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Altered responsiveness in psychogenic nonepileptic seizures and its implication to underlying psychopathology

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ABSTRACT

Purpose: Altered responsiveness during psychogenic nonepileptic seizures (PNES) is a distinct semiological feature that may signal a psychological vulnerability. We hypothesized that altered responsiveness is related to difficulties with emotion tolerance, experiential avoidance, difficulty coping, dissociation and trauma and prior experiences of loss of awareness.
Methods: 71 patients with video-EEG confirmed PNES were divided into two groups based on their responsiveness at the time of the captured event during long-term monitoring. Demographic information, clinical history and self-rated questionnaires highlighting psychopathology were compared between the groups.
Results: 47 patients (66%) had altered responsiveness during their captured event. Married or partnered subjects were more represented in the altered responsiveness group. Experiential avoidance, as measured by the Acceptance and Action Questionnaire-II, and affect intolerance, as measured by the Affective Style Questionnaire, were significantly higher in the altered responsiveness group. The Connor Davidson Resilience Scale was significantly higher among intact responsiveness subjects. Subjects with altered responsiveness were more likely to have a family history of seizures, comorbid headaches, and loss of consciousness (LOC) during traumatic brain injury. There were no differences in measures of dissociation, somatization, mood or anxiety, or presence of psychiatric comorbidities, including PTSD or history of trauma.
Conclusion: Altered responsiveness during PNES is a marker of lower emotional resilience or ability to tolerate emotions among patients with PNES. Emotion management may be an important therapeutic target for these patients. Prior experiences with LOC also contribute to the presence of altered responsiveness. Trauma and dissociation did not differentiate responsiveness during PNES.

1. Introduction

Psychogenic nonepileptic seizures (PNES) are seizure-like attacks that are due to a presumed underlying psychological etiology, and they are considered a subtype of conversion disorder in the DSM-5 [1]. PNES are the most common condition mistaken for epilepsy, and a substantial percentage of patients evaluated for uncontrolled seizures are ultimately diagnosed with PNES [2].

Semiology refers to the study of signs in a disease. In the case of PNES, presence of typical semiological features is primarily determined through objective observation of a typical episode. Diagnostic certainty is achieved when typical semiology is observed during video-EEG (v-EEG) monitoring with no accompanying electrographic features suggestive of epilepsy [3]. Therefore, the semiology of each PNES event has an important role in predicting diagnosis. Semiology also has safety implications and some studies have linked certain semiological signs to prognosis [4–6].

In epilepsy, semiology provides helpful localizing information, especially when a seizure focus needs to be identified for surgical treatment. In contrast, what semiology suggests about underlying psychopathology in PNES is not known. Very few studies have focused on the relationship between semiology and psychopathology, as the latter is generally identified through a comprehensive neuropsychiatric evaluation. However, if clear correlations can be established between semiological features and the

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psychopathology underlying PNES then semiology may confer clinical and prognostic information which could inform treatment.

There is currently limited data linking semiological features to underlying psychopathology. The few studies that have addressed semiology being linked to psychopathology showed that the 'catatonic' subtype (referring to motionless unresponsive episodes) had a more benign personality profile in the Minnesota Multiphasic Personality Inventory II (MMPI-II), with no clinical elevations, and lower ratings of pessimism compared to 'motor' subtypes [7,8].

The psychopathology underlying PNES has been suggested to imply a dissociative and avoidant response to hyperarousal [9]. Compared to normative data, PNES patients have demonstrated lower acceptance of their emotional states [10]. An impairment in the ability to tolerate and integrate emotional states is therefore a reasonable hypothetical underlying psychopathological mechanism in PNES.

While subjective report of impairment of consciousness is common in PNES, studies suggest that impairment of consciousness tends to be less pronounced in PNES than in epilepsy [11]. Lack of responsiveness during a PNES event indicates that relatedness to the environment is temporarily "shut down", either partially or entirely, and it is an observation that patients and caregivers use to infer impairment of consciousness. Pathological dissociation has been implicated as one mechanism in altered responsiveness in PNES [11]. Based on the mechanisms enumerated above in PNES in general, altered responsiveness may imply higher degrees of dissociation, affective intolerance and tendency to avoid emotional states.

In this study, we describe and analyze two subgroups of PNES subjects: those with and without altered responsiveness during their events. Our objectives are to: 1) identify demographic, social and clinical differences between the two subgroups; and 2) identify differences in measures of emotion regulation between the two subgroups.

We hypothesized that those PNES subjects with altered responsiveness during their episodes had, at the time of diagnosis, a decreased ability to tolerate their emotional states, compared to those PNES subjects without altered responsiveness. Patients with altered responsiveness would therefore score lower in scales measuring affect tolerance, and would score higher in scales of experiential avoidance, dissociation and have higher frequency of post-traumatic stress disorder (PTSD) and/or traumatic experiences. Measures that describe specific styles of managing emotional states will likely confirm affect intolerance as a feature that more clearly distinguish those PNES patients where ability to respond becomes compromised (as opposed to other affective styles such as concealing or adjusting that are unlikely to be tied to this specific semiological feature). Similarly, measures of experiential avoidance and dissociation will likely distinguish this subgroup of patients with altered responsiveness in PNES.

We also hypothesized that PNES subjects with altered responsiveness would be more likely to have more frequent exposure to other models of altered consciousness such as personal or family history of epilepsy and/or loss of consciousness (LOC) during traumatic brain injury (TBI).

2. Methods

2.1. Subjects

Seventy-one adult patients with v-EEG confirmed PNES were consecutively and prospectively recruited during their diagnostic long-term monitoring (LTM) admission, or during their first outpatient neuropsychiatric evaluation (if such evaluation had not taken place during the LTM admission). Subjects with comorbid documented epilepsy (as verified by interictal EEG suggestive of active epilepsy and/or as per the expert opinion of the treating epileptologist) were allowed in the study.

Recruitment took place at Brigham and Women's Hospital in Boston, Massachusetts, between January 2013 and May 2015. All subjects provided informed consent for research participation in accord with the local internal review board (IRB).

Subjects were divided into two groups based on their level of responsiveness during the captured event during their diagnostic v-EEG. Altered responsiveness was defined as the patient not responding (verbally or otherwise) and not remembering three words given to them during at least one of their v-EEG captured events.

2.2. Measures

Data on demographic and clinical factors were obtained with a semi-structured neuropsychiatric interview by a single neuropsychiatrist (GB). Self-rating questionnaires were used to obtain measures of psychopathology and underlying psychological mechanisms. These data were collected during the initial neuropsychiatric evaluation.

Demographic variables obtained during the interview include location of evaluation, age, sex, ethnicity, years of education, marital status and employment status. Clinical variables obtained during the interview include comorbid documented epilepsy, intellectual disability, history of a prior diagnosis of PNES, family history of epilepsy, age of onset of PNES, delay in diagnosis, frequency of events, reported duration of usual event, reported duration of longest event, reported number of symptoms per event, history of TBI (and presence of LOC during TBI). Psychiatric clinical variables obtained during the interview include active major depression, active post-traumatic stress disorder (PTSD), panic disorder, generalized anxiety disorder, subjective cognitive complaints, borderline personality disorder, past suicide attempts, family psychiatric history and history of trauma/abuse.

2.3. Self-report questionnaires

The Beck Depression Inventory-II (BDI-II) is a 21-item self-report scale that measures depressive symptoms over the preceding 2 weeks and was developed to assess DSM-IV depressive symptoms [12]. The BDI-II has been shown to have good internal consistency, with a coefficient α of 0.91 for an outpatient population [13].

The Dissociative Experiences Scale (DES) is a 28-item self-report questionnaire designed to assess the current degree of dissociative experiences using an 11-point multiple-choice response format that ranges from 0% to 100% [14]. Higher scores indicate likelihood of a dissociative disorder. Factor analysis has identified subscales that specifically distinguish clinical categories, depersonalization/derealization, amnestic dissociation and absorption and imaginative involvement. Internal consistency of the DES was shown to be quite high; in 16 studies, the mean coefficient α was 0.93 [15].

The depression, anxiety and stress symptoms scale (DASS) is a 42-item self-report questionnaire that measures depression (DASS-D), anxiety (DASS-A), and stress (DASS-S) levels over the preceding week [16]. The DASS subscales (anxiety and depression, respectively) have been shown to correlate highly with the Beck anxiety inventory ($r = 0.81$) and Beck Depression Inventory ($r = 0.74$) [17]. We only scored those items specific for the anxiety and stress subscales since depression severity was already captured with the BDI-II. In this study we selected to use the BDI-II rather than the Depression subscale of the DASS as a measure of depression because the BDI-II is consistently given to