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Dissociative experiences in epilepsy: Effects of epilepsy-related factors on pathological dissociation

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ABSTRACT

Psychogenic nonepileptic seizures (PNESs) in patients with epilepsy can be categorized as dissociative disorders. The prevalence of PNESs in patients with epilepsy appears to be much higher than that of dissociative experiences in nonclinical subjects. In order to clarify as to whether epilepsy-related factors were associated with pathological dissociation, we conducted a controlled study with 225 patients with epilepsy and 334 nonclinically matched individuals. All participants completed the Japanese version of the Dissociative Experiences Scale (DES). There was no significant difference in the DES score (DES-S) between the group with epilepsy and the control group. The group with epilepsy showed a significantly higher DES taxon (DES-T; a subset of DES-S and an index of pathological dissociation) than the control group. Thirty-one out of the 225 patients with epilepsy (13.8%) had PNESs. Because of its strong association with the DES-S and DES-T, PNESs can be regarded as a symptom of dissociation. With multiple regression analysis, the patients with a shorter duration of epilepsy, higher seizure frequency, or shorter period in education tend to suffer from pathological dissociation. These findings demonstrate that patients with epilepsy are more prone to experiencing pathological dissociation when having certain clinical factors.

1. Introduction

It is known that complex partial seizures sometimes resemble certain symptoms of dissociative disorders, e.g., amnesia, fugue, convulsion, and disturbed consciousness [1]. Both complex partial seizures and dissociative disorders are often associated with limbic dysfunction [2,3]. Patients with epilepsy sometimes exhibit psychogenic nonepileptic seizures (PNESs), which fulfill the criteria of dissociative (conversion) disorders [4]. The exact prevalence of PNESs in people with epilepsy in general has been somewhat inconclusive, which may reflect a paucity of studies in sufficient size and methodology. Comprehensive review articles [1,5] summarized the reported prevalence of PNESs in patients with epilepsy that ranges from 5 to 40%. This appears to be considerably higher than that of dissociative disorders in the general population that ranges from 0.3 to 3.4% [6–8]. This leads to a question as to why PNESs, most of which are categorized as dissociative experiences, are so frequently observed in people with epilepsy. The higher prevalence of PNESs (thus, dissociative experiences) may suggest an association or overlap between epilepsy-related factors and dissociation. This may also cast light on the possible susceptibilities to dissociative experiences of people with epilepsy.

The characteristics of dissociation have been studied in nonclinical individuals and people with a range of neurological and psychiatric conditions [9–11]. Dissociative experiences can be divided into two features: pathological dissociation observed in dissociative disorders and other neuropsychiatric conditions and nonpathological dissociation

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that could be experienced even by the nonclinical population [8,11]. Dissociation in epilepsy has been mostly studied in relation to PNESs [12]; however, it is still unclear whether PNESs in patients with epilepsy can be directly regarded as dissociative disorders (pathological dissociation). There has been a paucity of studies regarding the comprehensive nature of dissociative experiences in patients with epilepsy in comparison to nonclinical controls [13,14]. Only a few controlled studies have been carried out to look into the relation between dissociation and epilepsy-related factors in patients with epilepsy [13,15]. It is of interest as to (1) whether dissociation in patients with epilepsy differs from that in nonclinical controls, (2) how much PNES in patients with epilepsy account for comprehensive dissociation test scores, and (3) whether epileptic seizures and any other epileptic pathophysiology are directly associated with dissociative experiences.

The Dissociative Experiences Scale (DES) is a standardized quantification tool for a wide range of dissociative phenomena including both ordinary and pathological dissociation [8,9]. In particular, 8 out of the 28 DES items, termed DES taxon (DES-T), were strongly associated with the degree of pathological dissociation [6]. Our previous studies showed the DES scores as a useful screening tool for PNESs in patients with epilepsy [13]. In order to characterize dissociative experiences in epilepsy with a particular interest in epilepsy-related factors, we conducted a controlled study using the DES in a large cohort of patients with epilepsy and that of nonclinical individuals.

2. Methods

2.1. Subjects

We enrolled 225 patients with epilepsy from 11 Japanese institutions: Adachi Mental Clinic, Aichi Medical University Hospital, Asahi General Hospital, Asai Hospital, Jozen Clinic, Musashino Kokubunji Clinic, National Centre Hospital for Mental, Nervous, and Muscular Disorders, Nihon University Hospital, Osaka University Hospital, Sapporo Hanazono Hospital, and Tenshi Hospital. All the institutions had specialist epilepsy and neuropsychiatry clinics run by consultant neuropsychiatrists qualified in both psychiatry and epileptology. The participants were selected from a pooled database according to the following criteria: (1) epilepsy type — either idiopathic generalized epilepsy (IGE) or partial epilepsy (PE); (2) age at the time of evaluation ranging from 15 to 70 years; (3) no history of psychosis, substance misuse, dementing illness, or progressive neurological disease in accordance with the ICD-10 classification [4] and no clinically significant signs of other psychiatric disorders requiring treatment (such as depression and anxiety disorders) at the time of the evaluation; (4) no sign of acute antiepileptic drug toxicity at the time of the evaluation; and (5) sufficient intellectual function to complete self-administration of the DES questionnaires.

We recruited 334 nonclinical individuals, matched with the patients for age, sex, and education, from among members of various community services or employees of private companies [16,17]. These control subjects suffered neither neurologic nor psychiatric illnesses.

The participants' database was also used for our previous study [13]; data from 44 out of the 225 patients with epilepsy (19.6%) and 66 of the 333 nonclinical subjects (19.8%) were analyzed in our previous and current studies. The participants were selected from the database using the inclusion and exclusion criteria of the study, blind to their DES results. The matching factors (age at evaluation, sex, and years of education) were also employed to select the nonclinical subjects.

Diagnoses and evaluations were made by the patients' consultant neuropsychiatrists. All participants gave informed consent for their involvement in the study. This study was approved by the Ethics Committees of the relevant institutions.

2.2. Research items

We established (1) sex, (2) age at the evaluation, and (3) total years of education for all participants.

Within the patients with epilepsy, their epilepsy-related factors were also recorded as follows: (4) age at onset of epilepsy; (5) duration of epilepsy, time between the onset of epilepsy and the study evaluation; (6) epilepsy type based on seizure characteristics and clinical investigations in accordance with the international epilepsy classification [18]; (6) seizure type in accordance with the international seizure classification [19]; (7) seizure frequency where all epileptic seizures, excluding PNESs, were included and each seizure type was categorized into six levels (daily, weekly, monthly, yearly, less than yearly, and seizure-free for 3 years or more) [20]; (8) the presence or absence of PNESs (PNES + or PNES −), established using distinct seizure semiology and video-EEG monitoring where needed [13]; (9) the number of antiepileptic drugs (AEDs) taken; (10) lateralization of EEG abnormalities in interictal scalp EEG recordings [20]; and (11) the presence or absence of mesial temporal sclerosis (MTS) detected by MRI according to our routine protocols with qualitative analysis [21].

As for the epilepsy types, the patients were grouped into those with IGE and PE; PE was further classified into 5 subcategories [18]: temporal lobe epilepsy (TLE), frontal lobe epilepsy (FLE), parietal lobe epilepsy (PLE), occipital lobe epilepsy (OLE), and partial epilepsy with undifferentiated lobar foci (ULE). Seizure types were classified into simple partial seizures (SPSs), complex partial seizures (CPSs), generalized tonic–clonic seizures (GTCSs, secondary) seen in patients with PE, and absence and myoclonic seizures (GTCSs, primary) observed in patients with IGE.

The clinical features of PNESs were characterized by convulsion-like body movements, tingling sensation, or loss of responsiveness with or without body movement; these features are often exhibited for extremely long duration as a single seizure, with anatomical or neurophysiological inconsistencies and variable symptoms within an individual patient [22]. The cases where the seizures were difficult to be concluded as epileptic or PNESs were not included in this study.

2.3. The Dissociative Experiences Scale (DES)

Dissociative experiences were evaluated with the Japanese version of the Dissociative Experiences Scale (DES), which consisted of 28 items [16,23]. This is a Japanese translation of the original English version of the DES and has been validated [24]. The participants were instructed to assess the experiences in the questions which they had when they were not under the influence of alcohol or having epileptic seizures. The total DES score (DES-S, maximum: 100) was used as an index of comprehensive dissociative experiences. A DES-S of 30 or higher (DES-S $\geq$ 30) was a screening threshold for dissociative identity disorder [22]. The DES taxon (DES-T), composed of 8 out of the 28 DES items, was used as a measure of pathological dissociative experiences [6].

2.4. Data analysis

Differences in linear variables (e.g., DES indices) by categorical variables (e.g., sex, epilepsy type, and PNESs) were subjected to analysis of variance (ANOVA). Correlation between categorical variables was examined by means of a chi-square test or Fisher's exact test. Correlations between linear variables were examined by means of simple regression analysis. Correlations between rank-order variables were examined by means of Spearman's rank-order correlation coefficient. Since clinical variables in intractable epilepsy in adults are often intercorrelated to various degrees, we used a multiple linear regression analysis with stepwise selection method in order to reduce the effects of intercorrelations and to clarify the real contribution of variables to the DES indices. p values of <0.05 were considered significant. All statistical analyses