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DEMOGRAPHIC AND CLINICAL PROFILE OF PERSONS WITH EPILEPSY (PWE) FROM A TERTIARY CARE CENTER

Neurology

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ABSTRACT

Introduction: Epilepsy is a common neurological condition, coming to neurology outpatient department in hospitals.There is no study in literature from this part of country reviewing its demographic and clinical profile.

Objectives and Methodology:-Aim of this study is to determine the demographic and clinical profile of persons with epilepsy, attending neurology outpatient department in a tertiary care teaching hospital.Their demographic and clinical parameters, age, gender, rural/urban distribution, socioeconomic status, etiology, imaging and electroencephalography were recorded.

Result:154 patients with epilepsy were enrolled prospectively. 76% of them were male, with a male to female ratio of 3:1. The median age was 18 years (range- 1-79 years). 68.2% (n=105), belonged to rural area and 53.9% were of low socioeconomic status. 51.9% (n=80) had generalized seizures, followed by focal with secondary generalization seizure in 39% (n=60).Neurocysticercosis (n=44, 28.6%) was the commonest cause followed by birth asphyxia (n=10, 6.5%) and cerebrovasculardisease 5.2%(n=8). Granuloma (ring enhancing lesion) was the most common finding in 54.9% (n=39), CVA (n=5) and gliosis in 13 cases .Generalized spike and slow wave discharges were the most common finding in 60%.

Conclusion: Majority of person with epilepsy belonged to rural population and Neurocysticercosiswas most common etiology in them.

KEYWORDS

Epilepsy, Demographic, Electroencephalograph, Neurocysticercosis.

Introduction:

Epilepsy is a disease of the brain defined by any of the following conditions like, at least two unprovoked (or reflex) seizures occurring >24 h apart or one unprovoked (or reflex) seizure and a probability of further seizures similar to the general recurrence risk (at least 60%) after two unprovoked seizures, occurring over the next 10 years or diagnosis of an epilepsy syndrome[1]. Epilepsy is not a single entity but a collection of disorders that have in common the occurrence of seizures.

Epilepsy is the second most common and frequently encountered neurological condition that impose heavy burden on individuals, families, and also on healthcare systems. As per recent study, 70 million people have epilepsy worldwide and nearly 90% of them are found in developing regions[2].According to this study the median prevalence of rural studies is 1.54% (0.48-4.96%) and that of for urban studies is 1.03% (0.28-3.8%) in developing countries. India contributes about one-sixth of the global burden of epilepsy with more than 12 million persons with epilepsy (PWE) .With the proper history, clinical examination and investigations, risk factors and determinants of epilepsy can be found , which thus helps to organize preventive, curative, and rehabilitative services for PWE and also help in reducing burden on healthcare system.

Methods and Aim and Objectives:

All person with epilepsy of any age full-filling the Epilepsy definition proposed by the ILAE (Fisher et al., 2014), coming to neurology department (IGIMS, Patna) on outpatient visit between January 2017 to February 2018 were prospectively enrolled. Patient with Non epileptic psychogenic seizure, critically ill patient, situational epilepsy, seizures during pregnancy were excluded from study.

Data during the above mentioned period were collected and recorded in a structured proforma. Variables included in the data were socio-demographic characteristics, types of seizures, clinical manifestations, routine blood investigation, imaging i.e. computed tomography or Magnetic resonance imaging and Electro encephalogram.

History of the seizure event was given by their relative or the person who witnessed the event. Socio-economic status was analyzed using Modified BG Prasad Classification of 2004[3]. EEG was done usually on the day of their visit in neurology OPD. Each recording of EEG were obtained through digital equipments with minimal duration of 20-25 minutes and electrode positioned on scalp according to international 10.20 system.

Computed tomography of brain was done on 128 slice Computed tomography machine and MRI brain was performed on 1.5 tesla MRI machine. CSF examination was done in person suspected to have infective cause. Ethical approval was obtained from the ethics committee of IGIMS, Patna. Aim of this study is to determine the demographic and clinical profile of patients with epilepsy, coming in IGIMS Patna, neurology department.

Result:

From January 2017 to Feb 2018, a total of 154 patients with Epilepsy attending neurology OPD in IGIMS, Patna were enrolled. There was male preponderance (male n=117 (76%), female n=37 (24%)) with a male to female ratio of 3:1.The median age was 18 years (range- 1-79 years), with most of them being below 20 years of age (fig-1). Most of the person with epilepsy belonged to rural areas (n=105, 68.2%). 53.9% of them belonged to low socioeconomic status and only 2 belonged to high socio economic status group. No person had any family history of epilepsy. Of the seizure type 51.9% (n=80) had generalized seizures, 39%(n=60) had focal with secondary generalization seizure (fig-2).

On clinical Examination neurological deficit were present in 2 of them, one had right hemiparesis and other presented with left upper limb monoparesis, both of them had focal seizure with secondary generalization. In 53.2% (n=82) etiology was not identified most of them had generalized seizures.

Among the etiological factors infection i.e. neurocysticercosis (n=44, 28.6%) was the commonest cause followed by birth asphyxia(n=10, 6.5%), cerebrovascular disease 5.2%(n=8), cortical dysplasia 3.9%(n=6), post traumatic 1.3%, tumor 0.6% (n= 1).In this study imaging was done in 91.6% (n=141) person with epilepsy, of these 59.7% (n=92) underwent CT Brain (plain or Contrast) and 31.8% (n=49) underwent MRI Brain.

Of all patients in whom imaging were done 50% showed abnormal imaging findings. In person having abnormal imaging, granuloma (ring enhancing lesion) was most common finding n= 39 (54.9%), CVA(n=5), 13 patient had gliosis, 7 patients had mesial temporal lobe sclerosis, 3 patients had cortical dysplasia, 1 patients had polymicrogyrrhia and tumor each (Table-1& Fig- 3). 70 (50%) patients did not have any radiological abnormalities.

EEG were done in 95% (n=146) of patients. In 24% (n=37) EEG was abnormal. In persons having generalized seizures, 26% (n=21) had

abnormal EEG and in those with focal seizures 21% (n=16) had abnormal EEG. Among the abnormal EEG finding generalized spike and slow wave discharges was the most common finding in 60%.

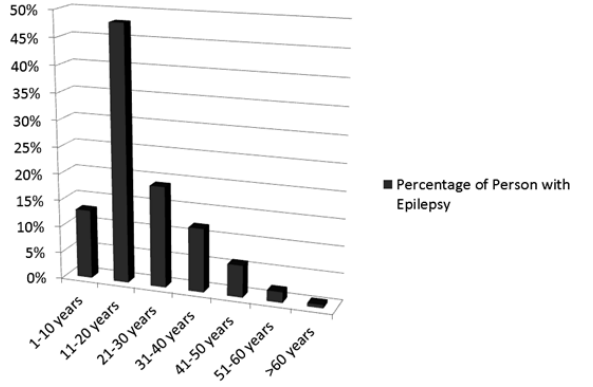

fig-1 -Age wise Percentage distribution of person with Epilepsy

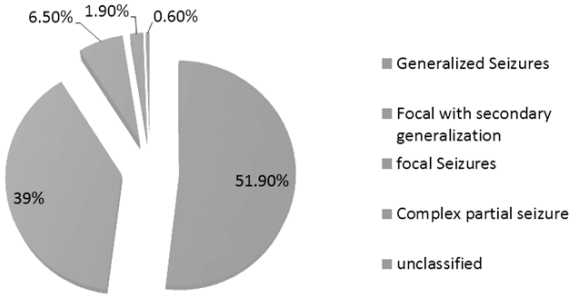

fig-2 Percentage distribution of seizure types

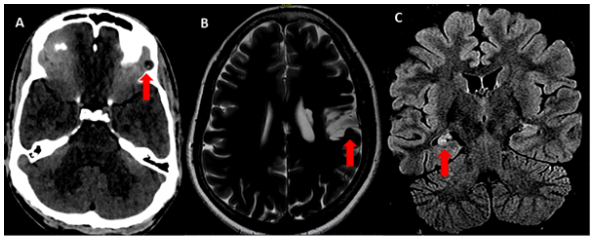

Fig-3- MRI Brain- **A**- T2 weigheted axial image showing granuloma (Neurocysticercosis) in basifrontal region in 17 year oid boy with focal seizure.**B**- Hyperintensity in T2 weigheted axial image in left parietal region (gliosis) in 45 year old male. **C**-Right side Mesial Temporal lobe Sclerosis in a 11 year old boy

Table 1- Abnormal Imaging findings in Persons with Epilepsy

Findings	CT Scan Brain,n=95 (%)	MRI Brain
Granuloma	13	13
Hypodensity (acute infact)	5	
Gliosis	8	
Polymicrogyrrhia	1	
MTLS		7
Atrophy		1
Cortical dysplasia		3
Tumors		1

Discussion:

In this study a total of 154 people with epilepsy were included. Their median age was 18 years with majority being below 20 years of age, which is consistent with the study done by Radhakrishnan K et al in 2000 and Das SK et al in 2006[4,5]. In the study done by Mani et al and Banerjee TK et al showed a bimodal distribution of age with first peak during early childhood and 2nd during 70s and 80s of life[6,7]. This second peak during later age of life may be due to increasing incidence of strokes and head injuries in india[6].

In this study there was male (M:F=3:1) preponderance similar to that of studies by Pandey S et al., Raina SK et al., Banerjee TK et al., Shah PA et al., Shaji S et al., Nandi DN et al., Banerjee T et al[4, 7-14].This high prevalence in male population may be due to cultural factors and differentially higher mortality among female children due to poor care. In contrast Radhakrishnan et al. and Das et al., showed almost similar prevalence rate in male and females [4,5].About 70% of them in this study belonged to rural population which is similar to the studies done by Gourie-Devi M et al, Banerjee TK et al., Mani KS et al[15,16,5,6].

The rural and urban difference may be due to poor antenatal/postnatal care, malnutrition, birth injury, increased incidence of infections, high rates of head injuries, and also limited health services in rural regions. As majority of them belonged to rural population hence about 60% of people belonged to low socioeconomic status which is same as the study done by Joseph N et al. in 2013, which was a hospital-based study on 196 cases in Karnataka[18]. An article by Banerjee et al., showed higher proportion of epilepsy among manual workers and those who had a monthly income between 2,000 and 5,000 INR both in the slum and non-slum areas[6].

Generalized seizures was the most common seizure type (52%) followed by focal seizures with secondary generalization (39%) which is similar to the study done by Kaul et al. and Kokatt et al[18,19] in which the prevalence of generalized epilepsy was about 70%. In contrast other hospital based performed by Sawhney IM et al. and Pal DK et al in which focal seizure is the most common type of seizure[20,21].

This difference in our study may be due to the history told by their relatives, as they may have not seen the initial part of seizure and witnessed it once it has generalized. In comparison to our study, other community-based studies showed a similar higher frequency of generalized seizures ranging from 79 to 54.5%[22,23]. As in our study, generalized seizure was the most common type and in about 53% of them no etiology was found. Among the etiological factor intraparenchymal solitary granuloma (Neurocysticercosis) was the most common cause in contrast to the study done by Murthy JM et al., in which cerebrovascular disease was the major cause in 26% of the cases followed by neuroinfections, birth trauma, and cerebral tumors[24].

This difference in our study may be due to more number of persons in younger age group and belonging to low socio-economic status and rural population in whom hygiene is suboptimal. The prevalence of active epilepsy related to NCC varies from 1.3 to 4.5 per 1,000 populations in Indian studies[25-28]. EEG was abnormal in 22% (n=16) of the total person with focal epilepsy and 27% (n=21) of the person with generalized epilepsy which is in accordance with the prior studies done in which abnormal EEG finding varied from 29 – 55 % in first EEG recording[29-31]. Among abnormal EEG finding generalized spike and slow wave discharges was the most common finding.

Conclusion:

This study for the first time highlights the current scenario of persons with Epilepsy from a tertiary care centre in Bihar. Major proportion of persons belonged to 1st and 2nd decade age group and generalized epilepsy was the most common seizure type. Majority belonged to rural population and low socioeconomic status. Neurocysticercosis was the most common etiological cause of seizure. Most common interictal EEG abnormalities were generalized spike and slow wave discharges. In generalized seizures, majority of them showed no imaging abnormalities.

Future scope:

Future studies are needed to find preventable etiological factor for epilepsy in our population so that strong public measures can be taken to preventive epilepsy and thereby decrease the burden of epilepsy on health care system and individual itself.

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Conflicts of interest: Nil

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