Original Article

Clinical profile and outcome of elderly patients with epilepsy in a Neurology tertiary care centre in Eastern India

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Elderly population (age 60 years or above), is the most rapidly growing population in the world and incidence of epilepsy is highest in the elderly. Epilepsy is an important health issue in this group. We conducted this study to identify characteristics and treatment outcome of epilepsy among elderly patients. We prospectively enrolled patients diagnosed with epilepsy with age of onset 60 years or older. Clinical data were collected and patients were followed-up for three months. Sixty six patients were included. Most frequent were focal seizures (72.72%), and localization related epilepsy was the most common type (n=57, 86.36%). Etiological diagnosis was possible in about 70% patients. Cerebrovascular disease (including hemorrhage and infarction) was the commonest cause of epilepsy. Interictal EEG showed epileptiform discharges in only 8 patients (12%). Most of the patients responded to monotherapy (80.3%). Levetiracetam (n=35, 53%) and Phenytoin (n=33, 50%) are the two most common AED taken by the patients. Most epilepsy in our population was focal onset mostly as a complication of cerebrovascular diseases. The overall effectiveness of AEDs treatment in elderly was satisfactory with most being stable on monotherapy.

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Key words **: Epilepsy, elderly, clinical features, etiology, outcome.**

Elderly population (age 60 years or above), is the most rapidly growing in the world. Epilepsy, once considered a disease of childhood and young, now known that old age is the most common time in life to develop epilepsy[1]. Epidemiologic studies show increased incidence of epilepsy in elderly, and age seems to be a risk factor for epilepsy independent of other factors[2]. Aging alone may have an epileptogenic effect on the neuron. The clinical presentation, etiology and treatment response may be different from the younger patients[3]. The differential diagnosis of seizures in elderly is broad and includes syncope, transient ischemic attack, transient global amnesia and episodic vertigo- making diagnosis of epilepsy difficult. Age related physiological changes can affect the pharmacokinetics and pharmacodynamics of antiepileptic drugs (AEDs). To evaluate this common yet unexplored problem in the Eastern region of our country, we conducted this study with the aim to provide information regarding demographic data, clinical presentation, type of epilepsy, underlying etiology, EEG and neuroimaging changes, and also to observe the response to treatment with AED.

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Editorial Comments :

- **Focal seizure common in elderly**
- **Common cause is cerebrovascular disease**
- **Response of antiepileptic therapy is satisfactory**

Materials and Methods

Study Design: This prospective follow-up study was conducted in a tertiary care hospital in West Bengal between Jan-2012 to Oct-2013.

Consecutive patients who were diagnosed to have epilepsy with age of onset above 60 years were included (as per ILAE definition 1989)[4]. Elderly patient who were already diagnosed as epilepsy before 60 years of age or having acute symptomatic seizure were exclude. The study was carried out with permission of hospital Ethics Committee and proper informed consent was taken.

Clinical Data collection : Data collection included gender, age at onset, seizure semiology, seizure frequency, neurological examination, EEG and neuroimaging features.

In addition to this, comorbidity- defined as occurrence of two or more separate clinical conditions in the same individual, was recorded. Information of AEDs and concomitant drugs with epileptogenic potential were recorded. Epileptic seizure was classified as focal or generalized[5]. Etiology of epilepsy was classified as genetic, structural, metabolic, immunological, infection or unknown[6]. The potential causes were further classified into different cat-

egories as suggested in international guidelines[5,7].

Epilepsy was diagnosed by a group of neurologists on the basis of clinical information including history, physical finding, scalp recorded EEG and 1.5T or 3T MRI.

Follow-up : All enrolled patient were followed up for three month to observe the response to treatment

Statistical Analysis : All evaluated data were recorded in a data base (Microsoft Excel Software) and then analyzed.

Results

Sixty six patients were included in the study. The mean age of the patients with new onset epileptic seizure was 62.5 (SD ± 7.58) years and 66.67% were male. According to initial clinical seizure classification, simple partial seizure was most common seizure type (n=26, 39.39%) followed by complex partial seizure (n=22, 33.3%) and generalized seizure (n=13, 19.7%). Two patients presented with status epilepticus (3%) and 3 (4.54%) were undetermined. Epilepsy diagnosis included extra temporal lobe epilepsy (n=34, 51.51%), temporal lobe epilepsy (n=14, 21.21%), generalized epilepsy (n=13, 19.7%) and unclassified (n=3, 4.5%). However, out of the 13 patients who presented as generalized tonic clonic seizure (GTCS), 7 showed focal abnormalities on MRI Brain, and hence were classified as symptomatic localization related epilepsy (LRE). They represented partial seizure with secondary generalization. LRE was most common type (n=57, 86.4%). Others were generalized epilepsy (n=6, 9.1%) and undetermined (n=3, 4.5%) (Fig 1). Among the LRE, symptomatic localization related epilepsy was most common (n=54, 81.81%).

An etiological diagnosis was possible in nearly 70% patients- consisting of cerebrovascular diseases (n=34, 51.51%) like infarction or hemorrhage (few showed only gliosis), followed by granuloma (n=4, 6%), other intracranial space occupying lesion (SOL) (n=4, 6%), Dementia (n=3, 4.54%), and ADEM (n=1, 1.5%) (Fig 2). A clear cause of epilepsy was not found in 30% patients.

Interictal EEG showed focal epileptiform discharge in 5 patients (7.58%) and generalized discharge in 3 (4.53%), focal or generalized slowing without epileptiform discharge in 20 patients (30.3%) and normal EEG in the rest.

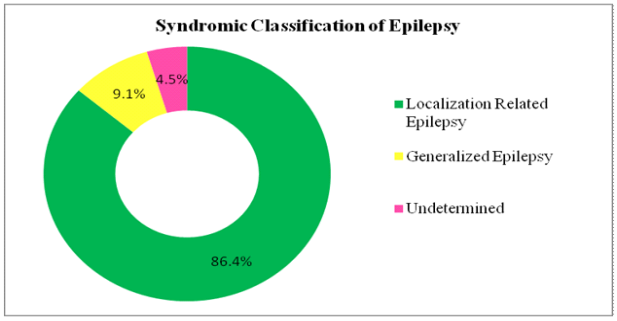

Fig 1 — Syndromic Classification of Epilepsy

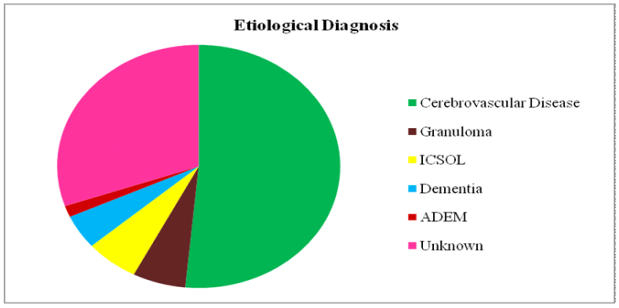

Fig 2 — Etiological Diagnosis

Majority of patients (n=53, 80.3%) were in Engel's Score range 7-12 at the time of presentation and at the time of last follow up total n=34 (51.51%) were in the score range of 0-4. At the time of registration, 69.7 % (n=46) were on AED monotherapy and two most common AED taken by the patients were Levetiracetam (n=35, 53%) and Phenytoin (n=33, 50%). At the time of last follow-up, 80.3% patients were maintained on monotherapy.

Discussion

Presently little is known about the pattern of epilepsy in elderly population in eastern part of India. We prospectively assessed the clinical profile and outcome of management of this cohort of elderly people.

Seizure semiology: Focal seizure was the most common seizure type while generalized seizure was observed rarely which is in keeping with previous reports[8,9]. It is likely that the high occurrence of cerebral pathology in elderly people is responsible for the predominance of focal onset epilepsy.

GTCS is the mostly readily recognizable type of epilepsy for the observer or eyewitness. However, we have shown that GTCS are not that common in the elderly. Hence one should be aware of the manifestations of focal/ partial onset seizures like altered mental status, memory disorder or episodes of confusion which may be the presentation of epilepsy in elderly.

Status Epilepticus: SE is reported to occur in upto 12% of adults with epilepsy[10]. In our study only two patients (3.03%) had status epilepticus. This low incidence of SE may be due to selection bias.

Etiology of epilepsy: Symptomatic localization related epilepsy was most common in elderly. According to Hauser WA *et al* (1992) most seizures in the elderly are caused by focal area of brain damage, the most common seizure types are localization related[2]. Our study reported symptomatic LRE in 81.81% of patients which was slightly higher than the Japanese study in which 76.3% patients had symptomatic LRE[11]. Other study from south India reported 67.62% symptomatic LRE[12]**.** The difference may be due to different selection criteria of the patients.

Potential cause: Stroke was the most important (n=29, 43.94%) cause in our study. This is in accordance with

finding in other countries[9,13,14]. Ischemic stroke was more common (n=23, 34.84%) than hemorrhagic stroke (n=6, 9.09%) as reported previously[15,16]. This indicates that a large fraction of epilepsy in the elderly is potentially preventable by prevention of stroke and modification of cardiovascular risk factors.

Antiepileptic Drugs: At the time of registration 69.7% patients were on monotherapy. Two most common AED taken by the patients in present study were Levetiracetam (n=35, 53%) and Phenytoin (n=33, 50%). Sodium Valproate was reported as most frequently prescribed in western countries[17,18]. ILAE recommends Lamotrigine and Gabapentin for older people but these drugs were not often used in our population. Availability of intravenous preparation and lack of interaction with concomitant used drug make Levetiracetam a good choice in elderly population. A study using Levetiracetam in epilepsy in patients aged 65 year and older showed a better response than the other group as a whole[19]. Another study done by Brazil CW *et al* found a response to Levetiracetam in late onset Epilepsy[20]. Phenytoin was taken by 50% patients at the time of registration and by 28 (42.42%) patients at the time of last follow-up. Our study was consistent with a community based study in which Phenytoin was prescribed as the initial medication in slightly more than half (52%) patients with seizure. In a previous study done by Garrard J *et al*, Phenytoin was used by nearly 60% of elderly patients[21]. The proven efficacy, low cost and availability makes Phenytoin a commonly used drug even in the elderly in resource-poor countries even though it is known to produce side effects. At the time of last follow-up 80.3% was stable on monotherapy, which is consistent with previous retrospective study where 88% patients could be managed by monotherapy[22].

Conclusion

Number of people aged 60 years or above is increasing day by day. Epilepsy in elderly is a common but under-recognized problem. The clinical presentations are different in this age group and one needs to recognize atypical manifestations such as altered mental status, memory disorder or episodes of confusion. The differential diagnosis is wide including syncope, transient ischemic attack, postural hypotension and others. Epilepsy has to be diagnosed properly with clinical judgment and with the help of EEG and neuroimaging. Most epilepsy in our population was focal/ partial onset, mostly as a complication of cerebrovascular diseases. Hence, a substantial fraction of epilepsy in the elderly is potentially preventable by prevention of stroke. The overall effectiveness of AED treatment in elderly was satisfactory with most being stable on monotherapy.

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