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PLENARY, PARALLEL AND DISCUSSION SESSIONS

Symptomatic generalized epilepsies: Clinical significance and problems

Yoko Ohtsuka, Katsuhiro Kobayashi, Harumi Yoshinaga, Makio Oka, Fumika Endoh

Department of Child Neurology, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Japan

Abstract

We investigated electroclinical features in patients with symptomatic or cryptogenic generalized epilepsies except for West syndrome. They were divided into a tonic group and a myoclonic group. As a result these groups exhibited different features with some overlap between them. They included Lennox-Gastaut syndrome, severe epilepsy with multiple independent spike foci (SE-MISF), Doose syndrome and other unclassified cases. Thus the boundary between these epilepsy syndromes is sometimes blurred. In patients with SE-MISF, main seizure types were minor generalized seizures though the main EEG findings were multifocal spikes. The role of both cortical and subcortical mechanisms in the occurrence of symptomatic generalized epilepsies should be further clarified.

INTRODUCTION

According to the 1989 ILAE classification, generalized epilepsies and syndromes are divided into three types: 1) idiopathic, 2) cryptogenic or symptomatic, and 3) symptomatic. The latter two categories include certain epileptic syndromes (Ohtahara syndrome, West syndrome and Lennox-Gastaut syndrome) that are collectively referred to as age-dependent epileptic encephalopathy.[1] Each of these syndromes has characteristic seizure types and EEG features. Although these syndromes have various underlying diseases, the onset of each syndrome corresponds to a particular age, and thus is closely related to the developmental stage of the CNS. Transition from one syndrome to another often occurs with increasing age.

In studying age-dependent epileptic encephalopathy, we found a significant number of patients who have minor generalized seizures without hypsarrhythmia or diffuse slow spike-waves. To describe these electroclinical characteristics, we previously proposed an epilepsy syndrome called severe epilepsy with multiple independent spike foci (SE-MISF).[2] The main clinical seizure types are generalized seizures such as brief tonic seizures, although the main EEG findings are multifocal spikes and/or spike-waves. Many but not all cases of SE-MISF exhibit transition from or to age-dependent epileptic encephalopathy. Except in the case of West syndrome, it is sometimes difficult to diagnose a specific epilepsy syndrome in cryptogenic or symptomatic generalized epilepsies.[3]

To elucidate the diagnostic issues of patients with symptomatic or cryptogenic generalized epilepsies, we performed an electroclinical study on patients with cryptogenic or symptomatic generalized epilepsies, not including patients with West syndrome.[3]

METHODS

The selection criteria were as follows: the predominant seizure type was minor generalized seizures such as brief tonic seizures, myoclonic seizures or atypical absences, and the predominant EEG pattern was one of diffuse epileptic discharges such as diffuse slow spike-waves, diffuse irregular spike-waves and diffuse multiple spike-waves. Patients whose predominant seizure type was a minor generalized seizure but whose EEGs showed multifocal spike-waves were also included in this study for the evaluation of SE-MISF. We divided the patients into two groups according to their main seizure type: a tonic group consisting of 54 patients with brief tonic seizures and a myoclonic group consisting of 24 patients with myoclonic seizures and/or atypical absences. The tonic group was further divided into two groups according to the presence or absence of a history of West syndrome.

RESULTS

In the tonic group with a history of West syndrome, seven patients had only brief tonic seizures; the other 16 had other seizures as well. Sixteen patients in this group continued to have tonic spasms (brief tonic seizures) after West syndrome. In the other 7, brief tonic seizures had relapsed after an absence of seizures. This group's EEG findings are as follows. After the disappearance of hypsarrhythmia, the voltage of the EEGs decreased, and multifocal spike-waves became more evident. During this process, diffuse discharges appeared sporadically. In some patients, obvious diffuse slow spike-waves emerged. Diffuse slow spike-waves bursts, which are characteristic of Lennox-Gastaut syndrome were observed in 48% of the patients in this group at some point during the clinical course. In many of them, however, this pattern was seen only temporarily or inconsistently. Abnormal sleep patterns such as rapid rhythm, also characteristic of Lennox-Gastaut syndrome, were observed in 83% of the patients.

In the tonic group without a history of West syndrome, 14 patients had brief tonic seizures only, while 17 patients had other seizures as well. Diffuse slow spike-waves bursts were obviously observed in 68% of the patients at some point during the clinical course. Diffuse slow spike-waves were only sporadically seen in two other patients, and were never seen in the remaining eight. The main EEG feature of these patients was multifocal spike-waves. Abnormal sleep patterns such as rapid rhythm were observed in 61% of the patients.

In the myoclonic group, a total of 20 patients had myoclonic seizures and the remaining four had only atypical absences. The characteristic EEG findings of the myoclonic group were diffuse irregular spike-waves and diffuse multiple spike-waves, but diffuse slow spike-waves were observed at some point during the clinical course in 33% of the patients. Abnormal sleep patterns such as rapid rhythm were also seen in 25% of the patients.

DISCUSSION

In this study, we divided patients with symptomatic or cryptogenic generalized epilepsies into two groups. The tonic group consists of patients with Lennox-Gastaut syndrome and its related syndromes and the myoclonic group consists of those with Doose syndrome and other myoclonic epilepsies. As a result, these two groups exhibited different features not only in their clinical seizure types but also in their EEG patterns, though there was some overlap between the groups.[3] Multifocal spike-waves were seen in many patients in the tonic group; this suggests that a significant number of patients did not meet the EEG criteria of Lennox-Gastaut syndrome, and could instead be diagnosed as SE-MISF.[2] The electroclinical characteristics of SE-MISF and West syndrome are similar, because hypsarrhythmia in West syndrome primarily consists of multifocal spike-waves with few synchronized seizure discharges, with tonic spasms occurring as generalized seizures. The reason why multifocal spike-waves are prominent in some older patients with SE-MISF has not been clarified, but factors such as brain damage type, treatment and genetic predisposition can influence the occurrence of this epilepsy syndrome.

Conventionally generalized epilepsies are thought to be characterized by generalized seizures with generalized-onset ictal EEGs and diffuse epileptic discharges on interictal EEGs. Some forms of brain damage, however, can result in generalized symptomatic epilepsies with partial seizures in addition to generalized seizures, and with focal epileptic discharges. Thus, the boundary between symptomatic generalized epilepsies and symptomatic localization-related epilepsies is sometimes blurred. The role of both focal cortical and subcortical mechanisms in the occurrence of symptomatic generalized epilepsies should be further clarified.

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