



Engaging psychiatrists in the diagnosis of psychogenic nonepileptic seizures. What can they contribute?



Massu Beghi^a, Giuseppe Erba^b, Cesare Maria Cornaggia^c, Giorgia Giussani^d,
Elisa Bianchi^d, Gianni Porro^e, Michela Russo^e, Ettore Beghi^{d,*}

^a Department of Mental Health, AUSL Romagna, Ravenna, Italy

^b Department of Neurology, SEC, University of Rochester, Rochester, NY, United States

^c School of Medicine and Surgery, University of Milano Bicocca, Italy

^d Laboratory of Neurological Disorders, Department of Neuroscience, IRCCS-Istituto di Ricerche Farmacologiche “Mario Negri”, Milan, Italy

^e Rehabilitation Centre Corberi, San Gerardo Hospital, Monza, Italy

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ABSTRACT

Purpose: To investigate if psychiatrists could predict the diagnosis of psychogenic nonepileptic seizures (PNES) by reviewing videos of seizures of various types and to compare the accuracy and the criteria leading to the diagnosis used by psychiatrists with those used by epileptologists.

Methods: Four board-certified psychiatrists were asked to review 23 videos capturing representative events of 21 unselected consecutive patients admitted to an epilepsy center for long-term video-EEG monitoring. All raters were blind to EEG and clinical information. They were requested to (1) rate the videos for quality and content; (2) choose among four diagnoses: (a) epileptic seizures; (b) PNES; (c) Other nonepileptic seizures (syncope, movement disorder, migraine, etc.); (d) “Cannot Say”; and (3) explain in their own words the main reasons leading to the diagnosis of choice. The results were compared to those of four blind epileptologists who independently reviewed the same cases. The inter-rater reliability was tested with the Kappa statistic.

Results: All psychiatrists were concordant and correct in 3/23 video-events, compared to 8/23 among epileptologists. Despite widespread disagreement among themselves and frequent failures as a group, individual psychiatrists scored a comparable number of correct diagnoses as did individual epileptologists. The comments provided to justify the diagnosis of choice differed from neurologists, varied among raters, and reflected considerable attention to body movements and body language.

Conclusion: Psychiatrists, as a group, are less reliable than neurologists in differentiating seizure types on video but, as individuals, can be quite accurate in making the correct diagnosis because they are more attuned to capture the subtleties of human behaviour, of subjective experiences, as the effects of hidden internal conflicts and can contribute a new lexicon in defining PNES.

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1. Introduction

Psychogenic nonepileptic seizures (PNES) are episodes of paroxysmal impairment of self-control associated with a range of motor, sensory and mental manifestations that resemble epilepsy and which represent an experiential or behavioural response to emotional or social distress [1]. From the psychiatrist's point of view, since the transition from the DSM-II [2] to the DSM-III [3], the term “neurosis” disappeared from the nosography, and

even in the current classification (DSM 5) [4] it is not present; PNES are included in the conversion disorder within the spectrum “Somatic symptoms and related disorders”. Thus, symptoms were dissembled in their expression and deprived of their “meaning” in the patient's history. On the other hand, the International Classification of Diseases (ICD-10) [5] places PNES in the Dissociative Disorders although, unlike the DSM-5, it merges Dissociative Disorders and Conversion Disorders. Into this dimension, PNES, that were classified as “hysteria”, no longer found their unique position in the DSM, remaining in a place of nowhere, expelled both by psychiatrists and neurologists. This can explain how, despite a 20% prevalence of PNES in a tertiary center for epilepsy [6], the delay in the diagnosis of PNES has been estimated to be 7–8 years [7,8].

* Corresponding author at: Laboratory of Neurological Disorders, IRCCS – Istituto di Ricerche Farmacologiche “Mario Negri”, Via Giuseppe La Masa, 19, 20156 Milan, Italy.

E-mail address: ettore.beghi@marionegri.it (E. Beghi).

At present, except for the combination of video-EEG monitoring (VEM), which is reliable only in the ictal phase, and the sophisticated services available only in specialized centers, an instrument for the diagnosis of PNES is lacking. The International League Against Epilepsy (ILAE) Nonepileptic Seizures Task Force published recommendations indicating that in certain cases it is possible to reach the diagnosis of PNES on clinical grounds in the absence of concomitant VEM [9]. A recent study carried out by our group [10] tried to investigate if visual information contained in video-recorded events allowed experienced epileptologists to predict the diagnosis of PNES without the aid of electroencephalography (EEG) and other clinical information. They were asked to review 23 videos capturing representative events of 21 unselected consecutive patients with a mix of epileptic seizures (ES), PNES and physiologic seizures (other NES). The four raters blind to EEG and clinical information predicted the diagnosis, confirmed by long-term VEM, in 8 of 23 videos (34.8%). The correct diagnoses were all ES or PNES presenting with clear motor manifestations. Predictive ability varied in the remaining videos. Interrater agreement was “moderate” for the overall group; “moderate” for ES; “substantial” for PNES; only “fair” for other NES. These results, based exclusively on video information, were superimposable to those obtained in a comparable trial conducted to test the inter-rater reliability of epileptologists interpreting both video and EEG data combined, also without any other patient information [11].

The aims of the present study were to investigate if, how, and to what extent a group of four psychiatrists could predict the diagnosis on pure visual information, reviewing blindly the same videos submitted to epileptologists in the previous study [10], and to compare the accuracy and the criteria leading to the diagnosis of the psychiatrists vis-à-vis with the epileptologists.

Based on the results of previous trials challenging various categories of medical providers in comparison to fully trained epileptologists [12–16], our expectation was that psychiatrists would fail, mainly because largely unfamiliar with the semiology of ES and because the characteristic features currently used to distinguish ES from PNES reflect neurological measures predominantly reported by epileptologists.

2. Methods

This study represented an extension of the feasibility trial of a larger project currently in progress at the University of Rochester (UR). The study protocol was reviewed and approved by the Research Subject Review Board (RSRB) of the UR where the patients were recruited and the videos recorded.

2.1. Population

Patients 18 years or older consecutively admitted between July 1 and September 10, 2014, were asked to participate. The patients' cohort was the same utilized in the previous study and the details are described elsewhere [10]. For each subject, at the time of discharge, audio-video segments representative of the clinical events were selected and, after removal of the EEG tracing, submitted to the independent raters for review.

2.2. Raters and procedure

Unlike the previous study, the four raters were board certified psychiatrists, each with different psychiatric background, varying degree of seniority, of knowledge about epilepsy and exposure to patients with seizure disorders (Table 1). Each rater was blind to the EEG findings, to the patient's history and comorbidities, and unaware of the final diagnosis established by the clinical team. The task was to review the same videos submitted to epileptologists in the previous study [10] and render a diagnosis out of the following options:

- ES, defined according to the 2017 ILAE classification [17];
- PNES, classified according to the six categories proposed by Seneviratne et al. [18]: 1. Rhythmic motor, 2. Hypermotor, 3. Complex motor, 4. Dialectic, 5. Nonepileptic auras, and 6. Mixed;
- Other nonepileptic seizures (NES), due to paroxysmal non-epileptic events other than psychogenic (syncope or other dysautonomic manifestations, migraine, movement disorder, panic attacks, etc.);
- “Cannot Say.”

In addition, psychiatrists had to specify the reasons leading to the diagnosis of choice and describe any behavioral observations that most contributed to their diagnostic decision.

As previously done by epileptologists, each psychiatrist worked independently and filed the data directly into a database set up at the IRCCS-Pharmacological Research Institute “Mario Negri” in Milano, Italy, for statistical analysis. We evaluated diagnostic accuracy as the ability of each individual rater to correctly predict the “gold standard” (GS) diagnosis, based on audiovisual evidence alone. The GS diagnosis was the result of a comprehensive evaluation of multiple factors. These included the patient's risk factors, comorbidities and psychosocial status; neurological, neuroimaging, interictal EEG findings and the characterization of the events (when recorded). This was based on video semiology, ictal EEG findings (including purely electrical seizures), and the results of monitoring other physiologic parameters such as electrocardiography, blood pressure, orthostatic testing, blood sugar, and so on as appropriate. In the two cases where by GS no diagnosis was possible (NDP), the rater's response “Cannot say” was considered correct. Raters' accuracy in predicting the GS diagnosis was presented as the proportion of raters that correctly predicted the GS.

2.3. Statistical analysis

We calculated interrater agreement among all raters, between pairs of raters, and between each rater and the GS using Fleiss' Kappa [19] with 95% confidence intervals (CIs). The Kappa statistic is a measure of interrater agreement adjusted by the amount of the agreement expected to occur by chance alone. Kappa values were used to assess overall agreement across all diagnostic categories (PNES, ES, Other NES, Cannot Say), and agreement in differentiating between the diagnosis of ES, PNES, Other NES, and Cannot Say. Kappa values were classified as poor (<0.00), slight (0.01–0.20),

Table 1
Individual profile of raters.

Rater	Years in practice	Formal education in epilepsy (Yes/No)	N. of patients with seizure disorders seen during clinical practice	Degree	Specialty training
PS1	30	YES	Hundreds	MD	Psychiatry
PS2	12	YES	6/year	MD	Psychiatry
PS3	30	NO	15/year	MD	Psychiatry
PS4	10	NO	15/year	MD	Psychiatry

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