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Prolonged exposure therapy for the treatment of patients diagnosed with psychogenic non-epileptic seizures (PNES) and post-traumatic stress disorder (PTSD)

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ABSTRACT

Objective: Although there is general consensus that psychogenic non-epileptic seizures (PNES) are treated with psychotherapy, the effectiveness of most psychotherapeutic modalities remains understudied. In this treatment series of 16 patients dually diagnosed with PNES and post-traumatic stress disorder (PTSD), we evaluated the effect of prolonged exposure therapy (PE) on reduction of PNES. Secondary measures included Beck Depression Inventory (BDI-II) and Post-Traumatic Disorder Diagnostic Scale (PDS).

Methods: Subjects diagnosed with video EEG-confirmed PNES and PTSD confirmed through neuropsychological testing and clinical interview were treated with traditional PE psychotherapy with certain modifications for the PNES. Treatment was conducted over the course of 12–15 weekly sessions. Seizure frequency was noted in each session by examining the patients' seizure logs, and mood and PTSD symptomatology was assessed at baseline and on the final session.

Results: Eighteen subjects enrolled, and 16 (88.8%) completed the course of treatment. Thirteen of the 16 (81.25%) therapy completers reported no seizures by their final PE session, and the other three reported a decline in seizure frequency ($Z = -3.233$, $p = 0.001$). Mean scores on scales of depression ($M = -13.56$, $SD = 12.27$; $t(15) = -4.420$, $p < 0{,}001$) and PTSD symptoms ($M = -17.1875$, $SD = 13.01$; $t(15) = -5.281$, $p < 0.001$) showed significant improvement from baseline to final session. Longitudinal seizure follow up in 14 patients revealed that gains made on the final session were maintained at follow-up ($Z = -1.069$ $p = 0.285$).

Significance: Prolonged exposure therapy for patients dually diagnosed with PNES and PTSD reduced the number of PNES and improved mood and post traumatic symptomatology. Follow-up revealed that gains made in seizure control on the last day of treatment were maintained over time.

1. Introduction

Psychogenic non-epileptic seizures (PNES) are episodes that look like epileptic seizures but are not caused by sudden abnormal electrical discharges in the brain. Correct diagnosis can take an average of 7.2 years [1]. An estimated 75% of patients with PNES are unnecessarily prescribed anti-epileptic drugs (AEDs) prior to receiving the correct diagnosis [2] and have undergone unnecessary medical interventions for prolonged seizures (status non-epilepticus) which could lead to death [3]. Psychogenic non-epileptic seizures have been associated with very poor quality of life, high rates of chronic disability, and excessive medical utilization [4].

Although there is a general consensus that psychotherapy is the indicated form of treatment for PNES, the effectiveness of most psychotherapeutic modalities remains understudied. Cognitive behavioral therapy (CBT) has been the most rigorously studied treatment modality thus far and has the highest reported level of efficacy. Psychoeducation, relaxation training, exposure to avoided situations, and cognitive restructuring are common techniques utilized in CBT. A randomized controlled trial that compared individual CBT to standard medical care revealed a significant reduction in monthly event frequency after 12 sessions [5]. A multi-center pilot randomized study that produced class I data randomized 34 patients into one of 4 treatment arms: 1) flexible dose sertraline hydrochloride only ($n = 9$), 2) cognitive behavioral informed psychotherapy (CBT-ip) [6], 3) CBT-ip with sertraline and 4) treatment as usual. The CBT-ip and CBT-ip plus sertraline showed significant improvements in monthly event reduction [7]. Other uncontrolled studies have evaluated the efficacy of CBT in an inpatient setting [8] and reported positive results.

Psychological trauma is common in those who are diagnosed with PNES [9]. Across ten studies reviewed by Fiszman et al. [10], the mean percentage of patients with PNES meeting criteria for PTSD was 38.9% (with a range of 9–100%).

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Prolonged Exposure (PE) therapy is a manualized form of CBT that specifically targets the effects of post-traumatic stress disorder (PTSD) [11,12]. There is a large body of research that stretches over the past 20 years empirically validating PE therapy as an effective treatment for PTSD [13,14]. This therapy aims to reduce the cognitive and behavioral avoidance strategies a patient with PTSD tends to utilize to diminish anxiety associated to the trauma reminders. Trauma is processed through two forms of exposure: imaginal (in-session retelling of the most traumatic memory and listening to the taped retelling in between sessions) and in vivo (confronting trauma-related situations in everyday life). The administration of PE has been associated with a decrease in PTSD as well as associated comorbid problems [15,16]. A substantial body of evidence also shows that PE can be safely and effectively used with patients with comorbidities that often co-occur with PTSD, including dissociation, borderline personality disorder, psychosis, suicidal behavior and non-suicidal self-injury, substance use disorders, and major depression [16]. Hagenaars et al. demonstrated that even patients presenting with severe dissociative or depressive symptoms might benefit similarly from exposure treatment as did patients with mild dissociative or depressive symptoms [17].

The purpose of this paper is to present findings based on a series of 16 cases that suggest that PE therapy has the potential to effectively treat patients who carry a dual diagnosis of PNES and PTSD.

2. Methods

Our treatment program with PE therapy was offered to 19 adult patients (16 females and 3 males) with a dual diagnosis of PNES and PTSD. One patient refused to enroll upon hearing the description of the treatment because she thought she would not be able to tolerate the stress of revisiting her trauma. Eighteen patients were enrolled in PE therapy between 2013 and 2016. The 18 patients were further reduced to 16 (13 females and 3 males) because one of the patients could not complete the program since she had to move back to her home state and another dropped out of the program in session 8 and did not respond to follow up calls. The diagnosis of PNES was confirmed with video-EEG monitoring. The diagnosis of PTSD was confirmed (according to DSM-IV criteria) through a clinical interview with a psychotherapist (LM, UV) in our Psychogenic Non-epileptic Seizure Treatment Program and supported by self-reported scores from the Trauma Symptom Inventory II (TSI-II) and the Post-traumatic Stress Disorder Diagnostic Scale (PDS). Psychotherapists who administered PE therapy were certified in this form of treatment through the University of Pennsylvania Center for the Treatment and Study of Anxiety (LM, UV).

Prolonged exposure therapy was conducted exactly in accordance to the official therapist manual [11] and consisted of 12–15, 90-minute sessions. The only modifications that diverged from the official treatment were asking the patient to keep a "seizure log" in between sessions so seizure frequency could be monitored, and agreed-upon therapist/patient responses if a seizure occurred in the therapist's office. These modifications made especially for PNES are detailed below.

In session 1, the overall rationale for prolonged exposure including an introductory psychoeducation regarding trauma and PTSD and breathing retraining was provided. In addition, the standard trauma interview [12] was conducted and an index trauma was identified. The index trauma is defined as the "worst traumatic experience the patient has suffered." Because these patients were also diagnosed with PNES, the interview was modified to include additional questions about PNES (e.g. seizure frequency, semiology, duration, and plan for therapist response to seizure during session). Patient and therapist agreed on a seizure-response plan should a seizure occur in session. This included that the therapist would continue to communicate verbally with the patient during the seizure, an agreed upon part of the body (e.g. forearm or shoulder) would have pressure applied for sensory grounding, instructions to initiate deep breathing as soon as physically possible would be given by the therapist, and if necessary, other grounding techniques such as holding a bag of ice, feeling the texture of a small object, and/or focusing on and silently naming predetermined objects in the office would be used. It was also agreed upon that if the patients' seizures resulted in falling to the floor, the therapist might need to put a pillow under their head or physically move them away from furniture which might require additional physical contact.

In session 2, the patient and therapist created an "in vivo" hierarchy. In vivo exercises involve exposure exercises to real life situations, places, and activities that have become associated to the traumatic event and are irrationally avoided (e.g. if the patient was assaulted outside of a restaurant, he/she may begin to avoid not just that restaurant, but all restaurants). The patient was instructed on "subjective units of distress" (SUDs),which are used to quantify distress associated to each in vivo item and in subsequent sessions are also used to rate distress levels associated to another form of exposure called "imaginal exposure." The second session also included an in-depth discussion regarding common reactions to trauma including PNES as potentially representing a dissociative/avoidance behavior. In session 3, the rationale for imaginal exposure (i.e. verbally communicating the index trauma out loud and in detail to the therapist for approximately 45 min) was provided and the first imaginal exposure exercise and processing was completed. Sessions 4–12/13: included in-session imaginal exposure, going over homework (in vivo exposure exercises and additional imaginal exposures on tape between sessions), and cognitive and emotional processing of in-session content. Sessions 14/15: The final imaginal exposure was conducted and the patient and therapist reviewed the progress made over the course of treatment. Strategies to prevent relapse were also provided.

Seizure frequency was noted at baseline and in every session. Patients were administered the PDS and BDI II at baseline and on the final session to track PTSD and mood symptoms. Twelve of the 16 patients were being prescribed one or more psychopharmacological agents. Our policy was to not interfere with the medications that were being prescribed, so patients continued their usual medication regimen throughout our course of treatment.

After completion of treatment, follow-up data regarding seizure frequency was obtained for 14 of the 16 patients. Since this information was collected in a naturalistic setting (through monthly support group attendance or spontaneous contact initiated by the patient), follow-up time frames were variable (ranging from 1 to 34 months). Seizure frequency was calculated as "seizures per day." For example, one seizure per week would translate into 1/7 (0.14), one seizure per month would translate into 1/30 (0.03) and 3 seizures per week would translate into 3/7 (0.43).

2.1. Inventories and scales

2.1.1. Trauma Symptom Inventory (TSI-2)

During the initial diagnostic procedure (prior to being referred for treatment), the Trauma Symptom Inventory-2 (TSI-2) was utilized in determining the diagnosis of PTSD along with clinical data obtained during the neuropsychological interview. The TSI-2 [18] is a 136-item self-report measure that is used to evaluate acute and chronic posttraumatic symptomatology in adults. The TSI-2 assesses for the effects of sexual and physical assault, intimate partner violence, combat, torture, motor vehicle accidents, mass casualty events, medical trauma, traumatic losses, and childhood abuse or neglect. The clinical scales of the instrument measure the extent to which the respondent endorses twelve trauma-related symptoms including the following: Anxious Arousal, Depression, Anger, Intrusive Experiences, Defensive Avoidance, Dissociation, Somatic Preoccupations, Sexual Disturbance, Suicidality, Insecure Attachment, Impaired Self-Reference, and Tension Reduction Behavior. The TSI-2 has been thoroughly examined with regard to reliability and