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Emotion processing and psychogenic non-epileptic seizures: A cross-sectional comparison of patients and healthy controls☆

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ABSTRACT

Purpose: This exploratory study aimed to examine emotion-processing styles in patients with psychogenic non-epileptic seizures (PNES), compared to healthy individuals, and to explore associations of emotion processing with other psychological measures and seizure frequency, using the new Emotional Processing Scale (EPS-25), which had not previously been used in this patient group.

Methods: Fifty consecutive patients with PNES referred for psychotherapy completed a set of self-report questionnaires, including the Emotional Processing Scale (EPS-25), Clinical Outcome in Routine Evaluation (CORE-10), Short Form-36 (SF-36), Patient Health Questionnaire (PHQ-15), and Brief Illness Perception Questionnaire (BIPQ). Responses on the EPS-25 were compared to data from 224 healthy controls.

Results: Patients with PNES had greater emotion processing deficits across all dimensions of the EPS-25 than healthy individuals (suppression/unprocessed emotion/unregulated emotion/avoidance/impoverished emotional experience). Impaired emotion processing was highly correlated with psychological distress, more frequent and severe somatic symptoms, and a more threatening understanding of the symptoms. Emotion processing problems were also associated with reduced health-related quality of life on the mental health (but not the physical health) component of the SF-36. The unregulated emotions sub-scale of the EPS was associated with lower seizure frequency.

Conclusion: The results showed clear impairments of emotion processing in patients with PNES compared to healthy individuals, which were associated with greater psychological distress and reduced mental health functioning. These findings seem to support the face validity of the EPS-25 as a measure for PNES patients and its potential as a tool to assess the effectiveness of psychological interventions.

1. Introduction

Psychogenic non-epileptic seizures (PNES) are episodes of alteration of consciousness and disturbance of sensory, motor, autonomic or cognitive functions that superficially resemble epileptic seizures. They are not caused by abnormal electrical discharges in the brain but are thought to represent an experiential and behavioural response to psychological distress perceived by patients as involuntary [1]. Most fulfil the diagnostic criteria of a conversion or somatic symptom disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) [2] or of dissociative convulsions in the International Classification of Diseases (ICD-10) [3].

Within the current bio-psycho-social model, PNES are explained as resulting from the interaction of multiple predisposing, precipitating and perpetuating factors, including a dysfunctional family environment, childhood abuse or other traumatic experiences [1]. The association with early life adversity and traumatic experiences means that PNES could be linked to abnormal emotion processing [4]. Emotion processing can broadly be defined as the way in which individuals process and absorb emotional disturbances associated with adverse life events [5,6].

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Emotion processing is multifaceted, and there has been considerable ambiguity in the conceptualisation of its association to related constructs such as emotion regulation, emotion expressiveness, emotion intelligence, emotion control or alexithymia [7,8]. In particular, there seems to be an overlap between the concepts of emotion regulation, described as "the processes responsible for the monitoring, evaluating, and modifying of emotional reactions to accomplish one's goals" [9], alexithymia or difficulties in understanding and expressing emotions [10] and emotion processing.

Baker et al. [7] developed a model of emotion processing which integrates the different emotion-related concepts. According to this model, emotion processing consists of an input in the form of an event that is consciously or unconsciously registered, followed by rapid and unconscious appraisal of the event and subsequent emotional experience, which is central to the processing of emotion and includes awareness of emotions, experiencing emotions as psychological wholes, identifying and labelling of emotions and linking them to relevant causal events. The final output stage is an appropriate expression of emotions. Incomplete processing characterised by prolonged or excessive avoidance and/or inhibition of negative emotions can result in intrusive or obsessive thoughts, disturbances of behaviour and experience, and further prevents the integration and resolution of negative emotional experiences [7,11]. Abnormal emotion processing has been associated with the development and maintenance of a number of psychological disorders, including Posttraumatic Stress Disorder [12], panic [6], depression [13] and psychosomatic conditions [14], such as fibromyalgia [15], chronic fatigue syndrome [16] and chronic pain [17].

An adapted form of this model has been applied to PNES, suggesting that PNES might actually be conceptualised as manifestations of abnormal emotion processing [11]. A number of experimental and self-report studies have investigated different concepts related to emotion processing in PNES and described abnormalities in relation to healthy controls, patients with epilepsy or healthy controls with a history of trauma [4,18–22]. As PNES are characterised by a heterogeneous aetiology and comorbid psychopathology, the studies have also explored the possibility that there may be several clinically distinct subpopulations of patients with PNES using cluster analysis [4,20,21]. The results suggest that there may be at least two clusters of PNES patients characterised by higher or lower levels of emotion dysregulation and higher or lower levels of abnormality in terms of psychopathology or personality profiles. These studies indicate that, whilst levels of emotion dysregulation may be higher in PNES than in the healthy population, the nature and extent of emotion dysregulation may depend on interactions with other psychological factors present in the disorder.

"Alexithymia" is one particular emotion-processing problem, which has been studied more extensively in patients with PNES: a recent study has found a 36.9% prevalence of alexithymia in patients with PNES. Alexithymia was associated with symptoms of psychological trauma, including intrusive experiences and defensive avoidance, and cynicism [23]. This corresponds with earlier findings of Tojek et al. [24] who reported high alexithymia scores in approximately 30% of patients with PNES. Bewley et al. [10] found considerably higher levels of alexithymia in patients with PNES (90.5%); however, levels of alexithymia in that study did not differentiate between patients with PNES, patients with epilepsy and healthy controls when co-morbid anxiety and depression were accounted for.

Another specific aspect of emotion processing which has received particular attention in patients with PNES is avoidance (including avoidance of emotions). Several self-report and experimental studies have revealed evidence of increased levels of avoidance in patients with PNES and have demonstrated a positive correlation between avoidance and PNES frequency and a negative correlation between avoidance and health-related quality of life (HRQoL) [25–29].

Given that PNES can be interpreted as an externalised form of abnormal emotion processing, there is a clear need for further research that would shed more light on emotion generation, perception, regulation and expression processes in patients with PNES as well as the interaction of emotion processing problems with other psychological factors. This exploratory study therefore aims to describe emotion processing styles of patients with PNES compared to healthy individuals, using the new Emotional Processing Scale (EPS-25) [30] developed on the basis of the integrative model of emotion processing described above, encompassing a broader range of different emotional processing deficits than other emotion scales. As a secondary aim, this study sought to explore the clinical utility of the EPS-25 as a measure to assess patients with PNES in the planning stage of therapeutic interventions or as a process measure before and after treatment.

2. Methods

2.1. Subjects

Patients with PNES were recruited consecutively from those referred to the Neurology Psychotherapy Service at the Royal Hallamshire Hospital and Barnsley Hospital for psychotherapy. All patients had been diagnosed by experienced consultant neurologists with a specialist interest in seizure disorder based at the Sheffield Teaching Hospitals NHS Foundation Trust on the basis of all clinical information available (including video-EEG recordings of typical events in most cases). All patients provided written informed consent.

Demographic and Emotional Processing Scale (EPS-25) data from 224 healthy controls provided by the developers of the EPS were used for comparison [30,31]. The healthy controls were recruited from a range of community sources and workplaces. They were matched in age and gender with the PNES group.

2.2. Design and procedure

This is a prospective, cross-sectional study. The study has been approved by the Sheffield Local Research Ethics Committee on 1st May 2009. The study was undertaken at the Sheffield Teaching Hospitals NHS Foundation Trust Department of Neurology.

Information concerning the study was sent to patients when they were invited in for their initial assessment session with a psychotherapist. In the assessment session, patients were screened for serious psychiatric conditions, suicide risk and suitability for psychotherapy, the diagnosis of PNES was further explained, and they were introduced to a range of self-help strategies. They were also given another copy of the patient information form and invited to join the study at the end of the assessment session. Written informed consent was taken at this point. Patients who agreed to take part were asked to complete a set of self-report measures after this initial session but before their first therapy session (approximately 3 months after the initial assessment).

2.3. Measures

2.3.1. Demographic and referral questionnaires

Demographic and clinical information was collected on questionnaires completed by patients and the referring neurologists. The frequency of PNES was calculated as the number of attacks per month. In addition, given the non-normal distribution of the data, seizure frequency was further examined by