Short Communication

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Dr. Babu Ram Pokharel MD, DM
Associate Professor, Department of Medicine
Kathmandu University Hospital of Medical Sciences
Dhulikhel, Nepal
ORCID iD: https://orcid.org/0000-0002-5577-9643

Dr Sanu Raja Amatya, MD
Lecturer, Department of Medicine
Kathmandu University Hospital of Medical Sciences
Dhulikhel, Nepal
ORCID iD: https://orcid.org/0000-0002-3173-3413

Address for correspondence:
Dr. Babu Ram Pokharel
Consultant, Department of Neurology
Nepal Mediciti Hospital
Lalitpur, Nepal
E-mail: drbrpokh@gmail.com
Contact number: +977 9841929745

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Spectrum of Neurological Diseases in Tertiary Care Centre of Nepal

Neurological cases in Nepal are not reported much. Neurological diseases are associated to poor health outcomes including mortality, disability and hospitalization. Epidemiology and clinical pattern of neurological disorders in developing countries remain largely unknown. This is a descriptive study to understand the burden of disease faced by neurologists and internists in a hospital of Nepal.This is a retrospective study of medical records of patients admitted in the Neurology unit of medical ward of Dhulikhel Hospital. A total of 318 patients were admitted during the period of July 2014 to January 2015. Diagnosis was established by clinical, radiological, nerve conduction studies, electroencephalography and cerebrospinal fluid analysis.A total of 318 patients records during the above mentioned period were reviewed. Common neurological diseases identified were vascular: 138(43.40%); seizure: 60(18.87%); infectious: 20(6.29%); demyelinating: 12(3.77%); degenerative: 14(4.40%); peripheral neuropathy: 14(4.40%); and others (mass lesion, ataxia, myelopathy) 60(18.87%). Cerebrovascular disease is the most common cause of admission of patients in the neurological unit of the hospital. There are differences in the neurological diseases with respect to age, gender and ethnicity.

Key words: Dhulikhel, Medical ward, Neurological diseases, Subgroup population

Neurological diseases include diseases of the brain, spinal cord, peripheral nerve, neuromuscular junction and muscles. World Health Organization estimates that neurologic diseases affect over one billion population worldwide, which constitutes 6.3% of the global burden and causes 12% of global death[1].A substantial number of inpatients in neurology units are of non-infectious neurological illness[2]. Major neurological disorders encountered by neurologists in the United Kingdom comprise of cerebrovascular diseases, seizure disorders, peripheral neuropathies, neurodegenerative diseases, multiple sclerosis and myelopathy[3]. Epilepsy is one of the major problems in countries like Nepal[4]. There are many social stigma regarding epilepsy. Epilepsy affects about 65 million people globally[5]. Epilepsy (27.0%), headache (19.0%) and cerebrovascular disorders (7.8%) were the commonest problems encountered by neurologists in India[6]. In the past 23 years, the life expectancy in low-income countries have achieved remarkable progress—for example, in Nepal, increased by 12.16 years since 1990, reaching life expectancy of 70.64 years in 2013 for both sex combined[7]. As the number of

old patients are growing due to increase in life expectancy in the society, neurological diseases like stroke, dementia and degenerative disease are also increasing[8]. Financial burden of neurological diseases is high. The total cost of disorders of the brain was estimated €798 billion in Europe 2010[9]. Taking care of the patient after the neurological disease as mentioned above are much problematic to the patient, family and the society in terms of time, effort and money. In Nepalese society there are different sub group of population[10]. This study also tries to analyze the subgroup's population against the occurrences of different neurological disease in a tertiary care hospital.

This study retrospectively reviewed the medical records of the patients admitted in the medical ward Neurology unit of Dhulikhel Hospital. During the period of July 2014 to January 2015, 318 cases were admitted in the neurological ward. The data from medical records were taken considering age, sex, caste and necessary investigations to diagnose the cases. The investigations included Computed Tomography (CT) scan 128 slice for stroke, Magnetic Resonance Imaging (MRI) brain / spinal cord for stroke and demyelinating disease, EEG for seizure, nerve conduction studies for peripheral neuropathy, cerebrospinal fluid (CSF) analysis for infective and inflammatory diseases. Oligoclonal and aquaporin antibody test were done at specialized centre for demyelinating disease. All the neurological cases were evaluated by a neurologist. As the hospital did not have neurosurgical facility, the cases which required acute neurosurgical intervention were not admitted in the ward like subarachnoid hemorrhage, massive hemorrhagic stroke, mass lesion with features of raised intracranial pressure (ICP). For this study, subgroup of population has been divided into Newar (N), Brahmin (B), Chhetri (C), Tamang (T) others (O). The data was analyzed by using Statistical Package for the Social Sciences version 20. The p-value of < 0.05 was taken as significant.

Total number of patients admitted in the medical ward for neurological problem during the mentioned period was 318.

Cerebrovascular disease (43.40%) is the most common cause of admission of patients in the Neurology unit followed by seizure (18.87%) and infection (6.29%) respectively.

Kathmandu University Hospital Dhulikhel is a tertiary care hospital located at Dhulikhel, Kavre. It is a major hospital in the area covering five nearby districts. During the study period, the number of male patients were greater than the number of female patients in ward and OPD of Neurology department with age range between 18 years to 90 years.

As the data suggest, cerebrovascular disease (43.40%) was the most common cause for admission. The male patients were 45% more than female patients, which is similar to other studies where males have 25 to 30% higher incidence rate of stroke than females[11].

There are modifiable and non-modifiable risk factors for stroke. Age is an important risk factor for stroke[12]. Most of the cases were above 60 years of age. For each successive 10 years after age 55, the stroke rate increases more than twice in both men and women[13].

Age, gender, race, ethnicity, and heredity have been identified as markers of risk for stroke. There were differences in number of cases with ethnicity. There are reports of racial differences in the occurrence of stroke. Stroke incidence and mortality rates vary widely between racial groups. Blacks are more than twice as likely to die of stroke as compared to whites[14]. Asians, specifically Chinese and Japanese, have high stroke incidence rates[15].

The second most common causes of admission in the ward are for the evaluation of seizures accounting for 18.87% of total neurological admission. There are a lots of social stigma regarding seizure. Seizure affects 1% of the population by the age of 20 and 3% of the population by the age of 75[16]. The number of male patients were higher than female patients; similar reports have been reported in the article by Newton, CR[17]. The most common age group for seizure was between 20 to 40 years.

The third most common disease that needed admission was neuro-infections 6.28%. The number of female patients

Diseases	Number of patients	Percentage
Infectious	20	6.29%
Vascular	138	43.40%
Seizure	60	18.87%
Demyelinating	12	3.77%
Degenerative	14	4.40%
Peripheral Neuropathy	14	4.40%
Others	60	18.87%

Table 1: Neurological disease in percentage (%)

Diseases	<20 years	21-40 years	41- 60 years	>61 years
Infectious	6	6	2	6
Vascular	4	12	30	92
Seizure	0	28	18	14
Demyelinating	0	8	4	0
Degenerative	0	2	4	8
Peripheral neuropathy	2	4	2	6
Others	6	14	20	20

Table 2: Different neurological diseases according to age (years)

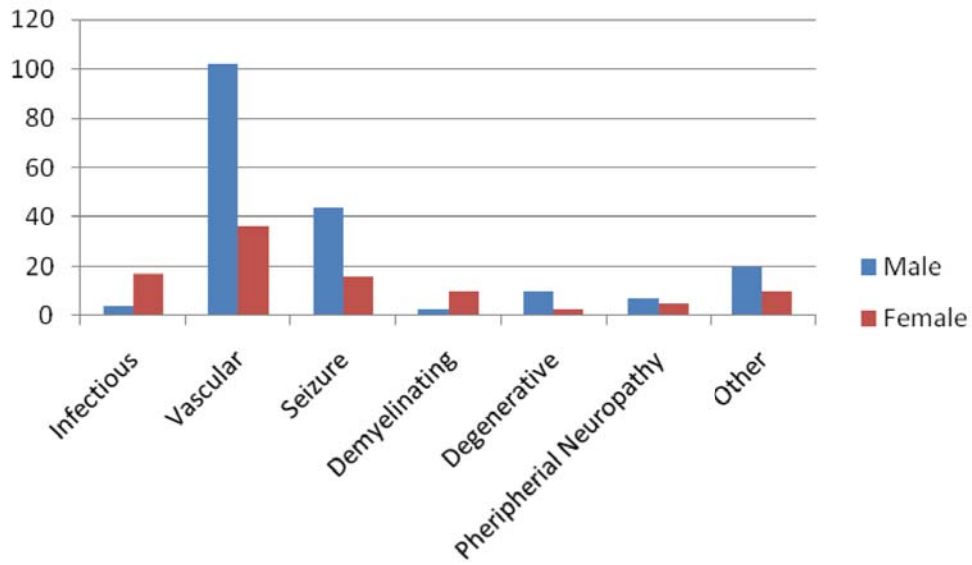

Figure 1: Sex distribution of neurological diseases

Diseases	Newar (%)	Brahmin (%)	Chhetri (%)	Tamang (%)	Others (%)
Infectious	40	10	20	20	10
Vascular	36	14	26	10.14	13.04
Seizure	20	10	16.66	10	43.34
Demyelinating	16.67	0	50	0	33.33
Degenerative	42.86	14.28	28.56	14.28	0
Peripheral neuropathy	28.56	14.28	14.28	28.56	14.28
Others	20	23.33	26.67	0	30

Table 3: Neurological diseases in different ethnic groups of population

were more than male patients. Neuro-infection included meningitis and encephalitis. Tubercular meningitis cases were seen in two of the admitted patients.

Demyelinating disease in particular multiple sclerosis(MS), accounted for approximately 2.1 million people worldwide. The disease is seen in all parts of the world and in all races, but rates vary widely[18]. Demyelinating diseases including MS, Neuromyelitis optica were common among the females like in the other parts of the world. Ten out of twelve cases were females in this category. In context of Nepal, firm data is not available, one report from the United States shows prevalence of 58-95 per 100,000[19].

Degenerative disease like Parkinsonism and Parkinson plus syndrome are also seen in Nepalese context which account to 4.04% of the total neurological patients admitted in the ward. Parkinson's disease affects approximately 1% of individuals older than 60 years of age. The estimated incidence was 4.5 to 21 while the prevalence is 18 to 328 per 100,000. The wide variation in reported global incidence and prevalence estimates may be the result of variation in data collection, analysis and different population composition[20]. The number of male patients were more than female patients in degenerative disease.

Peripheral neuropathy was reported in 4% of the cases with eight male and six female patients. Most of the cases were patients with diabetes mellitus and/or alcoholics. We do not have the prevalence of neuropathy in Nepal. In a large prospective study done by Pirart, the prevalence rose from 7.5% at the time of diagnosis to 50% after 25 years in diabetic population[21].

Cerebrovascular disease is the most common cause of admission of patients in Neurological unit. There are differences in the occurrence of neurological disease among different age, sex and sub group. Older male patients have higher chances of stroke while younger females had demyelinating diseases. Larger epidemiological studies are required for more data and finding out the neurological diseases. A major limitation of this study is its small sample size.

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