (40%) was the most predominant prodrome and confusion (60%) was the most common postictal symptom. Other symptoms included vertigo, anxiety, tinnitus and blurred vision before the seizure and post-ictal confusion, headache, vertigo, loss of consciousness, vomiting, tinnitus, slurred speech and paresis after the seizure attack.

Interestingly, our patients thought seizure to be because of number of reasons like trauma, brain disorder, fever, medications, stress, headache, weakness, alcohol, even cold climate and heat. To note, 35% of our patients did not have idea about the cause of the seizure. Eighty percent of patients had visited local traditional healer prior to medical attention.

### **Discussion**

Epilepsy is observed to be more common in males than females,<sup>4,7</sup> which was evident in our study too (M: F- 2.3:1). This may be because of the hospital based study and the fact that in developing countries like Nepal, males have easy access outside home while most of the females are restricted to their home. Socioeconomic factors can influence the risk of a disease, including epilepsy. First epileptic seizure induced by occupational nickel poisoning has been documented.<sup>8</sup> Most of our patients were farmers (75%), as the main occupation of the Nepalese is agriculture. In our cases, it was difficult to attribute a particular cause related to agriculture with seizure because etiology in all the cases was evident.

13 (65%) of our patients had formal education. Only 5 (25%) out of 20 patients had attended higher education of class 10 and above. In a study done in a rural region of North Vietnam, low level of education was related to high prevalence of epilepsy.<sup>9</sup> This correlates with finding of our study where 15 (75%) patients had low level or no formal education at all.

The age-specific incidence and the bimodal distribution reported in the developed countries have not been seen in developing countries. In developing countries, prevalence rate for epilepsy in elderly decreases, as compared to those in the first two decades. Most of our patients were younger, with highest frequency at the age of 20-30 years and declined with the increasing age. Similar trend has been demonstrated in studies from neighboring countries like India and Pakistan. In Pakistan, the highest prevalence rate of 1.25% was found at the age group 20-29 years. The prevalence rate steadily declined, reaching the lowest in the age group of 50-59. Also in India, prevalence and incidence rates were higher in the first 3 decades of life and lower in the elderly.<sup>10</sup>

75% of the patients had primary generalized tonic-clonic seizures and 15% had simple partial seizures. Hypertension is an established risk factor for clinically detected stroke, which is in turn, is a risk factor for epilepsy.<sup>11</sup> Seizures are found to occur in about 10% of stroke patients.<sup>12</sup> In our study, hypertension was associated with 40% of seizure patients while stroke with 10% of cases.

25% gave history of head trauma in the past. Head injury has interesting association with epilepsy as it may develop many years after head trauma. High risk of epilepsy has been demonstrated up to 10 or more years after traumatic brain injury (TBI) in a population-based cohort study.<sup>13</sup>

The high incidence and prevalence of epilepsy in developing countries has been attributed to an increased frequency of central nervous system infections.<sup>14</sup> Our 10% of patients were diagnosed to have neuroinfection most commonly observed below 25 years of age.

Alcohol acts on the brain through several mechanisms that influence seizure threshold. Recent researches have shown that the flow of calcium ions into brain cells via voltage-gated calcium channels plays an important role in the generation of alcohol withdrawal seizures, because blocking this flow suppresses these seizures. Smoking cigarettes also can trigger seizures. The nicotine in cigarettes acts on receptors for the excitatory neurotransmitter acetylcholine in the brain, which increases neuronal firing. 40% of our patients were smokers and also 40% were alcoholic. It was difficult to control seizure in these groups of our patients.

Neurocysticercosis is the most common parasitic disease of human nervous system and is one of the important causes of epilepsy in developing country. 20% of the CT scans showed calcified lesions suggestive of neurocysticercosis.

Patients with seizure were found to be very worried about their disorder. 70% believed doctors would take care of it while 30% had faith on god. Patients having faith on god and traditional healer were found to miss 2 to 3 doses of medication every month. However this was not the only reason. High cost of antiepileptics and inadequate knowledge seemed to potentiate the non-adherence to

antiepileptics. Some patients seemed to have idea that brain is the primary centre to initiate seizure whereas most of them pointed on the trauma they recently had. Few of the patients attributed their seizure to over the counter medications, stress, headache and environment like excess heat or cold. Besides, those who were alcoholic admitted that alcohol was the cause of their seizure.

### **Limitation of the study**

Apart from the inherent limitations of a hospital based study, our study has less number of samples and hence cannot be generalized. However, this study provides the socioeconomic, psychological and etiological scenario of patients presenting with seizure in our set-up and guides to set up large scale study in future.

### **Conclusion**

Epilepsy in Nepal still remains a big challenge. Seizure is seen to be more common in males, in younger age group and with low level of education. Neuroinfection is the most common etiology in developing countries, hence prevention and awareness of these conditions in public can mitigate the incidence of seizure. This kind of awareness program will help reducing treatment gap and myths about epilepsy, thereby helping both in reducing neuroinfection and improvising seizure treatment.

### **Acknowledgement**

We would like to thank Mr.N.Manandhar, Mr. Surya Prasad Ghimire, Ashok Chapagain, Prajjwal Malla, Shova Dangol, Asmita Rana, Manim Amatya, Dristi Shrestha, Apsara Pangen, Shankar

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Gupta, all medicine residents, staffs and participants for their support.

## References

1. World Health Organization. Epilepsy fact sheet. Available at: <http://www.who.int/mediacentre/factsheets/fs999/en/index.html>. Accessed June 1, 2011.
2. Chong-Tin TAN. Differences in epilepsy and seizures between Asia and the West. *Neurology Asia* 2007; **12** : 59 – 60
3. Krishna C.Rajbhandari. Epilepsy in Nepal. *Neurol J Southeast Asia* 2003;**8**:1-4.
4. Shaireen Usman, Haroon Rashid Chaudhry, Aftab Asif, et al. Demographic profile of patients with epilepsy in a community clinic. *Pak J Med Sci*, 2007;**23** part II (6) : 873-6
5. H. Oscar. Del Brutto, CT findings in neurologically normal adults with a single generalized seizure. *Journal of Epilepsy* 1994;**7** (1):38-40.
6. Gilberto Serrano Ocana, Juan Carlos Ortiz Sablon, Ilen Ochoa Tamayo et al. Neurocysticercosis in patients presenting with epilepsy at St Elizabeth's Hospital, Lusikisiki. *South African Medical Journal* 2009;**99** (8):588-91.
7. Sridharan Ramaratnam, Murthy B. Narasimha. Epilepsy in Asia. *Epilepsia* 2005; **46**(2) Supplement 1:89-90.
8. R. Denays, C. Kumba, D. Lison, et al. First epileptic seizure induced by occupational nickel poisoning. *Epilepsia*.2005;**46**:961–2.
9. Q Cuong LE, V Huong NGUYEN, Pierre JALLON. Prevalence of epilepsy in Phu Linh - Soc Son – Hanoi, a rural region in North Vietnam. *Neurology Asia* 2007; **12** (Supplement 1) : 57
10. Shih-Hui L.I.M. Epidemiology and etiology of seizures and epilepsy in the elderly in Asia . *Neurology Asia* 2004; **9** (Supplement 1):31–2.
11. D.C. Hesdorffer, W.A. Hauser, J.F. Annegers. Severe, Uncontrolled Hypertension and Adult-Onset Seizures: A Case-Control Study in Rochester, Minnesota. *Epilepsia*; 1996; **37**:736-41.
12. T.S. Olsen. Post-stroke epilepsy. *Current Atherosclerosis Reports* 2001;**3**(4):340-4
13. J. Christensen , M.G. Pedersen , C.B. Pedersen , et al. Long-term risk of epilepsy after traumatic brain injury in children and young adults: a population-based cohort study. *Lancet* 2009;**373** (9669):1105–10.
14. J.M. Murthy , S. Prabhakar . Bacterial meningitis and epilepsy. *Epilepsia* 2008; **49** Suppl 6: 8-12.