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Emotion regulation profiles in psychogenic non-epileptic seizures

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ABSTRACT

Background: Psychogenic non-epileptic seizures (PNES) are frequently encountered in epilepsy referral centers, yet there is limited understanding of the emotion processing style in this psychiatrically heterogeneous population. Understanding profiles of emotion regulation in PNES will provide further evidence of the psychogenic nature of the disorder and will potentially inform psychotherapeutic interventions.
Methods: Fifty-five patients with PNES underwent a neuropsychiatric evaluation and completed self-report questionnaires that measured difficulties in emotion regulation, psychopathology severity and quality of life.
Results: Through the use of cluster analysis, two groups were identified; Cluster 1 represented a highly emotion dysregulated group while Cluster 2 represented a low emotion dysregulated group. Additional analyses revealed that each group significantly differed from normative data. Finally, Cluster 1 was significantly associated with several measures of psychiatric symptoms, higher rates of comorbid psychiatric diagnoses and impairment in quality of life.
Conclusions: These findings suggest that patients with PNES may be subject to high levels of emotion dysregulation, severe psychiatric symptomatology and impaired quality of life, or to low emotion dysregulation characterized by emotional unawareness or avoidance. These profiles clearly differ from normative data regarding emotion regulation and their identification may help tailor psychotherapeutic interventions.

1. Introduction

Psychogenic non-epileptic seizures (PNES) are seizure-like attacks not explained by epileptiform activity or other physiological paroxysms. They consist of sudden, involuntary changes in behavior, sensation, motor activity, cognitive processing or autonomic function. Diagnosis is confirmed via video-electroencephalography monitoring (v-EEG) in approximately a quarter of patients evaluated at epilepsy referral centers [1]. Etiologically, PNES have been linked to a dysfunction in the processing of psychological or social distress [2,3].

Linking medically unexplained symptoms to psychosocial problems has been associated with a reduction in unnecessary pharmacological or surgical interventions in patients [4]. This finding suggests that awareness of one's psychological response to stress, as well as patterns of emotion regulation, is associated with positive outcomes. On the other hand, those with PNES constitute a heterogeneous population with varying degrees of psychiatric symptomology and somatic complaints [5,6]; therefore, it is unlikely that PNES will be associated with one single pattern of emotion processing and regulation.

Limited data exist on how PNES subjects process emotional information. Baseline levels of autonomic hypervigilance and a positive attentional bias when processing social threat stimuli at a preconscious level have been documented in PNES subjects [7]. This finding may be indicative of increased emotional reactivity in those with PNES.

Identification and expression of an emotional experience constitute another stage in the processing of emotions. Alexithymia is defined as difficulty in verbal expressions of affect leading to an expression of inner psychic distress in the form of physical complaints and description of emotions as physiological reactions as opposed to feelings [8]. Alexithymia has been reported to be higher in subjects with PNES compared to healthy controls based on a self-report measure (the Toronto Alexithymia Scale-20 [9,10]) [11]. Furthermore, deficits in emotional awareness, as measured by rater-administered scales, are more pronounced in psychosomatic populations compared to other psychiatric samples [12].

Emotion regulation is an identified mechanism underlying various forms of psychopathology [13–16]. One model conceptualizes emotion regulation as the ability to control one's behaviors when experiencing intense emotions, rather than the ability to directly control one's emotions themselves [17]. Following this model, "effective" regulation entails responses to affective states that minimize subjective and psychological distress with continued ability to pursue short- and long-term goals that are important to the individual [14]. Based on these concepts, Gratz and Roemer [18] postulated that

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emotion regulation involves the (a) awareness and understanding of emotions, (b) acceptance of emotions, (c) ability to control impulsive behaviors and behave in accordance with desired goals when experiencing negative emotions, and (d) ability to use situation-appropriate emotion regulation strategies flexibly to modulate behavioral responses.

A description of emotion regulation patterns in PNES subjects will provide clinicians with an explanatory model linking emotion regulation dysfunction to PNES and may facilitate transition to a psychotherapeutic intervention. The aims of this study are to: (1) identify subgroups of PNES subjects based on their emotion regulation profile; (2) compare the emotion regulation profile of PNES subgroups to existing normative data; and (3) describe such PNES subgroups clinically based on psychopathology measures.

2. Methods

2.1. Data collection

A total of 70 adult patients were referred by local academic epilepsy centers with a diagnosis of PNES to the University of Illinois at Chicago (UIC) Non-Epileptic Seizures Intervention Clinic (NESIC) for a neuropsychiatric evaluation and treatment. The protocol was approved by the UIC Institutional Review Board. All 70 participating subjects provided written informed consent allowing the authors to include their clinical information obtained during their initial evaluation as part of this study. No financial compensation was provided for their consent.

All patients had been diagnosed with PNES by the referring epileptologist. Diagnosis was established through v-EEG monitoring capturing a typical attack in 60 of the participating subjects. In three of the remaining patients, a typical event was captured during routine EEG with no video recording and the event was witnessed and described by medical staff during the procedure and acknowledged by patients or family members as typical. In these three cases, no electrographic changes were associated with the event and the semiology was suggestive of a psychogenic origin. For the remaining patients, capturing of a typical event on video EEG was not possible due to their infrequency, but semiology was highly suggestive of PNES with negative EEG recordings during routine studies or long-term monitoring. Eleven of the 70 participating subjects had a history of comorbid epilepsy. For these 13 patients, the diagnosis of PNES was established capturing a typical attack during v-EEG monitoring.

All of the following information was obtained during our clinical evaluation and subsequent completion of questionnaires. Data were gathered from the patient's self-report, information from family members and treatment providers, examination by clinicians and review of medical records.

2.2. Clinical interview

A wide variety of information was obtained through the use of a semi-structured clinical interview with both the patient and relevant family members; this information also was supplemented by the patient's medical record and necessary discussion with treatment providers. This assessment gathered information on psychiatric and medical history, as well as basic demographic information (age, sex, race, marital status, employment, and education level). Selective DSM-IV Axis I and Axis II disorders were assessed. This included depression, posttraumatic stress disorder (PTSD), generalized anxiety disorder, panic disorder, other anxiety disorders, dissociative disorders, somatoform disorders, eating disorders, and borderline personality disorder. There was also a dichotomous assessment of various psychiatric symptomatology: history of psychosis, mania, abuse (physical and sexual), and psychiatric treatment, as well as current suicidal ideation and cognitive complaints. A full assessment of PNES characteristics was also included, including age of onset, delay of months since diagnosis, and current use of anti-epileptic medication. All variables were scored dichotomously, in a present/absent format.

2.3. Self-report questionnaires

2.3.1. Beck Depression Inventory-II

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 [19]. The BDI-II has been shown to have good internal consistency, with a coefficient α of .91 in an outpatient population [20].

2.3.2. Dissociative Experiences Scale

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% [21]. Internal consistency of the DES was shown to be quite high; in 16 studies, the mean coefficient α was 0.93 [22].

2.3.3. Depression, Anxiety and Stress Symptoms Scale

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 [23]. 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 ($r = 0.74$) [24].

2.3.4. Patient Health Questionnaire-15

The Patient Health Questionnaire 15 (PHQ-15) is a 15-item self-report instrument that assesses the level of distress caused by different somatic symptoms over the preceding 4 weeks on a 3-point Likert scale [25]. The PHQ-15 has shown acceptable internal reliability across different ethnic groups (coefficient $\alpha = .79$) and has been found to be associated with medically unexplained symptoms and psychological distress [26].

2.3.5. Disruption of Functioning Index

The Disruption of Functioning Index (DFI) is a 7-item Likert-type scale that measures the extent to which a specific problem interferes with a person's ability to engage in various life activities (i.e., family and home responsibilities, recreation, social activity, occupation, sexual behavior, self-care and life-supporting activities). While the DFI has been validated as an instrument to measure pain-related disability [27], it was adjusted to refer to PNES.

2.3.6. Quality of Life in Epilepsy Inventory-31

The Quality of Life in Epilepsy Inventory-31 (QOLIE-31) is a 30-item Likert-type scale measuring a range of health concepts related to living with epilepsy [28]. This includes emotional well-being, seizure worry, medication effects, cognitive functioning, social functioning, energy/fatigue, and overall quality of life. Previous studies have found internal consistency reliabilities ranging from .77 to .85, with a test–retest correlation of .64. Subjects were instructed to rate their quality of life as affected by their PNES.

2.3.7. Difficulties in Emotion Regulation Scale

The Difficulties in Emotion Regulation Scale (DERS) is a 36-item Likert-type scale that measures clinically relevant emotion regulation [18]. The DERS is separated into 6 subscales: Nonacceptance (nonacceptance of emotional responses); Goals (difficulties in engaging in goal-directed behavior); Impulse (impulse control difficulties); Awareness (lack of emotional awareness); Strategies (limited access to emotion regulation strategies); and Clarity (lack of emotional