

Use of Different Antiepileptic Drugs in Idiopathic Generalized Epilepsy: A Clinical Study

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Abstract- We studied 200 patients of idiopathic generalized epilepsy (IGE) diagnosed by EEG criteria in our tertiary care hospital (Sri Guru Ram Rai Institute of Medical & Health Sciences, Dehradun, UK, India) from June, 2012 to May, 2015. 164 (82%) patients were diagnosed IGE. When history and records were checked 30% patients were taking broad spectrum AED, 35% were on specific AED, 51% were on nonspecific AED while 9.5% patients were on combination of AED. 39.21% patients on nonspecific AED were well controlled of seizures and 60.78% were poorly controlled. When we changed the medicine to broad-spectrum AEDs, 50.82% became well controlled.

Key Words : AED, Epilepsy, IGE

I. INTRODUCTION

Idiopathic generalized epilepsy (IGE) is a wide variety of epileptic syndromes. It has a strong genetic basis [1]. IGE is well controlled by broad-spectrum AED. [2]. IGE is usually adult onset IGE and family history of epilepsy is positive in young patients (during childhood or adolescence) [1, 3–5]. IQ of IGE patients is normal, they have no neurological deficit on examination, and magnetic resonance imaging (MRI) scan is normal. IGE is diagnosed by electroencephalogram (EEG). EEG may be normal and, when abnormal, it can be very characteristic of the syndrome, showing generalized spikes and polyspike complexes of 3–4 Hz, or faster frequency, superimposed on a normal EEG background [6–8]. In general, IGEs respond well to treatment, with 70–80% being fully controlled. The use of narrow-spectrum (nonspecific) AEDs, such as carbamazepine (CBZ) and phenytoin (PHT), either in monotherapy or in combination, is a common wrong practice, which could account for the seemingly difficult to control seizures “pseudointractability” in some reported series [1, 9–11].

II. METHODS

It was retrospective study. We studied EEG reports of all patients seen at our EEG lab in the period from the years 2012–2015. IGE patients with EEG criteria were identified. For those identified patients, we reviewed their charts, demographic data, workup for epilepsy, age of onset, seizure types, seizure frequency, and their history of AED use, prior to their evaluation at a specialized epilepsy clinic. The study was established with the objective of providing a comprehensive evaluation for patients with refractory epilepsy. The management of patient was under guidance of author who is an epileptologist and neurologist along with physician and supportive staff. The seizure response

rate was recorded based on the patients’ last 6 months of visits and compared it to a 6-month period following initiation of the “broad-spectrum” AED, if indicated. AED are divided into two types that is broad-spectrum (specific) and narrow-spectrum (nonspecific). It is known fact that certain AEDs are specific than the others for the treatment of IGE, namely, valproate (VPA), lamotrigine (LTG), topiramate (TPM), and levetiracetam (LEV) [10–16]. On the other hand, the group of “nonspecific” AEDs include phenytoin (PHT), carbamazepine (CBZ), oxcarbazepine (OXC), and gabapentin (GBP). International League Against Epilepsy 1989 classification to classify the different epilepsy types is used [17, 18].

The primary objective of our study was to report our experience in Uttarakhand, India to observe wrong diagnosis and wrong treatment of IGE with nonspecific AEDs. The secondary objective was to determine the percentage of patients who become adequately controlled after evaluation at the epilepsy clinic and switched to the “right” choice of AEDs.

III. RESULTS

200 patients were identified, 120 males and 80 females, mean age of 30 and mean seizure duration of 06 years (Table 1). According to the International League Against Epilepsy classification, 171 patients (85.5%) had idiopathic generalized epilepsy, 17 patients (8.5%) had juvenile myoclonic epilepsy (JME), and 12 patients (6%) had juvenile absence epilepsy (JAE) (Table 2).

When initially seen, 60 patients (30%) were not on any AED, and 70 patients (35%) were using specific AED (Table 3); of those, 48.3% were on VPA, 2.85% were on TPM, 25.71% were on LTG, 14.28% were on LEV, and 4% were on various combinations of specific AEDs (Table 4). On the other hand, 51 patients (25.5%) were taking narrow-spectrum (nonspecific) AEDs (Table 3); of those, 52.94% were on CBZ, 11.76% were on PHT, 11.76% were on PBT, 9.80% were on OXZ, and 13.7% were on various combinations of these nonspecific AEDs (Table 5). The remaining 19 patients (9.5%) were on a combination of both specific and nonspecific AEDs (Table 3).

Of the total 51 patients who were receiving nonspecific AEDs, seizures were adequately controlled in 20 patients (39.21%), while 31 patients (60.78%) had poorly controlled seizures (Table 6). When these patients’ AED regimens were changed from nonspecific to a specific AED, 30 patients (58.82%) became fully controlled, 8 patients (11.26%) appeared to be truly intractable to all medication regimens, and 13 patients (25.49%) have missed followup (Table 6).

IV. DISCUSSION

It is supposed that IGE patients are difficult to treat. Our study supports that it important to make a correct diagnosis of IGE and use specific AEDs. It is seen in this study that most of uncontrolled IGE are because of use of specific AEDs. According to International League Against Epilepsy, classification of syndromes be “used daily in communication between colleagues” and be the “subject of clinical trials and other investigations.”

Our findings are similar to other series, which show nonspecific AEDs were used in about 30% of IGE patients and 65% of them had poorly controlled seizures. Specific AEDs had good effects and 50% became seizure-free. This shows the importance of thorough and comprehensive evaluation of patients with difficult to control seizures before they are deemed refractory to AEDs. Interestingly, however, 34% of IGE patients treated with “nonspecific” drugs, such as CBZ or PHT, were seizure-free. Of note, all these patients had GTCs as the predominant seizure type, and none of them had associated absence or myoclonic seizures. It is well established that these latter seizure types may worsen with the use of certain AEDs, whereas GTCs may respond well to a narrow-spectrum (nonspecific) AEDs [2, 11, 16].

Clinical importance of our study is as most patients with generalized tonic clonic (GTC) seizures are assumed to have focal seizures with secondary generalization, especially if their seizures start in adult life [19]. Indeed, 22% of our IGE patients had their seizures beginning after the age of 20. We should use an open mind approach, when evaluating these patients, and to consider using broad-spectrum AEDs if in doubt about the underlying syndromic diagnosis.

Our study is retrospective study. It is required to do a large multi-centre study. Moreover, it has a selection bias, as specialty epilepsy clinics tend to evaluate patients that are doing poorly.

V. CONCLUSION

Our findings confirm the previous views. A poor choice of AED is main cause of IGEs that are seemingly difficult to control and show the importance of establishing specialized epilepsy clinics to evaluate these patients and make the appropriate changes. Use of inappropriate AEDs for IGE is still not well recognized in a significant proportion and that requires further evaluatios.

CONFLICT OF INTERESTS

The authors does not have any conflict of interests.

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Table 1: Patient demographics.

Total number	200
Mean age	30
Male	120
Female	80
Duration of seizures (mean)	6 years
EEG (IGE alone)	164 (82%)
EEG (IGE + Focality)	36 (18%)
Family History of seizures, excluding febrile Sz	46 (23%)

Table 2: Epilepsy/seizure types.

Epilepsy type	Seizure types	Total patients
Idiopathic generalized epilepsy with generalized tonic clonic seizures	GTCs	171(85.5%)
Juvenile myoclonic epilepsy	Myoclonic	17 (8.5%)
Juvenile absence epilepsy	Absence	12 (6%)

Table 3: Prior AED use.

Patients on no prior AED	60 (30%)
Patients on specific AED	70 (35%)
Patients on nonspecific AED	51 (25.5%)
Patients on combination of specific and nonspecific AED	19 (9.5%)

Table 4: Prior adequate AED use.

Patients on specific AED	70 patients
(1) Valproate	38 (48.3%)
(2) Topiramate	2 (2.85%)
(3) Lamotrigine	16 (25.71%)

(4) Levetiracetam	10 (14.28%)
(5) Combination	4 (5.71%)

Table 5: Prior nonspecific AED use.	
Patients on nonspecific AED	51 patients
(1) Carbamazepine	27 (52.94%)
(2) Phenytoin	6 (11.76%)
(3) Phenobarbital	6 (11.76%)
(4) Oxcarbazepine	5 (9.80%)
(5) Combination	7 (13.7%)

Table 6: Treatment response in nonspecific AED group.

51 patients	Prior nonspecific AED	Change adequate AED
Adequately controlled seizures	20 (39.21%)	30 (58.82%)
Poorly controlled seizures	31 (60.78%)	8 (11.26%)
Missed to follow up		13 (25.49%)