THE AGE OF NORMALIZATION OF THE EEG IN CHILDREN WITH BENIGN CHILDHOOD EPILEPSY WITH CENTROTEMPORAL SPIKES: A PARAMETER FOR THE DISCONTINUATION OF ANTIEPILEPTIC DRUGS

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SUMMARY

Benign childhood epilepsy with centrotemporal spikes (BECT) is placed in the group of idiopathic partial epilepsies in the International Classification of Epilepsies and Epileptic Syndromes. Although the course of BECT is not always mild, the prognosis is favorable, therefore, some authors have emphasized that antiepileptic treatment may be unneccesary in most cases. However, many children with BECT have more than 2 seizures in the active period of the disease and must be treated with antiepileptic drugs (AEDs). The crucial problem to solve is when to stop AED in a patient with BECT. In this study we have identified the age of normalization of the electroencephalography (EEG) in 29 BECT patients and tried to determine whether this parameter can serve as a reliable criterion to stop AED treatment. We observed that there was a good correlation between the normalization of the EEG and the discontinuation of AED treatment, and suggest the use of low doses of AED in BECT patients after the second or third recognized seizure in the active period of the disease under periodic EEG evaluation.

Key Words : Benign childhood epilepsy with centrotemporal spikes; Normalization of the EEG; Antiepileptic drug treatment

INTRODUCTION

Benign childhood epilepsy with centrotemporal spikes (BECT) is placed in the group of idiopathic partial epilepsies in the International Classification of Epilepsies and Epileptic Syndromes (1). Although the course of BECT is not always mild, the prognosis is favorable, almost all children recover before adulthood and relapses in adulthood are extremely rare (2 - 6).

Some authors have emphasized that antiepileptic treatment may be unneccesary in most cases (3,7) but it is not always easy to explain this to the parents especially if the seizures occur in clusters. Therefore, the patients with frequent seizures are treated sooner or later by a neurologist or a pediatrician. Most cases respond well to various AED even with low doses (3, 6, 8).

The crucial problem to solve is when to stop AED in a patient with BECT. In this study we have identified the age of normalization of the EEG in 29 BECT patients and tried to determine whether this parameter can serve as a reliable criterion to stop AED treatment.

PATIENTS AND METHODS

Patients selected were children with BECT who had been treated with monotherapy after the second or third recognized seizure and were without AED for at least 2.5 years (range 2.5-11 years). There were 20 boys and 9 girls. The age of onset of BECT ranged from 2 to 11 years, with a mean age of 7.2 years.

The diagnosis of BECT was based on the characteristic features of the seizure and EEG abnormalities. A typical daytime attack begins with paresthesis in oral-buccal cavity, speech arrest and excessive pooling of saliva without loss of consciousness. Motor phenomena during the daytime seizures are usually restricted to one side of the face. The nocturnal seizures are commonly secondarily generalized. The interictal EEG in all patients showed biphasic spike usually followed by a slow wave at the midtemporal and central region on a normal background activity.

Clinical and EEG follow-up with periodic examination were conducted every six months. Electrodes were placed according to the 10-20 system. Bipolar recordings were made, using longitudinal and transverse couplings. Hyperventilation and photic stimulation were performed in all patients.

RESULTS

Table I summarizes the results obtained in our study. Seizure frequency was variable before treatment. Sixteen patients had no seizure after the onset of the treatment. The duration of active period (the time between the first and the last seizure) ranged from 6 months to 10 years. All patients had centrotemporal spikes on their awake EEG recordings during the active period. The age of the last seizure ranged from 6.5 to 13 years with a mean age of 9.9 years. Paroxysmal EEG discharges definitely disappeared from 6 months 5 to years after the last seizure between 9 and 13.5 years. The follow-up period after AED discontinuation was 2.5 to 11 years.

Table I: Clinical characteristics of patients with BECT

Patient no.	Age of first seizure (years)	Age of last seizure (years)	Age of EEG normalization (years)	Active period (years)	No. of seizures under treatment	AED/Onset of therapy (years)
1/F	6.5	12	13	5.5	5*	PHT/7
2/M	2	12	12.5	10	-	CBZ/12
3/F	5.5	9	9.5	3.5	>5	PHT/6
4/M	6	6.5	9.5	0.5	-	PHT/6.5
5/F	9	11	12	2	-	CBZ/11
6/F	7	10	11.5	3	1*	CBZ/9
7/M	9.5	10.5	13	1	-	PB/10.5
8/F	11	11.5	11.5	0.5	-	CBZ/11.5
9/M	10	10.5	12.5	0.5	-	PB/10.5
10/F	10.5	11	11.5	0.5	-	PB/11
11/M	5.5	8	12	2.5	-	CBZ/8
12/M	6	6.5	10	0.5	-	CBZ/6.5
13/F	9	12	12.5	3	3*	PB/9
14/F	7	8	10	1	-	PHT/9
15/M	7	11	12	4	1*	CBZ/9
16/M	6	6.5	11.5	0.5	-	PB/6.5
17/M	6	7	9	1	-	PB/7
18/M	8	10.5	12	2.5	1 #	CBZ/8
19/M	6	13	13.5	7	-	PB/12
20/M	8	11.5	12.5	3.5	-	PHT/11.5
21/M	8	9.5	10.5	1.5	2*	CBZ/8
22/M	6.5	8	9.5	1.5	-	CBZ/8
23/M	3	10	12	7	4*	PHT/3.5
24/M	9	11	12.5	2	-	PB/11
25/M	7	11	11	4	2*	PHT/9
26/M	9	11	13	2	1*	PB/9
27/M	7	10	12	3	3 #	CBZ/8.5
28/F	7	9	10	2	3*	CBZ/7
29/M	9	11	12	2	2*	PB/10

* Discontinuation of 1 or 2 doses; # Low doses

DISCUSSION

BECT has the best prognosis among the benign epilepsies in childhood (2-6). The seizures stop completely after puberty whether they had been treated or not. Therefore, in the last years some authors have suggested no treatment after the first seizure, because seizures can remain as an isolated or rare event (3,7).

On the other hand, in some patients seizures can appear in clusters or occur frequently during the active period of the disease (5,9). These patients will be treated sooner or later by an expert neurologist or pediatrician. Since Gower's concept that in general seizures predispose further seizures, effective treatment may also be important in BECT (3,10).

In this study, we defined the first normalization age of the EEG and tried to determine whether this parameter can serve as a reliable criterion to discontinue the AED. It is generally accepted that the presence of focal neurologic signs and/or mental retardation, the early age of seizure occurrence, a long duration of the illness and the presence of paroxysmal EEG activity at the start of discontinuation of AED treatment are predictors of relapse (3, 11-14). In our series, only one patient (Patient 2) was mildly mentally retarded and had a slight left hemiparesis due to meningitis at the age of one year. His results did not differ from the others. In two patients the first seizure occurred before five years, but the age of the last seizure in these patients was not different than the last seizure age of the whole group.

It is generally accepted that the active period of the disease improves in a short time, although the EEG abnormality changes more slowly and less frequently (3,8). This general agreement must be evaluated with caution, since the active period of the disease will be influenced by AEDs. Therefore, the age of the last seizure in children with BECT who used AEDs cannot reflect the real age of the last seizure.

All children in our series were treated with low doses of various AEDs. None of them showed side effects or decline of school performance which would indicate impairment of cognitive functions. In general we started AED treatment after the second or third seizure because the seizures can remain as an isolated event especially if they appear around puberty. In many patients there were several years between the onset of the first seizure and the onset of the therapy because either the patient did not report to the physician on time or the proposed therapy was not appropriate. In 16 patients (55.1%) no seizure occurred under AED treatment. In ten patients (Patients 1, 6, 13, 15, 21, 23, 25, 26, 28, 29) seizures were only observed in periods of discontinuation of 1 or 2 doses. In patients who had seizures under AED treatment despite appropriate usage the seizures could be explained with low dosages of the AED since these patients became seizure free after the increase of the doses (Patients 18, 27). Only one patient (Patient 3) had frequent seizures due to inappropriate usage of AED.

On the other hand, the persistence of the paroxysmal EEG discharge after the last seizure in children with BECT under AED treatment could indicate that the focus is still active. For this reason, we tapered the dosage of the AED as soon as the spike discharge disappeared from the EEG and stopped the medication in three or six months thereafter. All patients were seizure free after discontinuation of the AED treatment in the follow-up period and in none of our patients the discharge reappeared after the normalization of the EEG.

Our results indicate that the normalization of the EEG is a reliable criterion to stop AED treatment in BECT patients. Therefore, we suggest the use of low doses of AED in BECT patients in the active period of the disease until disappearance of the spike discharge in the EEG under periodic evaluation and stop the treatment after normalization of the EEG in three or six months.

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