

***FUNCTIONAL DISORDERS

Psychiatric and Clinical Neurosciences
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Abnormal somatosensory evoked potentials in two patients with conversion disorder

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On clinical grounds, somatosensory evoked potentials (SEP) and motor evoked potentials (MEP) are currently used to discriminate between hysterical and neurological conditions. The present paper reports on two patients with severe gait disturbance who had the near-total absence of SEP responses on the scalp during the symptomatic period, which normalized after recovery. These findings, along with others, may shed light on the brain correlates of conversion phenomena.

The Value of Pseudoneurological Symptoms for Assessing Psychopathology in Primary Care.

Psychosomatic Medicine. 66(1):141-146, January/February 2004.

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Objective: This study sought to examine the relationship between pseudoneurological symptoms (PNS) and somatic and psychiatric symptom severity, physical functioning, and psychiatric comorbidity. Methods: Interview and questionnaire data were obtained from 120 patients with somatization who participated in a study assessing the efficacy of cognitive-behavioral therapy. Measures elicited information on psychiatric diagnoses, anxiety and depressive symptom levels, somatic symptoms, and physical functioning. Statistical analyses examined the relationship between PNS and the diagnosis of somatization disorder, physical and psychiatric symptom severity, and psychiatric comorbidity. Results: Roughly half of the sample had a history of four or more PNS. Results showed that having four or more PNS was not predictive of somatization disorder. However, having four or more PNS was found to be significantly correlated with the severity of anxiety, depression, somatic complaints, and physical dysfunction. These associations were identified while controlling for the symptom count of nonpseudoneurological symptoms, the presence of somatization disorder, and the presence of chronic painful physical conditions. In addition, having four or more PNS was significantly associated with a higher likelihood of receiving a diagnosis of major depression, dysthymia, panic disorder, and generalized anxiety disorder. Conclusions: A history of four or more PNS is common among somatizing patients in primary care and associated with a more severe clinical presentation, even after controlling for other factors known to be associated with severity. Four or more PNS may identify a distinct subgroup of somatization and serve as a clinical indicator for identifying psychiatric disorders in primary care. Future studies should explore the assessment of PNS using briefer measures. Furthermore, PNS should be evaluated with samples more representative of US primary care populations, as well as samples that include adequate representation from other ethnic backgrounds (eg, African-American, Asian, etc.).

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Reliability of self-reported diagnoses in patients with neurologically unexplained symptoms

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Background: Patients with neurologically unexplained symptoms (NUS) often have a previous history of other medically unexplained symptoms. A past history of such symptoms can help make a positive diagnosis of a somatoform or affective disorder, and enable appropriate management strategies. However, information on past medical diagnoses is primarily obtained from patient interviews and may be inaccurate, particularly in patients with NUS. **Objective:** To assess the reliability of past medical diagnoses reported by patients with NUS compared with patients with confirmed neurological disease (ND) without suspicion of somatoform illness. **Methods:** 21 patients with NUS and 16 patients with ND were interviewed about their current and past medical problems and diagnoses. The accuracy of the reported diagnoses was assessed through examination of their complete general practice notes. **Results:** The median number of previous diagnoses reported by patients with NUS was significantly higher than in controls (7 v 3, $p = 0.001$). There was no difference in the median number of confirmed diagnoses between the two groups (2 v 2.5); however, the median percentage of reported diagnoses confirmed by investigations was significantly smaller in the NUS group (22% v 80%, $p = 0.001$). The additional diagnoses reported by patients with NUS not only comprised functional syndromes such as irritable bowel syndrome or non-cardiac chest pain (6% v 0%, $p = 0.01$), but also organic diagnoses which had either been unequivocally excluded (5% v 0%, $p = 0.006$), were based on equivocal findings often found after multiple investigations (9% v 0%, $p = 0.01$), or had not been investigated before a clinical diagnosis was made (50% v 18%, $p = 0.04$). **Conclusion:** **Reported previous diagnoses should not be taken at face value when the current differential diagnosis includes a functional/somatoform neurological syndrome, particularly if the list of past medical diagnoses is long. Confirmation of previous diagnoses from alternative sources may contribute to a diagnosis of somatoform disorder, allowing appropriate management strategies for the current (and past) complaints to be initiated.**

Cognitive Behavior Therapy for Hypochondriasis: A Randomized Controlled Trial

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JAMA. 2004;291:1464-1470

Context Hypochondriasis is a chronic, distressing, and disabling condition that is prevalent in ambulatory medical practice. Until recently, no specific treatment has been clearly demonstrated to be effective. **Objective** To assess the efficacy of a cognitive behavior therapy (CBT) for hypochondriasis. **Design** A randomized, usual care control group design, conducted between September 1997 and November 2001. The individual primary care physician was the unit of randomization, and all patients clustered within each physician' practice were assigned to the experimental treatment (individual CBT and a consultation letter to the primary care physician) or to the control condition. Subjects were assessed immediately before and 6 and 12 months after the completion of treatment. **Setting and Participants** Participants were 80 patients from primary care practices and 107 volunteers responding to public announcements, all of whom exceeded a predetermined cutoff score on a hypochondriasis self-report questionnaire on 2 successive occasions. **Intervention** A scripted, 6-session, individual CBT intervention was

compared with medical care as usual. The CBT was accompanied by a consultation letter sent to the patient's primary care physician. **Main Outcome Measures** Hypochondriacal beliefs, fears, attitudes, and somatic symptoms; role function and impairment. **Results** A total of 102 individuals were assigned to CBT and 85 were assigned to medical care as usual. The sociodemographic and clinical characteristics of the 2 groups were similar at baseline. Using an intent-to-treat analytic strategy, a consistent pattern of statistically and clinically significant treatment effects was found at both 6- and 12-month follow-up, adjusting for baseline covariates that included educational level, generalized psychiatric distress, and participant status (patient vs volunteer). At 12-month follow-up, CBT patients had significantly lower levels of hypochondriacal symptoms, beliefs, and attitudes ($P=.001$) and health-related anxiety ($P=.009$). They also had significantly less impairment of social role functioning ($P=.05$) and intermediate activities of daily living ($P=.001$). Hypochondriacal somatic symptoms were not improved significantly by treatment. **Conclusion** This brief, individual CBT intervention, developed specifically to alter hypochondriacal thinking and restructure hypochondriacal beliefs, appears to have significant beneficial long-term effects on the symptoms of hypochondriasis.

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A preliminary morphometric magnetic resonance imaging study of regional brain volumes in body dysmorphic disorder

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Morphometric magnetic resonance imaging (MRI) was used to compare regional brain volumes in eight women with body dysmorphic disorder (BDD) and eight healthy comparison subjects. The BDD group exhibited a relative leftward shift in caudate asymmetry and greater total white matter vs. the comparison group. **Findings with respect to the caudate nucleus are consistent with both the conceptualization of BDD as an obsessive-compulsive spectrum disorder, and the 'striatal topography model' of obsessive-compulsive disorders.**

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Behavioural Interventions In the Rehabilitation of Acute Versus Chronic, Non-Organic, (Conversion/Factitious) Motor Disorders

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Background: Repeated case series have documented the effectiveness of multidisciplinary, inpatient, behavioural treatment for conversion disorders. However, in the absence of controlled research, treatment success could be attributed to providing patients with a face-saving opportunity to get better. Aim: The present study contrasts two behavioral treatments to elucidate the factors underlying successful inpatient rehabilitation of this population. Methods: Thirty-nine patients with non-organic, motor disorders underwent a standard behavioural, rehabilitation program. Using a cross-over design, **patients who did not improve then underwent a strategic-behavioural treatment in which they and their families were told that full recovery constituted proof of an organic etiology while failure to recover was definitive proof of a psychiatric etiology.** **Results: Retrospective chart review indicated that the standard behavioural treatment was effective for 8 of 9 acute patients but only 1 of 28**

chronic patients. Among the 21 chronic patients who then underwent the strategic-behavioural intervention, 13 were symptom-free at discharge. Conclusions: The strategic intervention was superior to standard behavioural treatment with chronic patients. Treatment components previously deemed critical for the effectiveness of behavioral treatment including ameliorating hypothesized skill deficits and eliminating all reinforcement of disabled behaviour may be unnecessary.

Learn Mem. 2004 Mar-Apr;11(2):213-26.

Functional amnesia: clinical description and neuropsychological profile of 10 cases.

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We carried out the first neuropsychological study of a series of patients with functional amnesia. We evaluated 10 patients, first with a neurological examination and then with three tests of anterograde amnesia and four tests of retrograde amnesia. Excluding one patient who later admitted to malingering, all patients had a significant premorbid psychiatric history and one or more possible precipitating factors for their amnesia. Eight of the 10 patients still had persistent retrograde amnesia at our last contact with them (median = 14 mo after the onset of amnesia). On tests of anterograde amnesia, the patients performed normally as a group, though some patients scored poorly on tests of verbal memory. On tests of retrograde amnesia, all patients had difficulty re-collecting well-formed autobiographical memories of specific events from their past. In contrast, patients performed as well as controls at distinguishing the names of cities from fictitious city names. On remote memory tests for past public events and famous faces, different patients exhibited different but internally consistent patterns of impaired and spared performance. The variability in the clinical and neuropsychological findings among our patients may be understood by supposing that memory performance is poor in proportion to how directly a test appears to assess a patient's common sense concept of memory. **The presentation of patients with functional amnesia is as variable as humankind's concept of what memory is and how it works.**

"Functional motor amnesia" in stroke (1904) and "learned non-use phenomenon" (1966)

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The "learned non-use phenomenon" described by Taub, one of the most original recent contributions to rehabilitation medicine probably corresponds to what Henry Meige (1866-1940), who studied under J.-M. Charcot, described in hemiplegics in 1904 using the expression "functional motor amnesia". He specified in 1914 at the time of the Babinski description of anosognosia, that: "Even with educated subjects who are still relatively young we are sometimes confronted with strange incapacities that are not due to impotence, negligence, or lack of confidence in the results. [] With the transitory halting of the motility all memory of the function appears to have disappeared". Meige describes motor disorders that are: (i) distinct from lesional paralyses; (ii) secondary to the absence of activity; (iii) linked to a learning process; (iv) linked to a phenomenon of functional memory loss; (v) reversible; and (vi) motor re-education focusing on extended and repeated practice of the lost function: the same characteristics as the "phenomenon of learned non-use" described by Taub in monkeys then in man.

Functional Somatic Syndromes: Emerging Biomedical Models and Traditional Chinese Medicine

Steven Tan, Kirsten Tillisch and Emeran Mayer
eCAM 2004 1(1):35-40

The so-called functional somatic syndromes comprise a group of disorders that are primarily symptom-based, multisystemic in presentation and probably involve alterations in mind-brain-body interactions. The emerging neurobiological models of allostasis/allostatic load and of the emotional motor system show striking similarities with concepts used by Traditional Chinese Medicine (TCM) to understand the functional somatic disorders and their underlying pathogenesis. These models incorporate a macroscopic perspective, accounting for the toll of acute and chronic traumas, physical and emotional stressors and the complex interactions between the mind, brain and body. The convergence of these biomedical models with the ancient paradigm of TCM may provide a new insight into scientifically verifiable diagnostic and therapeutic approaches for these common disorders.

Psychol Med. 2004 Jan;34(1):137-46.

Suicide at 50 years of age and older: perceived physical illness, family discord and financial strain.

Duberstein PR, Conwell Y, Conner KR, Eberly S, Caine ED.

BACKGROUND: Mental disorders amplify suicide risk across the lifecourse, but most people with mental disorder do not take their own lives. Few controlled studies have examined the contribution of stressors to suicide risk. **METHOD:** A case-control design was used to compare 86 suicides and 86 controls aged 50 years and older, matched on age, gender, race and county of residence. Structured interviews were conducted with proxy respondents for suicides and controls. **RESULTS:** Perceived physical illness, family discord and employment change amplified suicide risk after controlling for sociodemographic covariates and mental disorders that developed $>$ or $=$ 1 year prior to death/interview. Only the effect of physical illness (OR 6.24, 95% CI 1.28-51.284) persisted after controlling for all active mental disorders.

CONCLUSIONS: Interventions to decrease the likelihood of financial stress and to help families manage discord and severe physical illness may effectively reduce suicides among middle-aged and older adults.

Medical Illness and the Risk of Suicide in the Elderly

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Arch Intern Med. 2004;164:1179-1184.

Background Suicide is a leading cause of death, and rates are especially high among the elderly. Medical illnesses may predispose to suicide, but few controlled studies have examined the association between specific diseases and suicide. We explored the relationship between treatment for several illnesses and the risk of suicide in elderly patients using a population-based approach.

Methods All Ontario residents 66 years or older who committed suicide between January 1, 1992, and December 31, 2000, were identified from provincial coroners' records. Their prescription records during the preceding 6 months were compared with those of living matched controls (1:4) to determine the presence or absence of 17 illnesses potentially associated with suicide.

Results During the 9-year study period, we identified 1354 elderly patients who died of suicide. The most common mechanisms involved firearms (28%), hanging (24%), and self-poisoning (21%). Specific illnesses associated with suicide included congestive heart failure (odds ratio [OR], 1.73; 95% confidence interval [CI], 1.33-2.24), chronic obstructive lung disease (OR, 1.62; 95% CI, 1.37-1.92), seizure disorder (OR, 2.95; 95% CI, 1.89-4.61), urinary incontinence (OR, 2.02; 95% CI, 1.29-3.17), anxiety disorders (OR, 4.65; 95% CI, 4.07-5.32), depression (OR, 6.44; 95% CI, 5.45-7.61), psychotic disorders (OR, 5.09; 95% CI, 3.94-6.59), bipolar disorder (OR, 9.20, 95% CI, 4.38-19.33), moderate pain (OR, 1.91; 95% CI, 1.66-2.20), and severe pain (OR, 7.52; 95% CI, 4.93-11.46). Treatment for multiple illnesses was strongly related to a higher risk of suicide. Almost half the patients who committed suicide had visited a physician in the preceding week.

Conclusions Many common illnesses are independently associated with an increased risk of suicide in the elderly. The risk is greatly increased among patients with multiple illnesses. These data may help clinicians to identify elderly patients at risk of suicide and open avenues for prevention.

Neuropsychologia Volume 42, Issue 8, 2004, Pages 1132-1147

A case of psychogenic fugue: I understand, aber ich verstehe nichts

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Psychogenic fugue is a disorder of memory that occurs following emotional or psychological trauma and results in a loss of one's personal past including personal identity. This paper reports a case of psychogenic fugue in which the individual lost access not only to his autobiographical memories but also to his native German language. A series of experiments *compared his performance on a variety of memory and language tests to several groups of control participants including German-English bilinguals who performed the tasks normally or simulated amnesia for the German language. Neuropsychological, behavioral, electrophysiological and functional neuroimaging tests converged on the conclusion that this individual suffered an episode of psychogenic fugue, during which he lost explicit knowledge of his personal past and his native language. At the same time, he appeared to retain implicit knowledge of autobiographical facts and of the semantic or associative structure of the German language. The patient's poor performance on tests of executive control and reduced activation of frontal compared to parietal brain regions during lexical decision were suggestive of reduced frontal function, consistent with models of psychogenic fugue proposed by Kopelman [The Handbook of Memory Disorders, 2nd ed., Wiley, Chichester, 2002, p. 451] and Markowitsch [Memory, Consciousness, and the Brain, Psychology Press, Philadelphia, 2000, p. 319].

Psychosomatics 45:291-296, August 2004

PTSD and Somatization in Women Treated at a VA Primary Care Clinic

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The authors examined the association between trauma, posttraumatic stress disorder (PTSD), and somatization in 264 women attending a Department of Veterans Affairs primary care clinic. Using a structured computerized interview (Composite International Diagnostic Interview), they found that **traumatic events were reported by 81% of the women. The lifetime prevalence of PTSD was 27%; for somatization it was 19%. PTSD was the best predictor of somatization after control for demographic variables, veteran status, and other mood and anxiety disorders. Psychological numbing symptoms of PTSD emerged as a particularly strong predictor of somatization. The link between PTSD and somatization deserves further study. (Both dissociative??) See next...**

Epilepsy Behav. 2004 Dec;5(6):818-25.

Traumatic events and posttraumatic stress disorder in patients with psychogenic nonepileptic seizures: a critical review.

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Although video-EEG monitoring has revolutionized the diagnosis of psychogenic nonepileptic seizure (PNES), the etiology of this condition remains poorly understood. This article is a critical review of studies on the prevalence of traumatic events, abuse, and/or posttraumatic stress disorder (PTSD) in patients with PNES. **Searches carried out on MEDLINE (1966-2004) and Web of Science (1945-2004) identified 17 relevant studies. PNES samples showed very high rates of trauma (44-100%) and abuse (23-77%), which were 15-40% higher than those found in control groups. This suggests that traumatic experiences may be a potential risk factor for PNES. PNES samples also showed a higher prevalence of PTSD than control groups, raising the possibility that PNES may arise as a clinical expression of a hypothetical PTSD subtype the core symptoms of which are dissociative.** Methodological limitations do not permit the confirmation of these hypotheses. Stronger research designs are needed, such as prospective and case-control studies in both hospital and community settings.

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Medically unexplained symptoms and neuropsychological assessment.

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Several illnesses expressed somatically that do not have clearly demonstrated pathophysiological origin and that are associated with neuropsychological complaints are reviewed. Among them are nonepileptic seizures, fibromyalgia, chronic fatigue syndrome, Persian Gulf War unexplained illnesses, toxic mold and sick building syndrome, and silicone breast implant disease. Some of these illnesses may be associated with objective cognitive abnormalities, but it is not likely that these abnormalities are caused by traditionally defined neurological disease. Instead, **the cognitive abnormalities may be caused by a complex interaction between biological and psychological factors. Nonepileptic seizures serve as an**

excellent model of medically unexplained symptoms. Although nonepileptic seizures clearly are associated with objective cognitive abnormalities, they are not of neurological origin. There is evidence that severe stressors and PTSD are associated with immune system problems, neurochemical changes, and various diseases; these data blur the distinctions between psychological and organic etiologies. Diagnostic problems are intensified by the fact that many patients are poor historians. **Patients are prone to omit history of severe stressors and psychiatric problems, and the inability to talk about stressors increases the likelihood of suffering from physiological forms of stress.**

Psychosomatics 45:350-353, August 2004

Factitious Physical Disorders, Litigation, and Mortality

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This case report describes four patients who died of factors directly related to factitious physical disorder and whose cases involved civil litigation. The causes of death varied among the patients and included massive aspiration pneumonia, cardiac arrest, opioid overdose, and septic shock. We discuss how individuals with factitious disorder may enter the legal system through the process of civil litigation. This entry into the legal system, in which monetary gain plays a significant role, illustrates that the boundary between malingering and factitious disorder can be permeable. Nonetheless, individuals with factitious physical disorder have a strong tendency toward self-injurious behavior that may eventually result in death. In the case series of 20 patients from which these four patients were drawn, four (20%) patients died as a direct result of factitious disease. This mortality rate should serve as a warning sign to physicians who provide care for these patients that they are dealing with a potentially fatal disease.

Psychosomatics 45:365-366, August 2004

Munchausen by Proxy and Malingering by Proxy

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LETTER TO THE EDITOR: The term "Munchausen by proxy" has long referred to a form of maltreatment in which an individual in loco parentis fabricates or produces illness (physical and/or emotional-behavioral) in another to assume the vicarious sick role.¹ More recently, "malingering by proxy" has been used to refer to people whose motives for such abuse or neglect are external and often tangible.² The following case displays both phenomena in a single person.

Psychosomatics 45:243-246, June 2004

Comorbid Factitious and Conversion Disorders

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Oh what a tangled web we weave,

When first we practice to deceive!

—Sir Walter Scott (1771–1832), *Marmion*, canto VI, stanza 17

The presence of deception is the key to distinguishing between factitious and conversion disorders.^{1,2} The former condition is marked by active dissimulation that permits the individual to assume the role of the patient; the latter is prompted by unconscious conflicts and symptoms that are not intentionally produced. Coexistence of the two disorders in the same patient highlights the fluid nature of prevarication. Furthermore, since patients with either diagnosis are frequent targets for intense countertransference and are consequently the objects of scorn, irritation, and humor, the following case underscores the role of therapeutic confrontation -

The present case involves a woman with factitious breast cancer and a comorbid conversion disorder. Ms. A conceded that she had prevaricated regarding her breast cancer but maintained that her presenting symptom of leg weakness was genuine. That she had a propensity for conversion disorders is not surprising, given a past history of pseudoseizures. This case is interesting because of the combination of factitious behavior, conversion signs, and inconsistent insight into her deception. Ms. A stated that there were times when she was convinced that she really did have a malignancy. It is unclear, even to her, how much of the disease was contrived and how much of it she really believed.

.... It is understandable that sometimes the line between reality and fantasy can blur. Polage has described a fascinating experiment with normal subjects who were instructed to tell a lie to an experimenter. She reported that after lying to the researcher for an extended period of time, up to 10% of the subjects subsequently became convinced of the truth of the tale and denied that they had been lying. This phenomenon is also evident in law enforcement and is manifest in the reopening of the Central Park jogger case, in which five defendants were convicted after falsely confessing to the crime. The videotaped confessions are compelling in the detail and seeming truthfulness of the accounts, but they were refuted by DNA and other evidence. In patients prone to suggestibility (i.e., those with a history of conversion), it is reasonable to assume that memories will be altered by repeated false statements and further reinforced by family and friends who provide a social influence that helps perpetuate the false belief. This is an especially problematic area in dissociative disorders.

Spence and associates¹⁶ have made use of positron emission tomography to study a small group of patients with conversion disorders involving motoric function of their upper extremities. They compared the patients with normal individuals who were requested to feign limb weakness, as well as a control group. The conclusions are preliminary because of the small group size and the absence of patients with factitious disorders. Nevertheless, it is interesting that all of the patients with conversion disorder who attempted to move their affected limbs were found to have left prefrontal hypofunction, while right prefrontal hypofunction characterized the group that feigned having a disorder ($p < 0.001$). The authors hypothesized that hysterical pathophysiology specifically involves dysfunction of the left dorsolateral prefrontal cortex, and this region is activated in the feigners who chose to slow down and limit their movements.

In conversion disorders, direct confrontation is generally accepted as being an ineffective approach, as it directly challenges the subjective experience of the patient. More supportive, insight-oriented, cognitive, and behavioral techniques are recommended that focus on understanding the symptoms as part of a biopsychosocial system.^{17,18} Behavioral reinforcement has been particularly useful in dealing with conversion in children, in whom insight-oriented therapy is less effective.¹⁹ All patients should be offered encouragement that symptoms will remit.

The literature is divided as to the management of factitious disorders. Most authors recommend confrontation by the primary physician after discovery of irrefutable evidence of

duplicious behavior. In one study, only 13 of 33 confronted patients acknowledged self-inducing symptoms, but almost all reported an improvement in the physician-patient relationship. Other experts have suggested that a nonconfrontational approach improves patient compliance. **The goal is not to invalidate the patients' symptoms but rather to build rapport and make psychiatric follow-up acceptable. This would be particularly applicable to situations where it is not clear how much is believed and how much is contrived.**

In our patient's case, the attending physician and the psychiatrist enacted a variation of "good cop, bad cop." The patient was confronted in the traditional manner by the internist, while the consultant used a gentler and more empowering approach. Since patients rarely accept referrals immediately, the consultant provided the patient with a task and asked her to consider seeking psychiatric help if that task could not be accomplished. This allowed the patient the time to come to terms with her denial and provided her with the responsibility for arranging care. This combination of interventions proved to be effective in helping Ms. A recognize the nature of her symptoms and to seek outpatient care.

J Clin Psychiatry. 2004 Jun;65(6):783-90.

Motor conversion disorders reviewed from a neuropsychiatric perspective.

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BACKGROUND: Conversion disorder is a somatoform disorder defined by the presence of pseudoneurologic symptoms relating to voluntary sensory or motor function. The correct diagnosis of conversion disorder presenting with motor symptoms is complicated by the lack of gold-standard diagnostic tests and the absence of a universally accepted set of positive diagnostic criteria. This article reviews the epidemiology, pathophysiology, presentation, differential diagnosis, treatment, and prognosis of motor conversion, placing emphasis on diagnostic validity, reliability, and utility, while evaluating the empirical evidence supporting diagnostic and treatment strategies. **DATA SOURCES AND STUDY SELECTION:** Literature searches were carried out in PubMed using the keywords conversion disorder, motor conversion, dystonia, psychogenic, hysteria, somatization, motion disorder, movement disorder, and patho-physiology. Articles and book chapters in the author's personal collection were also utilized. **CONCLUSIONS:** Advances in neuropsychiatric research are leading to significant improvements in the diagnosis and understanding of motor conversion disorders. Positive, objective, and quantitative diagnostic criteria show significant promise for enhancing diagnostic accuracy. **Current pathophysiologic research has begun to provide mechanistic explanations for conversion symptoms, thus blurring the distinction between psychogenic and organic motor disorders.**

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Psychosocial interventions for somatizing patients by the general practitioner:

A randomized controlled trial

Astrid Larisch, Axel Schweickhardt, Michael Wirsching and Kurt Fritzsche

The objective of this study was to compare the effects of psychosocial interventions based on the modified reattribution model for somatizing patients in general practice (GP) with those of nonspecific psychosocial primary care (PPC) alone.

Methods Forty-two GPs were randomized, 23 into the intervention group (IG), who were trained in reattribution techniques, and 19 into the control group (CG). One hundred twenty-seven patients were included. Primary outcome measures were somatoform symptoms and quality of life.

Results Multilevel modeling revealed a reduction of physical symptoms ($P=.007$), an improvement in physical functioning ($P=.0172$), and a reduction of depression ($P=.0211$) and anxiety ($P=.0388$) in the IG compared with the CG at the 3-month follow-up. However, results no longer remained significant after controlling for baseline and covariate variables besides a reduction of physical symptoms at 6-month follow-up ($P=.029$).

Conclusion **Compared with nonspecific PPC, the effects of reattribution techniques were small and limited to physical symptoms.**

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Medically unexplained physical symptoms: The feasibility of group cognitive-behavioural therapy in primary care

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Objective The aim of this study was to estimate the number of patients with medically unexplained physical symptoms (MUPS) that could be eligible for group cognitive-behavioural treatment (CBT) and to assess the acceptability of this treatment.

Methods For 3 months, all consultations of one general practitioner (GP) were screened for MUPS. Patients with MUPS who were considered eligible for group CBT were interviewed and offered treatment.

Results From January to March 1999, 1084 consultations of 796 patients were screened. The GP classified the symptoms of 104 patients aged 25–79 as unexplained. Of these, 71 patients were not considered to be eligible for treatment, mainly due to a psychological attribution of the symptoms. The research interview was offered to 33 patients, 16 of them declined and 12 were interviewed. Seven out of the 12 eligible patients accepted treatment.

Conclusion In primary care, 18% of patients aged 25–79 years was estimated to have MUPS. For only a minority of these patients, group CBT was considered suitable and acceptable.

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Medically unexplained symptoms and neuropsychological assessment.

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Several illnesses expressed somatically that do not have clearly demonstrated pathophysiological origin and that are associated with neuropsychological complaints are reviewed. Among them are nonepileptic seizures, fibromyalgia, chronic fatigue syndrome, Persian Gulf War unexplained illnesses, toxic mold and sick building syndrome, and silicone breast implant disease. **Some of these illnesses may be associated with objective cognitive abnormalities, but it is not likely that these abnormalities are caused by traditionally defined neurological disease. Instead, the cognitive abnormalities may be caused by a**

complex interaction between biological and psychological factors. Nonepileptic seizures serve as an excellent model of medically unexplained symptoms. Although nonepileptic seizures clearly are associated with objective cognitive abnormalities, they are not of neurological origin. There is evidence that severe stressors and PTSD are associated with immune system problems, neurochemical changes, and various diseases; these data blur the distinctions between psychological and organic etiologies. Diagnostic problems are intensified by the fact that many patients are poor historians. Patients are prone to omit history of severe stressors and psychiatric problems, and the inability to talk about stressors increases the likelihood of suffering from physiological forms of stress.

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Subjective health complaints, sensitization, and sustained cognitive activation (stress).

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INTRODUCTION: This review argues that "subjective health complaints" is a better and neutral term for "unexplained medical symptoms." The most common complaints are musculoskeletal pain, gastrointestinal complaints and "pseudoneurology" (tiredness, sleep problems, fatigue, and mood changes). These complaints are common in the general population, but for some these complaints reach a level that requires care and assistance. **THEORETICAL ASSUMPTIONS:** We suggest that these complaints are based on sensations from what in most people are normal physiological processes. In some individuals these sensations become intolerable. In some cases it may signal somatic disease, in most cases not. **Cases without somatic disease, or with minimal somatic findings, occur under diagnoses like burnout, epidemic fatigue, multiple chemical sensitivity, chronic musculoskeletal pain, chronic low back pain, chronic fatigue syndrome, and fibromyalgia. These complaints are particularly common in individuals with low coping and high levels of helplessness and hopelessness.** **CONCLUSION:** The psychobiological mechanisms for this is suggested to be sensitization in neural loops maintained by sustained attention and arousal.

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*****FUNCTIONAL SYMPTOMS IN NEUROLOGY: MANAGEMENT**

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In this article we offer an approach to management of functional symptoms based on our own experience and on the evidence from other specialities (because the evidence from neurology is so slim). We also tackle some of the most difficult questions in this area. What causes functional symptoms? Does treatment really work? What about malingering? (*"A composite scan of four patients with functional hemimotor and sensory symptoms compared to recovery. There was hypoactivation of the contralateral thalamus, caudate, and putamen during the symptomatic state. Activations on a scan do not tell us how the symptom came to be there (or even if it was fabricated or not), but along with studies of endocrine and immunological abnormalities challenge a purely "psychogenic" view of the problem."*)

Brain. 2004 Oct;127(Pt 10):2360-72. Epub 2004 Sep 1.

The syndrome of fixed dystonia: an evaluation of 103 patients.

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We describe the clinical features of 103 patients presenting with fixed dystonia and report the prospective assessment and investigation of 41 of them. Most patients were female (84%) and had a young age of onset [mean 29.7 (SD 13.1) years]. A **peripheral injury preceded onset in 63% and spread of dystonia to other body regions occurred in 56%**. After an average follow-up of 3.3 years (overall disease duration 8.6 years), partial (19%) or complete (8%) remission had occurred in a minority of patients. **The fixed postures affected predominantly the limbs (90%), and rarely the neck/shoulder region (6%) or jaw (4%).** In the prospectively studied group, **pain was present in most patients and was a major complaint in 41%. Twenty percent of patients fulfilled criteria for Complex Regional Pain Syndrome (CRPS). No consistent investigational abnormalities were found and no patient tested (n = 25) had a mutation in the DYT1 gene. Thirty-seven percent of patients fulfilled classification criteria for documented or clinically established psychogenic dystonia; 29% fulfilled DSM-IV (Diagnostic and statistical manual of mental disorders, 4th edition) criteria for somatization disorder, which was diagnosed only after examination of the primary care records in many cases; and 24% fulfilled both sets of criteria. Ten percent of the prospectively studied and 45% of the retrospectively studied patients did not have any evidence of psychogenic dystonia, and detailed investigation failed to reveal an alternative explanation for their clinical presentation. Detailed, semi-structured neuropsychiatric assessments in a subgroup of 26 patients with fixed dystonia and in a control group of 20 patients with classical dystonia revealed dissociative (42 versus 0%, P = 0.001) and affective disorders (85 versus 50%, P = 0.01) significantly more commonly in the fixed dystonia group. Medical and surgical treatment was largely unsuccessful. However, seven patients who underwent multidisciplinary treatment, including physiotherapy and psychotherapy, experienced partial or complete remission. We conclude that fixed dystonia usually, but not always, occurs after a peripheral injury and overlaps with CRPS. Investigations are typically normal, but many patients fulfil strict criteria for a somatoform disorder/psychogenic dystonia. In a proportion of patients, however, no conclusive features of somatoform disorder or psychogenic disorder can be found and, in these patients, whether this disorder is primarily neurological or psychiatric remains an open question. Whilst the prognosis is overall poor, remissions do occur, particularly in those patients who are willing and able to undergo multidisciplinary treatment including physiotherapy and psychotherapy, suggesting that this type of treatment should be recommended to these patients.**

J Am Acad Psychiatry Law 33:1:99-105 (2005)

Evidence-Based Medicine and Medicine-Based Evidence: The Expert Witness in Cases of Factitious Disorder by Proxy

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The UK media has recently devoted much attention to the role of expert witnesses in child protection cases. One or two particular pediatricians who have given expert testimony have been the subject of personal vilification and professional investigation. These cases raise questions about the use of medical expert testimony when there is real uncertainty in the

scientific community and the emotional stakes are high. Do doctors use scientific evidence to make diagnoses in the same way that the courts use evidence to make judgments? The cases also raise questions about the personal credibility and trustworthiness of experts: should we allow ourselves to be seen as personally powerful witnesses? Are we responsible for how we are seen by the jury? In this article, these questions are addressed, with the conclusion that distress and anxiety about child maltreatment influences all the players in the justice process and may interfere with the process of justice.

NES

Epilepsy & Behavior Volume 5, Issue 4 , August 2004, Pages 503-508

Wambacq I, Abubakr A.

Auditory event-related potentials (P300) in the identification of psychogenic nonepileptic

A composite scan of four patients with functional hemimotor and sensory symptoms compared to recovery. There was hypoactivation of the contralateral thalamus, caudate, and putamen during the symptomatic state. Activations on a scan do not tell us how the symptom came to be there (or even if it was fabricated or not), but along with studies of endocrine and immunological abnormalities challenge a purely "psychogenic" view of the problem.

Reproduced from Vuilliemier et al,¹ with permission from Oxford University Press. **seizures**
Ilse Wambacq, and Abuhuziefa Abubakr

The feasibility and conceivable value of postictal event-related potential (ERP) recordings were studied in patients with nonepileptic seizures (NES) admitted for long-term video/EEG monitoring. Ten patients with NES underwent preictal (on hospital admission) and postictal (6 hours after seizure) ERP recordings of an auditory oddball paradigm. Additionally, 10 temporal lobe epilepsy (TLE) patients with partial seizures and secondary generalization underwent preictal, postictal (<6 hours after seizures), and interictal (7–48 hours after seizure) ERP recordings. We recently reported that ERPs recorded in TLE patients with partial epilepsy undergo a temporary change postictally, while returning to their preictal state during interictal recordings. In the current study intraclass correlations, transformed into z scores, are used to determine test–retest validity of repeated ERP recordings. An independent sample t test with z scores for the comparison of preictal and postictal recordings showed that ERP activation differed between NES and TLE patients ($P=0.009$). More specifically, ERP recordings in the preictal and postictal states were similar in NES patients, but dissimilar in TLE patients. On the other hand, this dissimilarity in ERPs disappeared when comparing z scores for the preictal and postictal recordings in NES patients with z scores for the preictal and interictal recordings in TLE patients. **This further supports the notion that identical waveforms during preictal and postictal recordings in NES patients reflect nonepileptic seizure activity. The current findings suggest that postictal ERP recordings are useful in the diagnosis of NES and differentiate TLE from NES.**

Psychogenic status epilepticus in children

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Epilepsy features, psychiatric profile, psychosocial factors, and outcome are described for six children (three males) aged 5–15 years (mean 12.1) with psychogenic status epilepticus (PSE), i.e., prolonged or repetitive psychogenic seizures (PSs), >30 minutes, simulating status epilepticus. They had epilepsy, they were on chronic anticonvulsants (ACVs), and some had other neurological deficits. All received intravenous and/or rectal ACVs prior to suspicion of PSE. PSE was confirmed via video/EEG, demonstrating no epileptogenic activity during alleged seizures. Provocation and placebo therapy techniques were used in two. Psychiatric assessment identified comorbid disorders such as depression, anxiety disorder, obsessive–compulsive disorder, obsessive–compulsive symptoms, and posttraumatic stress disorder. Psychosocial stressors were almost ubiquitous. Psychiatric intervention included psychotherapy, family therapy, and medical treatment in one patient. Outcome was monitored for an average of 3.6 years (3–5 years). PSE did not recur. PSs recurred in three. Psychiatric comorbidity improved in four, who accepted psychiatric intervention and whose epilepsy also improved. In conclusion, the occurrence of PSE in children and adolescents with epilepsy is stressed. Prompt diagnosis was often missed in the acute care setting, and this carries important implications for iatrogenic complications. PSE diagnosis resulted in identification and management of comorbid psychiatric disorders. This was probably important in reducing the predominating anxiety and affective disorders in most patients as well as PSE recurrence. Epilepsy severity and associated deficits were most likely important factors in determining outcome.

Group psychoeducation as treatment for psychological nonepileptic seizures

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There is no consensus for the type(s) of treatment(s) that may be effective or ineffective for psychological nonepileptic seizures (PNES). We provided an open-ended group psychotherapy program to 10 patients with PNES, including a disorder-specific psychoeducation treatment component in the first 10 weeks. Seizure frequency and questionnaire responses were examined pre- and posttreatment in all 7 of 10 individuals who completed the majority of the psychoeducational sessions. Four individuals experienced no change in seizure frequency; in three of these this was due to a cessation of events at treatment initiation. Two individuals experienced a decline; and one, an increase, in seizure frequency. Significant decreases were reported in posttraumatic ($P=0.003$) and dissociative ($P=0.04$) symptoms and emotionally based coping mechanisms ($P=0.03$). There was also a trend toward improved quality of life ($P=0.07$). Experience/expression of anger remained stable. **Psychoeducation may be an effective method of treating PNES and may improve coping strategies and reduce PNES-associated psychopathology in some patients. Additional controlled studies on larger samples are needed.**

Article in Portuguese]

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The purpose of this study was to point out the effectiveness of prolonged video EEG monitoring (PVEM) in the diagnosis of nonepileptic seizures (NES) as well as to estimate its prevalence in a reference center of epilepsy (EP). A sample of 47 patients with the diagnosis of NES with spontaneous or provoked seizures was observed. A protocol with the clinical history and semiology of seizures was analyzed; Fisher's exact test and cluster analysis were used for statistical observation. The results showed a prevalence of 10% of NES; more prevalence in females (63.8%); the crises were spontaneous in 57% of the patients. The mean age was 32.5 +/- 11 years and the most frequent semiological sign was apparent sleep (82.2%). Either EP or NES was observed in 9% of the patients. **There were three groups according to the cluster analysis: hypermotor NES of the extremities with tonus alteration; NES with automatism; and axial NES with eye movements. In conclusion, the study of clinical semiology of NES during the PVEM provides both this nosological entity and the differential EP diagnoses while the provocative test helps to obtain the seizures.**

Epilepsia. 2004 Aug;45(8):928-32.

Evaluating the utility of inpatient video-EEG monitoring.

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PURPOSE: Inpatient video-EEG monitoring (VEM) is widely used for the diagnosis, seizure classification, and presurgical evaluation of patients with seizure disorders. It is resource intensive and relatively expensive, so its utility continues to be debated. Few studies have specifically evaluated the utility of inpatient VEM in altering diagnosis or management of patients with seizure disorders. We sought to assess the proportion of patients for whom the preadmission diagnosis and management were altered after inpatient VEM of patients admitted for diagnostic and presurgical evaluation of seizure disorders. **METHODS:** Data from a consecutive cohort of patients admitted over a 3-year period to an inpatient VEM unit in a tertiary referral hospital were retrospectively analyzed. The preadmission diagnosis and management by the referring neurologist was compared with the diagnosis and management after the VEM. **RESULTS:** Of 131 patients, 91 (70%) were admitted for diagnostic evaluation and 39 (30%) for a presurgical workup. Mean evaluative period was 5.6 days. Mean number of seizures recorded was 2.9. No seizures were recorded in 31% of patients. Interictal EEG showed epileptiform changes in 56 (43%). **In 76 (58%), the diagnosis was altered as a result of the VEM, with the greatest change being an increase in the nonepileptic diagnosis group (7% to 31%) and the generalized diagnosis group (5% to 11%). Management was changed after the VEM in 95 (73%).** **CONCLUSIONS:** **The results of this study demonstrate that inpatient VEM has a high yield in changing diagnosis and management. Future long-term cost-benefit studies of the management changes resulting from VEM evaluation will aid in further reinforcing its role.**

J Head Trauma Rehabil. 2004 Jul-Aug;19(4):290-5.

Evaluation of seizure-like episodes in survivors of moderate and severe traumatic brain injury.

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BACKGROUND: Transient paroxysmal alterations of consciousness or behavior are common sequelae of moderate and severe traumatic brain injury (TBI). Clinicians caring for patients with such episodes often diagnose them as epileptic seizures, a frequent and well-studied complication of TBI. As it is difficult to confirm this diagnosis, antiepileptic drugs are often used empirically. However, as such therapy is frequently ineffective, we studied the usefulness of prolonged video electroencephalogram (VEEG) monitoring in the clinical management of paroxysmal behaviors in TBI survivors. **METHODS:** Records of patients referred evaluation in an epilepsy monitoring unit for management of medically intractable epilepsy were retrospectively reviewed. Patients with a documented history of moderate-to-severe brain injury preceding the onset of epilepsy were identified. These patients were studied by simultaneous videotape and scalp electroencephalographic recordings, and the majority also underwent magnetic resonance imaging and neuropsychologic studies. **RESULTS:** Of the 1858 consecutive admissions over a 66-month period, 127 (7%) fulfilled enrollment criteria. VEEG monitoring was conducted for an average of 4.6 days. Monitoring was successful in establishing a diagnosis in 82% of the cases referred: **62% had focal seizures, 6% had generalized seizures, and 33% had psychogenic nonepileptic seizures. Of those with temporal lobe epilepsy, 53% had mesial temporal sclerosis**, as shown by magnetic resonance imaging. **CONCLUSIONS:** VEEG is a useful procedure in the evaluation of TBI survivors with spells. **The yield of diagnoses that may alter treatment is substantial. Additionally, mesial temporal sclerosis is associated with TBI.** Given the variety of seizure types found in survivors of moderate-to-severe TBI, obtaining specific diagnosis of seizure type by VEEG monitoring impacts treatment options.

NEUROLOGY 2004;63:516-519

Ictal stuttering: A sign suggestive of psychogenic nonepileptic seizures

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Objective: To determine if ictal stuttering (IS) is more common among patients with psychogenic nonepileptic seizures (PNES) than patients with epileptic seizures (ES).

Methods: The authors prospectively reviewed the medical records, EEG-video recordings, and Minnesota Multiphasic Personality Inventory-2 (MMPI-2) scores of consecutive adults of normal intelligence diagnosed with either PNES or ES.

Results: A total of 230 (117 PNES and 113 ES) patients were studied. PNES patients were older ($p = 0.029$), more likely to be female ($p < 0.001$), and had a shorter duration of seizure disorder ($p < 0.001$) than ES cases. Ten (8.5%) PNES subjects and no ES cases demonstrated IS. The proportion of patients with IS in these two groups was significantly different ($p = 0.004$). PNES patients with IS were of similar age as but had an even shorter ($p = 0.010$) duration of seizure disorder (mean = 3.0 years) than those without IS. Scores on the hypochondriasis, depression (D), and hysteria scales of the MMPI-2 were significantly higher among PNES subjects than in ES patients ($p = 0.002$). However, seven PNES patients with IS had a lower mean score on the D scale than did 98 PNES cases without stuttering ($p = 0.005$). This produced a more sharply defined "conversion V" appearance on the MMPI-2 graph in the stutterers.

Conclusions: **Ictal stuttering was present in 8.5% of 117 consecutive patients with psychogenic nonepileptic seizures, but was not observed in a consecutive series of 113 adults with epileptic seizures. Patients with psychogenic nonepileptic seizures with ictal stuttering had a shorter duration of seizure disorder and a more prominent conversion profile on the Minnesota Multiphasic Personality Inventory than either patients with psychogenic nonepileptic seizures without stuttering or subjects with epileptic seizures.**

Epilepsia. 2004 Nov;45(11):1344-50.

"Convulsive" nonepileptic seizures have a characteristic pattern of rhythmic artifact distinguishing them from convulsive epileptic seizures.

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PURPOSE: Approximately 30% of patients admitted for video-EEG monitoring have psychogenic nonepileptic seizures (PNES). Differentiation of "convulsive" PNES from convulsive seizures can be difficult. The EEG often displays rhythmic movement artifact that may resemble seizure activity and confound the interpretation. We sought to determine whether time-frequency mapping of the rhythmic EEG artifact during "convulsive" PNES reveals a pattern that differs from that of epileptic seizures. **METHODS:** EEGs from 15 consecutive patients with "convulsive" PNESs were studied with time-frequency mapping by using NEUROSCAN and compared with 15 patients with convulsive epileptic seizures. Fast Fourier transforms (FFTs) were performed to determine the dominant frequency for 1- to 2-s windows every 2 s through the seizures. **RESULTS:** **The dominant frequency remained stable within a narrow range for the duration of the PNES, whereas in the epileptic seizures, it evolved through a wide range.** The coefficient of variation of the frequency during the seizures was considerably less for patients without epilepsy (median, 15.0%; range, 7.2-23.7% vs. median, 58.0%; range, 34.8-92.1%; $p < 0.001$). The median frequency did not differ significantly between groups (4.2 vs. 4.6 Hz; $p = 0.290$). **CONCLUSIONS:** **"Convulsive" PNES display a characteristic pattern on time-frequency mapping of the EEG artifact, with a stable, nonevolving frequency that is different from the evolving pattern seen during an epileptic seizure.**

Neurology. 2004 Jul 13;63(1):40-2.

Paroxysmal eyelid movements: a confusing feature of generalized photosensitive epilepsy.

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BACKGROUND: Persistent, frequent, nonepileptic paroxysmal eyelid movements were observed in 19 children and adults with well-controlled generalized epilepsy. **METHODS:** Patients were identified from five epilepsy centers. **RESULTS:** Seventeen patients were female and two male. All had generalized photosensitive epilepsy requiring antiepileptic drugs (AEDs). In two children, paroxysmal eyelid movements began 2 to 4 years before their epilepsy was noted; in the remainder, it was noted when epilepsy was first diagnosed. Age at last follow-up was 8 to 38 years (average 21 years) with average follow-up of 9 years. All patients showed photosensitive generalized spike-wave discharges on EEG. Paroxysmal eyelid movements were a source of diagnostic confusion, but direct examination and video during EEG recording distinguished the attacks from absence seizures. In all cases, the epilepsy is completely or nearly completely controlled with AEDs, but the paroxysmal eyelid movements have not resolved with

age. In 12 cases, there was a family history of the eyelid disorder without epilepsy. Videos of patients and an affected parent are available on the Neurology Web site. **CONCLUSION: There is an association between paroxysmal eyelid movements and photosensitive generalized epilepsy, creating diagnostic confusion.**

Srp Arh Celok Lek. 2004 Jan-Feb;132(1-2):22-7.

[Phenomenology and psychiatric origins of psychogenic non-epileptic seizures]

[Article in Serbian]

Ristic AJ, Petrovic I, Vojvodic N, Jankovic S, Sokic D.

INTRODUCTION: Psychogenic nonepileptic seizure (PNES) is a sudden change in a person's behavior, perception, thinking, or feeling that is usually time limited and resembles, or is mistaken for, epilepsy but does not have the characteristic electroencephalographic (EEG) changes that accompanies a true epileptic seizure [1]. It is considered that PNES is a somatic manifestation of mental distress, in response to a psychological conflict or other stressors [2]. A wide spectrum of clinical presentation includes syncope, generalized tonic-clonic seizure, simple and complex partial seizure, myoclonic seizure, frontal lobe seizures and status epilepticus [3]. Coexistence of epilepsy and PNES is seen in approximately 9% of cases [5]. Between 25-30% of patients referred to tertiary centers and initially diagnosed as refractory epilepsy were on further examination diagnosed as PNES [6, 7]. In DSM-IV [12] PNES are usually categorized under conversion disorder with seizures or convulsions. However, psychiatric basis of PNES may be anxiousness (panic attack), somatization or factitious disorder, simulation, dissociative disorders and psychosis [1]. **AIM:** The aim of the study was to establish clinical phenomenology and EEG characteristics as well as basic psychiatric disorder in patients with PNES. **METHOD:** In a retrospective study covering the period from January 1st 1999 till April 31st 2003, 24 patients (22 female, 2 male) treated at the institute of Neurology in Belgrade were analyzed. PNES were defined as sudden change in behavior incoherent with epileptiform activity registered on EEG. Possible PNES were determined on the basis of history data and clinical examination during the attack but definitive confirmation was established only by the finding of no ictal EEG changes during typical seizure of each patient. Patients with coexisting epilepsy were included in the study, too. At least two standard EEG (range 2-6, median 4) were performed at the beginning of diagnostic evaluation. Demographic data, clinical presentation (apparent loss of consciousness, type of convulsion and associated clinical signs) and placebo-induced seizures (administration of saline near the cubital vein) with EEG or video-EEG monitoring were analyzed. Basic psychiatric disorder was classified according to DSM IV classification criteria. **RESULTS:** Duration of PNES was 4.7 years (range from 2 months to 30 years). The time from onset to the diagnosis of PNES was 4.5 years. Epilepsy comorbidity was diagnosed in 9 patients (37.5%). The average time of use of antiepileptic drugs (AED) in the group of isolated PNES was 2.4 years and 20% of patients were treated with two or more AED. The vast majority of patients presented with bilateral convulsions (54.16%) with apparent loss of consciousness found in 91.6% of cases. Ictal inury (16.7%), tongue bite (4.2%) and premonition of the seizure (17.4%) were uncommon. Variability in clinical presentation of seizures was found in over half of patients (57%). Psychological trigger could be determined in over 60% of patients. EEG findings in a group with isolated PNES suggesting the existence of epileptiform activity was found in one case. EEG monitoring of placebo-induced seizure was performed in 20 patients, of whom 19 (95%) showed typical habitual attack with no electroclinical correlate. In 70% of cases

conversion disorder DSM-IV criteria were fulfilled. Somatization disorder and undifferentiated somatoform disorder were found in 3 patients. The diagnosis of factitious disorder was made in one case and only two patients were undiagnosed according to DSM-IV. **DISCUSSION:** Average delay from onset to diagnosis of PNES in larger studies was estimated to be approximately 7 years [8]. Even though diagnostic delay in our study was shorter, organizational reasons for this could not be found. Longer duration of a typical attack (compared to the epileptic seizure), apparent loss of consciousness, bilateral convulsion behavior and significant clinical variability in absence of typical epileptic elements such as tongue bite and ictal inury could be the main clinical manifestation of PNES. We found rare interictal abnormalities (6.7%) in the group with isolated PNES and significant percentage (77.7%) in patients with coexisting epilepsy which is coherent with other reports [8]. The latest could lead to prolonged delay in appropriate diagnosis and suitable treatment. Clear psychological trigger wasn't noted in whole group of patients (61%). This, however, is not unusual since PNES represents a chronic disorder with repeated triggering that could lead to less significant role of the same psychological trigger in developed PNES. Even insufficiently resolved in ethical terms, placebo-induced procedure was of huge sensitivity. In clinical practice conversion disorder is hard to differ from malingering or implementation of secondary gain. One could make the conclusion only on the basis of detailed and careful estimation of the symptoms developing context. **Conversion disorder is more prevalent among women (from 2:1 to 10:1) [4, 13] but modest percentage of affected men could be explained only by limited sample in this study.** **CONCLUSION:** PNES is often replaced with epilepsy and in number of cases clinical differentiation is not easy. One should be acquainted with clinical presentation of PNES as well as its psychiatric origin in order to adequately recognize and treat the disorder.

Eur Neurol. 2004;51(3):153-6. Epub 2004 Mar 12.

Predicting nonepileptic seizures utilizing seizure frequency, EEG, and response to medication.

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The objective was to develop criteria that would prompt evaluation with video EEG monitoring in order to shorten the time to diagnosis of nonepileptic seizures. Over a period of 3 consecutive years, all patients being seen for seizures or the consideration of seizures meeting the **following criteria were admitted for video EEG monitoring: (1) at least two events per week, (2) refractory to at least two medications, and (3) no prior EEG studies with epileptiform abnormalities after at least two attempts.** A total of 13 patients met all three criteria, 11 of these patients had nonepileptic seizures, yielding a positive predictive value of 0.85. The median time from onset of symptoms until referral to the study institution was 3 years, with a range of 0-15 years. The median time from the first patient visit to a definitive diagnosis on video EEG monitoring was 1 month, with a range of 0-7 months. Patients meeting these three criteria frequently have nonepileptic seizures. These patients should undergo video EEG monitoring in a timely fashion to clarify the diagnosis.

Epilepsy Behav. 2004 Aug;5(4):517-21.

Serum prolactin levels for differentiation of nonepileptic versus true seizures: limited utility.

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Frequently occurring nonepileptic psychogenic seizures (PNES) are a cause of substantial morbidity. Differentiation of these from true seizures may sometimes be very difficult. Serum prolactin level estimation following the event has been described as a useful test for this purpose. We conducted this study to assess the role of this test in diagnosis of PNES. Serum prolactin was estimated from venous blood samples of 19 patients (13 females, 6 males) with PNES and 17 patients (5 females, 12 males) with true complex partial seizures with or without secondary generalization. The age range was 12-39 years in the PNES group and 9-42 years in the true seizure group. Five patients (all females) in the PNES group (26.3%) had raised prolactin levels, all of them having greater than twice normal levels. In the true seizure group, 10 of 17 (58.8%) patients had raised levels; only 3 (17.6%) of these had greater than twice normal levels. The difference in percentage of patients with abnormal prolactin levels between these groups was not found to be significant. **We demonstrate that serum prolactin level estimation is not a useful method for differentiation of psychogenic nonepileptic from true epileptic seizures.**

J Neurol. 2004 Jun;251(6):704-9.

Non-epileptic seizures of the elderly.

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OBJECTIVE: To characterize non-epileptic seizures (NES) in the elderly and compare their features with NES of a younger control group. METHODS: The database of the epilepsy monitoring unit of the Cleveland Clinic Foundation (CCF) was searched for patients aged 60 years and older having undergone long-term video-/EEG monitoring between 1994 and 2002, with the subsequent diagnosis of NES. Videotapes of all events were evaluated by independent observers. **NES were classified based on the clinical manifestations recorded on video, EEG and imaging data, and compared with a control group of younger adults with NES.** RESULTS : Thirty-nine elderly patients were included. Seventeen of them (44%) had NES only, six (15%) had both epilepsy and NES. The control group consisted of 20 patients, two of them had NES and epilepsy. **The NES were classified as physiological in 10 elderly patients (43%) and one control patient. They included TIA, syncope, movement disorders and sleep disorders. Psychogenic NES were found in 13 elderly and 19 control patients and were associated with somatoform disorders, anxiety disorders, mood disorders and reinforced behavior pattern.** Psychogenic NES consisted of predominant motor activity in 8 (61%) elderly and 13 (68%) control patients, unresponsiveness in 4 (31%) elderly and 2 (11%) control patients and subjective symptoms in 1 (8%) elderly and 4 (21%) control patients. Twelve (71%) of the patients of each group without evidence for epilepsy were on anticonvulsant drugs at the time of admission. **CONCLUSION: NES are a frequent problem in elderly patients referred to a comprehensive epilepsy center. In contrast to a younger control group, physiological and psychogenic NES are equally frequent in the elderly.** Loss of responsiveness was seen in only

20% of patients with psychogenic NES. Although most of the patients did not have any evidence for epilepsy, more than two thirds of these patients had been placed on anticonvulsive drugs

Epilepsy Behav. 2004 Dec;5(6):1005-13.

Nonepileptic seizures following general anesthetics: a report of five cases.

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Five patients who developed seizures following a general anesthetic are described. It is **not possible to determine retrospectively whether or not the initial attacks were definitely epileptic, but these patients all subsequently received a diagnosis of psychological nonepileptic convulsions/seizures** (also known as pseudoseizures, psychogenic nonepileptic seizures, and nonepileptic attack disorder) established by video/EEG telemetry or ictal EEG recordings. **In two cases there was evidence of concurrent epilepsy. We suggest that nonepileptic seizures may develop following postanesthetic seizures and that a psychogenic basis for seizures occurring after general anesthetics needs to be considered.**

J Neurol Neurosurg Psychiatry. 2004 Jul;75(7):1009-12.

Pseudosleep events in patients with psychogenic non-epileptic seizures: prevalence and associations.

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OBJECTIVES: To determine the prevalence and clinical associations of a history of events during sleep in patients with psychogenic non-epileptic seizures (PNES, pseudoseizures), and to compare the prevalence of a history of sleep events with that in poorly controlled epilepsy. **METHODS:** Prospective study by semistructured interview of the history of event patterns and their clinical associations in 142 patients with video EEG confirmed PNES, and 100 patients with poorly controlled epilepsy. **RESULTS:** 84/142 patients with PNES (59%) and 47/100 with epilepsy (47%) gave a history of events during sleep ($p = 0.062$). In patients with PNES, significant associations were found between a history of sleep events and: convulsive clinical semiology, antiepileptic drug treatment, fatigue, suicide attempts, mood disorder, and physical abuse. A particularly strong association with social security benefit was also found (odds ratio 4.0, $p < 0.001$). **CONCLUSIONS:** **The prevalence of a history of sleep events is similar in PNES and epilepsy, and is of no value in discriminating between the two, although a history of events occurring exclusively during sleep does suggest epileptic seizures.** The clinical associations found indicate that a combination of psychopathological and external influences may be important in determining whether or not a patient with PNES gives a history of events during sleep.

Acta Neurol Scand. 2004 May;109(5):318-23.

Serum neuron-specific enolase, prolactin, and creatine kinase after epileptic and psychogenic non-epileptic seizures.

Willert C, Spitzer C, Kusserow S, Runge U.

PURPOSE: To evaluate the discriminative power of serial, simultaneous determinations of serum neuron-specific enolase (NSE), prolactin (PRL) and creatine kinase (CK) in differentiating psychogenic non-epileptic seizures (PNES) from epileptic seizures (ES). **METHODS:** Prospective measurement of the three markers after 44 single seizures (32 ES and 12 PNES) during continuous video-EEG monitoring at seven different sampling points. **RESULTS:** Patients with ES had a significantly greater increase in PRL at 10, 20, 30 min, 1 and 6 h. The sensitivity for elevated NSE and CK was low. PRL showed a higher sensitivity. However, the corresponding positive predictive value was lower than in CK and NSE. Additionally, PRL had the lowest specificity of all parameters. **CONCLUSIONS: The limited discriminative power of PRL, CK, and NSE calls into question if these markers are helpful in differentiating PNES and ES.**

Neurology. 2004 Nov 9;63(9):1728-30.

Short-term outpatient EEG video with induction in the diagnosis of psychogenic seizures.

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To analyze the yield of short-term outpatient EEG video monitoring, the authors reviewed data on all patients who underwent this procedure at their center. All patients were suspected of having psychogenic nonepileptic seizures (PNES) on clinical grounds. The total number of cases of short-term outpatient EEG video monitoring was 74. **In 49 (66%) cases, the suspected diagnosis of PNES could be confirmed, thereby obviating the need for prolonged inpatient EEG video monitoring.**

Przegl Lek. 2004;61(11):1244-52.

Placebo test in the diagnostics of pseudoepileptic seizures in children and adolescents]

Article in Polish]

Kubik A, Skowronek-Bala B, Zajac A, Kacinski M.

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THE AIM OF THE STUDY: The psychogenic pseudoepileptic seizures can be provoked by suggestion and by placebo test. This is the possibility that differentiates them with epileptic seizures, if there is a chance to record with video EEG. In the developmental age the intravenous placebo tests are willingly used, moreover the oral placebo has probably the same effectiveness. The Aim of the study was to determined the effectiveness of oral placebo in provoking psychogenic paroxysm and bioelectrical brain disorders in children with pseudoepileptic seizures. We also evaluated the effectiveness of placebo in provoking epileptic seizures in children with coexisting epilepsy. **MATERIAL:** The placebo was given to 30 among 40 children with pseudoseizures which was diagnosed with video EEG. There were 36 girls and 4 boys aged 8 to 18 years (average 13 years) hospitalised in the Department of Neurology in Krakow between 2002-2004. The most frequent type of paroxysm were syncope which needed to be diagnosed, fainting, headache, dizziness, paroxysmal abdominal pain and visual disorders. **In 15/40 children with paroxysmal nonepileptic events the epileptic seizures were coexisting.** **METHODS:** Pseudoepileptic seizures were provoked even by the video EEG monitoring,

suggestion, hyperventilation and placebo probe. For deepening the assessment of the EEG pattern beside the hyperventilation reactions test of open and closed eye and photostimulation were used. During the placebo probe video EEG was done with voice recording and analyses of the synchrony of clinic and EEG pattern. **RESULTS: Among 30 children with pseudoepileptic seizures after placebo in 20 paroxysm during recording were observed. The character of the paroxysm was similar to the previous history. More frequently were observed behavioural and visual disorders and rare syncope. No epileptic seizures were developed by placebo. 19/30 children with clinically positive and negative placebo test, developed paroxysmal bioelectric activity. CONCLUSION: The oral placebo test was clinically effective in diagnosis of the pseudoepileptic events in 2/3 children. It developed paroxysmal EEG pattern in children with clinically positive and also with negative placebo test.**

Epilepsy Behav. 2004 Dec;5(6):818-25.

Traumatic events and posttraumatic stress disorder in patients with psychogenic nonepileptic seizures: a critical review.

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Although video-EEG monitoring has revolutionized the diagnosis of psychogenic nonepileptic seizure (PNES), the etiology of this condition remains poorly understood. This article is a critical review of studies on the prevalence of traumatic events, abuse, and/or posttraumatic stress disorder (PTSD) in patients with PNES. **Searches carried out on MEDLINE (1966-2004) and Web of Science (1945-2004) identified 17 relevant studies. PNES samples showed very high rates of trauma (44-100%) and abuse (23-77%), which were 15-40% higher than those found in control groups.** This suggests that **traumatic experiences may be a potential risk factor for PNES. PNES samples also showed a higher prevalence of PTSD than control groups, raising the possibility that PNES may arise as a clinical expression of a hypothetical PTSD subtype the core symptoms of which are dissociative.** Methodological limitations do not permit the confirmation of these hypotheses. Stronger research designs are needed, such as prospective and case-control studies in both hospital and community settings.

Gen Hosp Psychiatry. 2004 Jul-Aug;26(4):310-5.

Psychiatric disorders, trauma, and MMPI profile in a Spanish sample of nonepileptic seizure patients.

Bailes E, Pintor L, Fernandez-Egea E, Torres X, Matrai S, De Pablo J, Arroyo S.
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The aim of this study was to examine clinical characteristics in patients with psychogenic nonepileptic seizures and to analyze the Minnesota Multiphasic Personality Inventory (MMPI) profiles and their relation to psychopathology. Thirty patients with nonepileptic seizures confirmed through video-electroencephalography were included. A structured clinical interview (Structured Clinical Interview for DSM-III-R), a measure of personality variables (MMPI), and several structured interviews designed for collecting data on clinical and personal history were administered. Descriptive and comparative statistical methods were used. **Of the sample, 67.7%**

met criteria for two or more simultaneous Axis I diagnoses, and 60% for an Axis II personality disorder. The most frequently elevated scales of the MMPI were Schizophrenia and Depression. There were multiple scale elevations in 12 profiles, the 91.7% of which had elevated "neurotic" and "psychotic" scales. The subgroup with personality disorders showed higher scores on the MMPI Paranoia and Hypomania scales, and the subgroup with traumatic experiences showed higher scores on the MMPI Hypomania scale. Our sample comprising patients with nonepileptic seizures showed a significant degree of psychopathology and absence of a unique character substrate. According to grades of clinical severity of pseudoseizures, several subgroups and different therapeutic implications may be defined.

J Clin Exp Neuropsychol. 2004 May;26(3):369-92.

Medically unexplained symptoms and neuropsychological assessment.

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Several illnesses expressed somatically that do not have clearly demonstrated pathophysiological origin and that are associated with neuropsychological complaints are reviewed. Among them are nonepileptic seizures, fibromyalgia, chronic fatigue syndrome, Persian Gulf War unexplained illnesses, toxic mold and sick building syndrome, and silicone breast implant disease. Some of these illnesses may be associated with objective cognitive abnormalities, but it is not likely that these abnormalities are caused by traditionally defined neurological disease. Instead, **the cognitive abnormalities may be caused by a complex interaction between biological and psychological factors. Nonepileptic seizures serve as an excellent model of medically unexplained symptoms. Although nonepileptic seizures clearly are associated with objective cognitive abnormalities, they are not of neurological origin. There is evidence that severe stressors and PTSD are associated with immune system problems, neurochemical changes, and various diseases; these data blur the distinctions between psychological and organic etiologies.** Diagnostic problems are intensified by the fact that many patients are poor historians. **Patients are prone to omit history of severe stressors and psychiatric problems, and the inability to talk about stressors increases the likelihood of suffering from physiological forms of stress.**

Epilepsy & Behavior Article in Press, Corrected Proof - Note to users

The use of eye movement desensitization and reprocessing in the treatment of psychogenic seizures

Zeina Chemali, and Mary–Ellen Meadows

We present a case illustrating the use of eye movement desensitization and reprocessing (EMDR) in the treatment of psychogenic seizures. These seizures were events lasting many hours, necessitating frequent emergency room visits and an extensive medical work up. Given the patient's history, posttraumatic stress disorder (PTSD) was diagnosed. EMDR is widely used as a treatment modality for PTSD, and the patient was referred for once-per-week treatment, with complete recovery after 18 months of therapy. The impact of her recovery on her quality of life was astonishing. **This case supports the notion that EMDR can be an effective**

alternative treatment for psychogenic seizures, especially when the history reveals a traumatic event or abusive experiences.

Curr Opin Pediatr. 2004 Oct;16(5):523-31.

Pediatric stress-related seizures: conceptualization, evaluation, and treatment of nonepileptic seizures in children and adolescents.

Wood BL, Haque S, Weinstock A, Miller BD.

PURPOSE OF REVIEW: Nonepileptic seizures are seizure-like symptoms that occur in the absence of epileptogenic brain activity. They can cause severe compromise of daily function and impede development in children, and are frequently misdiagnosed, leading to inadequate or potentially harmful medical treatment. This review will characterize nonepileptic seizures, identify associated factors, propose to a reconceptualization of the phenomenon as stress-related seizures, and suggest guidelines for valid diagnosis and intervention. **RECENT FINDINGS:** **Nonepileptic seizures occur in 10 to 20% of children who present to epilepsy centers, and are more common in females. Early intervention improves prognosis. Factors associated are physical, sexual and other trauma, family dysfunction, and other acute or chronic stressors.** They are frequently misdiagnosed and inappropriately treated. **Therapy redirecting preoccupation with worries has been effective.** **SUMMARY:** **Nonepileptic seizures are best conceptualized and referred to as stress-related seizures.** Long Term Video-EEG Monitoring (LTM) is the gold standard for diagnosis. Diagnosis and intervention requires collaboration between primary care physicians, neurologists, and medically oriented clinicians providing individual and family psychotherapeutic intervention.

Epilepsia. 2004;45 Suppl 2:15-21.

The treatment of nonepileptic seizures: historical perspectives and future directions.

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Nonepileptic seizures (NES) are neuropsychiatric disorders presenting with a combination of neurologic signs and underlying psychological conflicts. For more than a century, the medical community has accumulated data and insights about the phenomenology, epidemiology, risks, comorbidities, and prognosis of NES. However, we have not progressed much beyond anecdotal reports of treatments for NES, and no randomized, controlled trials of treatment for the disorder have been conducted. **We review the diagnosis and treatment of NES and suggest directions for future research in these areas.**

J Clin Exp Neuropsychol. 2003 Sep;25(6):793-804.

*****A comparison of MMPI-2 decision rules in the diagnosis of nonepileptic seizures.**

Cragar DE, Schmitt FA, Berry DT, Cibula JE, Dearth CM, Fakhoury TA.

The differential diagnosis of epileptic seizures (ES) and psychogenic nonepileptic seizures (PNES) continues to be a common concern in epilepsy treatment centers. The MMPI/MMPI-2 is the most commonly studied psychological measure in the differential diagnosis of ES and PNES. Wilkus, Dodrill, and Thompson (1984) and Derry and McLachlan (1996) both developed decision rules for use with the MMPI and MMPI-2 to assist in this

diagnostic discrimination. Both sets of decision rules were evaluated in a sample of ES (n=58), PNES (n=29) and epilepsy plus PNES (n=19) patients. Validity of the epilepsy diagnosis was established with 24-hr video-EEG monitoring in all cases. The two sets of decision rules applied to the MMPI-2 showed sensitivities of 68% and 48% and specificity values of 55% and 58%.

Calculation of positive and negative predictive power for both sets of rules at three different base rates suggests that use of these rules can result in a large number of false positive diagnoses of PNES.

Journal of Psychosomatic Research, Volume 57, Issue 6, December 2004, Pages 541-547

Illness beliefs and locus of control: A comparison of patients with pseudoseizures and epilepsy

Jon Stone, Michael Binzer and Michael Sharpe

Purpose: The aim of this study was to examine the illness beliefs and locus of control of patients with recent onset pseudoseizures and to compare these with patients with recent onset epilepsy.

Methods: Twenty consecutive patients with pseudoseizures of recent onset (mean duration 5.4 months) were compared with 20 consecutive patients with recent onset epilepsy on their responses to (a) the Illness Behaviour Questionnaire (IBQ) and (b) a measure of locus of control, a dimension of the tendency to attribute events to internal or external factors.

Results: In comparison with patients with epilepsy, patients with recent onset pseudoseizures believed that psychological factors were less important than somatic ones were ($P < .005$) and had a greater tendency to deny nonhealth life stresses ($P < .0001$). No significant differences were detected in disease conviction or illness worry. Patients with pseudoseizures had a more external locus of control ($P < .001$),

Conclusions: **Patients with pseudoseizures are less likely than those with epilepsy to see psychological factors as relevant to their symptoms, more likely to deny that they have suffered from life stress and also to have a more external locus of control.** The implications for treatment are discussed.

Epilepsy Behav. 2005 Feb;6(1):9-14.

The problem of psychogenic symptoms: is the psychiatric community in denial?

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Psychogenic symptoms are common and pose an uncomfortable challenge. Among psychogenic symptoms, psychogenic nonepileptic seizures (**PNES**) are common and have been extensively studied. **They are unique in that, unlike most other psychogenic symptoms, they can be diagnosed with near certainty. PNES can be used as a model, as almost everything that applies to PNES applies to other psychogenic symptoms. According to DSM-IV, somatic symptoms are the main manifestation of three groups of disorders: somatoform disorders, factitious disorder, and malingering. Treatment is challenging. Unfortunately, psychogenic symptoms tend to be neglected. For example, the American Psychiatric Association has abundant written patient education material available on diverse topics, but none on somatoform disorders.** Psychogenic symptoms are also not the subject of much clinical research. **A search of the journal Neurology for 1994-2003 for the word psychogenic**

in the title found 21 articles, only 4 of which on topics other than psychogenic seizures. A similar search for original articles in the New England Journal of Medicine found no articles with psychogenic in the title and two with psychogenic in the abstract. Thus, there seems to be a severe disconnect between the frequency of the problem and the amount of attention devoted to it.

Epilepsy Behav. 2005 Mar;6(2):174-8.

Frequency of panic symptoms in psychogenic nonepileptic seizures.

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This study investigates the frequency of symptoms of panic attack in a sample of adults (n = 18) and adolescents (n = 21) who were evaluated for intractable seizure disorder and diagnosed with psychogenic nonepileptic seizures (PNES). Medical records were retrospectively reviewed for symptoms associated with their typical seizure events as documented by the attending epileptologist. **Adolescents, as a group, reported significantly more symptoms of panic attack than adults.** Three adolescents met the full criteria for a panic attack, while no adults met these criteria. **In addition, while numerous adults endorsed no panic symptoms associated with their PNES episodes, all adolescents endorsed at least one symptom.** Implications of results are discussed in terms of the diagnosis and treatment of PNES in the different age groups.

Epilepsy Behav. 2005 Mar;6(2):264-5.

A spell in the epilepsy clinic and a history of "chronic pain" or "fibromyalgia" independently predict a diagnosis of psychogenic seizures.

Benbadis SR.

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The clinical suspicion for psychogenic nonepileptic seizures (PNES) is based on multiple features obtained in the history. We reviewed the records of all patients evaluated over 5 years in a single epilepsy clinic for refractory seizures who eventually underwent EEG/video monitoring. We designated two groups: (1) patients with a diagnosis of "fibromyalgia" or "chronic pain" and (2) patients who had a seizure during the visit, either in the waiting area or in the examining room. **Of 36 patients with "fibromyalgia" or "chronic pain," 27 (75%) were found to have PNES. Of 13 patients who had a "seizure" during their clinic visit, 10 (75%) were found to have PNES. We conclude that each of these findings has a predictive value of 75%.**

Epilepsy and Behavior (in press).

Use of the Personality Assessment Inventory as an efficacious and cost effective diagnostic tool for nonepileptic seizures.

Wagner, M.T., Wymer, J.H., Topping, K.B., & Pritchard, P.B.

Video electroencephalographic monitoring (VEEG) is considered the "gold standard" for making the differential diagnosis between epileptic seizures (ES) and nonepileptic seizures (NES), but is a costly, time consuming procedure and not readily available in all communities. Of the various diagnostic techniques and measures that have been used, the Personality Assessment Inventory (PAI) has shown promise to be an effective psychological screening tool to aid in the differential diagnosis of ES/NES. **Using VEEG results as the outcome measure, this study examined the diagnostic effectiveness of the PAI in a group of adults with treatment refractory seizures.** Results indicated that, on psychological screening, patients with NES endorse significantly greater functional consequences of their seizure-like episodes than participants with ES. **A "NES Indicator" score, calculated from the PAI Somatization subscales, provided sensitivity of 84% and specificity of 73% for the diagnosis of NES versus ES.** The PAI appears to be a useful screening tool prior to hospital admission for VEEG.

OLDER NES

J Neurol. 2003 Nov;250(11):1355-62.

Clinical significance of recurrent psychogenic nonepileptic seizure status.

Reuber M, Pukrop R, Mitchell AJ, Bauer J, Elger CE.

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To explore the clinical significance of a history of recurrent psychogenic nonepileptic seizure status (PNES-status), this study describes the frequency of PNES-status in 85 consecutive PNES patients and examines whether there are relevant differences between patients with a history of recurrent PNES-status and other PNES-patients. PNES patients were also compared with 64 patients with epilepsy. Data were extracted from hospital records and a postal questionnaire (Dimensional Assessment of Personality Pathology-Basic Questionnaire; Screening for Somatoform Symptoms; Dissociative Experience Scale). Of the PNES-patients, 77.6% reported at least one seizure > 30 minutes (PNES-status), 27 % admission to intensive care with status. 38.8% reported recurrent hospital admissions with status (PNES-status group), the remaining patients served as PNES-controls. The only clinical difference between the two PNES groups was that status patients were younger than PNES-controls (mean age 20.3 vs. 30.3 years, $p = 0.001$). **Our results suggest that PNES status is common and often unrecognised. There were no substantial psychometric differences between patients with recurrent PNES-status and other PNES patients although both PNES-groups had more abnormal somatisation, dissociation and personality scores than patients with epilepsy.**

Przegl Lek. 2003;60 Suppl 1:39-41. Related Articles, Links

Nonepileptic seizures of psychogenic origin in children: analysis and characteristics of risk factors, clinical symptoms and significance of diagnostic investigation]

Article in Polish]

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Nonepileptic seizures of psychogenic origin (NESP) belong currently to dissociation disorders. Their causes and precise outline of diagnostics, therapy and prophylaxis procedures remains still difficult. The authors investigated the group that consisted of 25 patients with the above described type of seizures. Prospective examinations were conducted. In each patient detailed analysis of risk factors and clinical semiology before and after hospital admission was performed. Moreover brain MRI, psychological and psychiatric examinations were made. Among patients with NESP, girls prevailed (88%). **Most important stressogenic factor was trouble with peer relationships. Clinical manifestation was diverse, mostly the attacks were similar to epileptic, simple, partial seizures.** The final diagnosis depended on results of video examinations (lack of clinical-bioelectrical correlation or lack of bioelectrical activity disturbances before or after attack) and results of psychological and psychiatric consultation.

Epilepsy Behav. 2003 Aug;4(4):424-9

Psychogenic nonepileptic seizures: acute change in event frequency after presentation of the diagnosis.

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Seizure frequency during inpatient video EEG monitoring was examined before and after the diagnosis of psychogenic nonepileptic seizures (PNES) was presented to patients (N=22). A control group of 10 patients with epileptic seizures (ES) were also followed from pre- to postdiagnosis. The number of PNES or ES within the 24-hour period prior to diagnosis was compared with the number of events that occurred within the 24-hour period after presentation of the diagnosis. Findings indicate that patients with PNES had a significant decrease in the frequency of events after diagnosis, while those with ES showed no change in event frequency after diagnosis. Eighteen of twenty-two patients with PNES had no further events during an acute follow-up period. **Results suggest that providing patients with a diagnosis of PNES appears to reduce the acute frequency of PNES and may be an important first step in the long-term remediation of PNES. Long-term follow-up is needed to determine if such feedback alters the course of the disorder.**

Epilepsia

Volume 44 Issue 8 Page 1122 - August 2003

Confirmation of Nonconvulsive Limbic Status Epilepticus with the Sodium Amytal Test

*Jorge G. Burneo, *Robert C. Knowlton, Camilo Gomez, *Roy Martin, and *Ruben I.

Kuzniecky

Summary: Is it a seizure? This question can be difficult for a clinician to answer, and it may be more critical if the possible seizure lasts >30 min. Long-duration questionable seizure activity changes the question to, "Is it status epilepticus?" Status epilepticus (SE) can be divided into convulsive and nonconvulsive types. Convulsive SE is the most easily recognized, whereas nonconvulsive SE is more clinically variable and controversial. The term nonconvulsive SE is more often applied to patients who are severely obtunded or comatose with minimal or no motor

movements, or in a stupor of altered consciousness reflecting generalized ictal activity. Nonconvulsive SE also can be caused by focal seizure activity, sometimes restricted to deep small volumes of brain in which scalp EEG may not be diagnostic. **We present the case of a patient who had dominant limbic hippocampal SE, but in whom the diagnosis could not be confirmed until a modified novel use of the sodium amytal test was performed.**

Epilepsy Behav. 2003 Aug;4(4):395-8.

Sleep structure in patients with psychogenic nonepileptic seizures.

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Psychogenic nonepileptic seizures (PNES) are a significant public health problem, occurring in perhaps 25% of patients admitted to epilepsy monitoring units. Additional distinguishing characteristics for these patients would be helpful from both a clinical and a scientific standpoint. This study examines sleep structure by polysomnography in patients with PNES compared with patients with epileptic seizures (ES). ES and PNES were verified by video-EEG monitoring. All patients with PNES were evaluated by a psychiatrist. Eight female patients with PNES were compared with 10 female ES patients in the same age group. Percentage REM sleep was significantly greater for women with PNES (23+/-1%) than for those with ES (18+/-1%). There were no differences in other sleep stages, total sleep time, or sleep efficiency. **REM latency was less in PNES patients although not significantly. The study suggests that patients with PNES have a sleep architecture similar to that found in major depression, known to be associated with increased REM sleep.**

Seizure. 2003 Dec;12(8):561-7.

Are there physical risk factors for psychogenic non-epileptic seizures in patients with epilepsy?

Reuber M, Qurishi A, Bauer J, Helmstaedter C, Fernandez G, Widman G, Elger CE. mreuber@doctors.org.uk

Patients with epilepsy may have additional psychogenic non-epileptic seizures (PNES). It has been suggested that PNES are more common if patients with epilepsy are female, develop epilepsy later in life and have right-sided brain lesions. We examine whether these or other physical factors affect the risk of PNES in patients with epilepsy in a controlled study. **METHODS:** Ninety consecutive patients with PNES and concurrent epilepsy (PNES+E group) and 90 consecutive patients with epilepsy alone (epilepsy group) were compared with regard to the variables sex, age at onset of epilepsy, epilepsy type (focal/generalised), location and lateralisation of epileptogenic zone, aetiology of epilepsy, interictal epileptiform potentials, magnetic resonance imaging (MRI) abnormalities, neuropsychological (NPS) deficits and intelligence quotient (IQ). **RESULTS:** Female sex ($P<0.001$), abnormal visual memory ($P=0.012$), global NPS impairment ($P=0.029$), and low IQ category ($P=0.005$) were associated with a higher risk of PNES. Other variables did not differ between the groups. **CONCLUSIONS:** **In patients with epilepsy, female sex, poor visual memory or global neuropsychological underperformance and low IQ are associated with an increased risk of PNES. MRI changes, epileptiform EEG abnormalities and location of epileptogenic zone do not show a predilection for one hemisphere.**

Psychosom Med. 2003 Jul-Aug;65(4):695-700.

Childhood family dysfunction and associated abuse in patients with nonepileptic seizures: towards a causal model.

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OBJECTIVE: A history of childhood sexual abuse is thought to characterize patients with nonepileptic seizures (NES). We tested the hypotheses: 1) that history of sexual abuse is more prevalent in patients with NES than in controls with epilepsy; 2) that such abuse is associated with NES, not directly but because it is a marker of family dysfunction; and 3) that family dysfunction and abuse are, in turn, linked to NES because they increase a general tendency to somatize. **METHODS:** We compared 81 patients with NES with 81 case-matched epilepsy patients, using questionnaires to elicit recollections of sexual, physical, and psychological abuse and family atmosphere and to quantify current somatization. **RESULTS:** Although each form of abuse was more prevalent in NES patients, only child psychological abuse uniquely distinguished NES from epilepsy. However, its association with NES was explained by family dysfunction. A general tendency to somatize explained part of the relationship of abuse to NES. **CONCLUSIONS: Abuse therefore seems to be a marker for aspects of family dysfunction that are associated with--and may therefore cause--somatization and, specifically, NES.**

Neurology. 2003 Dec 23;61(12):1791-2.

Frequency of epilepsy in patients with psychogenic seizures monitored by video-EEG.

Martin R, Burneo JG, Prasad A, Powell T, Faught E, Knowlton R, Mendez M, Kuzniecky R. rmartin@uab.edu

This study examined the frequency of epilepsy in a consecutive series of patients who received a definitive diagnosis of psychogenic nonepileptic seizures (PNES) after completing inpatient video-EEG (VEEG) monitoring. Of the 1,590 patients receiving definitive diagnosis, 514 (32.3%) were diagnosed with PNES. **Twenty-nine (5.3%) of these patients were found to have both PNES and epilepsy. When strict diagnostic criteria are applied, there is little overlap between epileptic seizures and PNES among patients referred for VEEG monitoring.**

Epilepsy Behav. 2003 Jun;4(3):205-16.

Psychogenic nonepileptic seizures: review and update.

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The population incidence of psychogenic nonepileptic seizures (PNES) may be only 4% that of epilepsy, but many patients with PNES have a tendency to seek medical attention, and PNES make up a larger share of the workload of neurologists and emergency and general physicians. Although a great number of publications describe how PNES can be distinguished from epileptic seizures, it usually takes several years to arrive at this diagnosis, and three-quarters of patients (with no additional epilepsy) are treated with anticonvulsants initially. However, the management of PNES as epileptic seizures can lead to significant iatrogenic harm. Moreover, the failure to recognize the psychological cause of the disorder detracts from

addressing associated psychopathology and enhances secondary somatization processes. This review provides an overview of studies of the diagnosis, etiology, treatment, and prognosis of PNES. **Physicians should always consider PNES in the differential diagnosis of a seizure disorder.** If a diagnosis of PNES is possible, or a diagnosis of epilepsy in doubt, a clear diagnostic categorization should be sought. This should involve the assessment of the patient by a physician versed in the diagnosis of seizure disorders and, in many cases, the documentation of a typical seizure by video-EEG. **Outcome may be improved if the diagnosis is more actively sought, made earlier, and communicated more convincingly.**

Epilepsy Behav. 2000 Dec;1(6):436-443.

De Novo Nonepileptic Seizures after Cranial Surgery for Epilepsy: Incidence and Risk Factors.

Davies KG, Blumer DP, Lobo S, Hermann BP, Phillips BL, Montouris GD.

We evaluated the incidence of de novo nonepileptic seizures (NES), confirmed by EEG monitoring, after cranial surgery for intractable epilepsy in 228 surgery patients. Eight patients (3.5%) developed de novo NES at 6 weeks to 6 years (mean, 23 months) after surgery. Six had undergone a resection and two complete callosotomy. They did not differ from a larger surgical group with respect to sex, side of surgery, age at onset, or duration of epilepsy, Full Scale Intelligence Quotient, seizure outcome, or preoperative interictal dysphoric disorder (IDD), but there was a significant excess of postoperative IDD and operative complications (bone flap infections); the callosotomy patients had marked hemisphere disconnection syndromes. Repeat EEG videotelemetry monitoring is important to detect postoperative NES so that inappropriate therapeutic measures may be avoided. **Risk factors may be exacerbation or persistence of IDD and surgical complications. The etiology of NES is discussed.**

J Clin Neurophysiol. 2003 Feb;20(1):42-4.

Overinterpretation of EEGs and misdiagnosis of epilepsy.

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The overinterpretation of EEGs is a known problem that has not been reported specifically. The authors report a series of EEGs on patients who were diagnosed eventually with psychogenic nonepileptic seizures and who had an EEG read as epileptiform. Of the 15 actual records available for review, the overread patterns were wicket spikes (n = 1), hypnagogic hypersynchrony (n = 1), and hyperventilation-induced slowing (n = 1). In the other 12 records, the overread patterns were simple fluctuations of sharply contoured background rhythms or fragmented alpha activity. **Rather than well-described normal variants, the overinterpreted patterns tend to be normal fluctuations of background activity.**

Epilepsy Behav. 2002 Jun;3(3):249-254.

*****Evidence of brain abnormality in patients with psychogenic nonepileptic seizures.**

Reuber M, Fernandez G, Helmstaedter C, Qurishi A, Elger CE.

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Markers of brain abnormalities in patients with psychogenic nonepileptic seizures (PNES) were studied to explore whether physical brain disorder is associated with an increased risk of PNES. Evidence of epileptiform EEG changes, MRI abnormalities, and neuropsychological (NPS) deficits was obtained from the records of 329 consecutive patients in whom the diagnosis of PNES was established at our center between 1991 and 2001. Two hundred six patients had PNES alone, and 123 PNES and epilepsy (PNES+E). In the PNES-only group, at least one marker of brain disorder was detected in 22.3% of patients (epileptiform potentials in 8.7%, MRI changes in 9.7%, NPS deficits in 9.7%). The actual prevalence of abnormalities is likely to be higher because 54.9% of the patients with only psychogenic seizures did not undergo MRI or neuropsychological testing. Evidence of brain abnormality was found more frequently in the PNES+E group (epileptiform potentials in 70.7%, MRI changes in 60.2%, NPS deficits in 52.8%). **Although markers of brain abnormality were detected much less commonly in the PNES than in the PNES+E group, they were still found in a substantial proportion of patients with PNES alone. This suggests that physical brain disease plays a role in the development of PNES. Markers of physical abnormality were not more common in the right hemisphere.**

Epilepsy Behav. 2002 Jun;3(3):242-244.

Behaviors mimicking seizures in institutionalized individuals with multiple disabilities and epilepsy: a video-EEG study.

DeToledo JC, Lowe MR, Haddad H.

We reviewed 824 video-EEG telemetry requests of institutionalized patients with epilepsy, searching for evaluations of "new seizure types" identified by staff (caregivers, teachers, therapists, LPNs, RNs). Of the 63 newly identified "seizure types," epilepsy was confirmed in 4 (6.3%); 59 represented nonepileptic events. **Causes for diagnostic confusion in the profoundly retarded included stereotypic repeated blinking, swallowing, buccolingual movements, spontaneous grimacing, periods of apparent psychomotor arrest and increased muscle tone, dystonic posturing, and irascible personality emerging after reduction of sedatives.** Three cases of "startle seizures" were due to dystonic posturing caused by the unexpected contact of body with water during bath. Episodes of decreased daytime alertness ("somnolence") were erroneously attributed to "absence seizures" in eight cases by staff supervising tasks requiring sustained attention (i.e., school, workshop). In less impaired patients, self-stimulation, self-abuse, and ataxia with falls were the more common diagnoses. Simulation of seizures, a somewhat uncommon finding in this population, was the diagnosis in 3 cases. All were high functioning and appeared to simulate seizures to avoid work. Our findings suggest that the de novo appearance of a "new seizure type" in these patients, particularly in cases with a well-established seizure pattern, is uncommon. Four patients in whom the "new event" was confirmed to be epileptic had preexisting secondarily generalized seizures. What the staff identified was the variable clinical progression of seizures probably due to medication changes. Different fragments of the seizure appear to have occurred at different times with variable intensity and duration. A single seizure type may have appeared to be a variety of attacks because of this fragmented presentation.

J Neurol. 2003 Mar;250(3):338-46.

Patients with psychogenic nonepileptic seizures, alone or epilepsy-associated, share a psychological profile distinct from that of epilepsy patients.

Galimberti CA, Ratti MT, Murelli R, Marchioni E, Manni R, Tartara A.
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The aim of this study was twofold: 1 - to identify a psychological profile of patients with psychogenic nonepileptic seizures (PNESs) that is possibly distinct from that of subjects affected by epileptic seizures (ESs) alone; 2 - to detect the possible differences between the clinical features and psychological profile of patients affected by PNESs alone and those of subjects in whom PNESs are associated with epileptic seizures (ES/PNES patients). We assessed the psychological profiles of 2 different groups of subjects. The first group was of 38 patients who had all developed PNESs after epileptic seizures (ES/PNES, group 1). The second group was of 31 patients with PNESs alone (PNES, group 2). We compared the psychological findings of each of these 2 groups with those of 2 control groups, composed of patients who matched groups 1 and 2 for sex, age, and educational level, but who were affected only by ESs (groups 1C and 2C). Finally, we considered possible differences between the ictal symptoms and signs of PNESs occurring in ES/PNES and in PNES patients. Both the ES/PNES group and the PNES group revealed higher percentages of Somatoform Disorders and Cluster B Personality Disorders (DSM-III-R diagnoses) than the ES patients in the control groups. The scores obtained on the Psychophysiological Distress Scale of the Cognitive Behavioural Assessment Battery (CBA) followed the same pattern. Among PNES ictal phenomena, autonomic symptoms and signs were significantly more frequent in the PNES than in the ES/PNES group. The occurrence of PNESs mimicking generalised tonic-clonic ESs (GTC-PNESs) was significantly associated with a low academic level. **The results of this study suggest that the patients with PNESs alone and those affected by PNESs and ESs share the same psychological profile, which is different from that of patients with ESs alone. However, some differences between ES/PNES and PNES patients were found in the clinical semiology of their PNESs.** Our findings could have implications for the diagnosis and for the treatment of patients with PNESs.

Epilepsy Behav. 2001 Dec;2(6):568-573.

Evidence That Emotional Maladjustment Is Worse in Men Than in Women with Psychogenic Nonepileptic Seizures.

Holmes MD, Dodrill CB, Bachtler S, Wilensky AJ, Ojemann LM, Miller JW.

The purpose of this study is to examine the effects of gender on adjustment and cognition in patients with psychogenic nonepileptic seizures (NES) and on patients with epilepsy. We compared 57 women and 27 men, all at least 16 years old, with only NES as documented by long-term EEG-video monitor studies, to equal numbers of randomly selected women and men with only epileptic seizures. Variables examined included age, age of onset, education, scales from the MMPI, the WAIS-R, and the number of tests outside normal limits from the Neuropsychological Battery for Epilepsy. We found no significant differences in mean age, intelligence, or percentage of neuropsychological tests outside normal limits across the four groups. Women and men with NES had significantly later age of onset of attacks compared with subjects of either gender with epilepsy (26 years vs 13 years, $P < 0.001$) and men with NES had greater educational achievement than women with NES or patients with epilepsy ($P < 0.02$). However, the most important findings were seen on the MMPI. Men with NES exhibited significantly greater elevations on multiple scales (especially Hysteria, Depression,

Hypochondriasis, Psychoasthenia, Schizophrenia) compared with men with epilepsy or women with either epilepsy or NES. **We conclude that men with NES have significantly worse patterns of emotional adjustment, as measured by the MMPI, than women with NES or subjects of either gender with epilepsy.**

Epilepsy Behav. 2002 Aug;3(4):343-349.

Psychological factors in the genesis and management of nonepileptic seizures: clinical observations.

Prigatano GP, Stonnington CM, Fisher RS.

Nonepileptic seizures (NES) are frequently thought to have a "psychogenic" basis. Two 6-month group psychotherapy programs were provided for patients diagnosed as having NES [eight patients were treated during the first program, seven during the second (N=15)] to explore the potential role of psychological factors in the genesis of NES and to determine if psychotherapeutic interventions reduced the frequency of NES. Of the 15 patients, 9 (60%) completed at least 58% of the treatment sessions. Of those 9 patients, 6 (66%) reported a decline in "seizure frequency." One reported an increase (11%). Self-reported frequency highly correlated with paranoid ideation. Dissociative phenomena were common as was a history of sexual abuse. Each patient reported being in an adult situation that they found unacceptable or intolerable. None perceived a solution to their situation. Reports by health care providers that their seizures were not "real" (i.e., true epilepsy) restimulated feelings associated with their not being believed when they reported being sexually abused as children. **The psychological genesis of NES in this sample of patients appears rooted in the recurrent experience of being in abusive or exploited relationships for which they perceived no solution.**

Epilepsy Behav. 2002 Oct;3(5S):19-23.

Treatment of nonepileptic seizures.

Curt LaFrance W, Devinsky O.

STUDIES ON NONEPILEPTIC SEIZURES (NES) PROVIDE DICHOTOMOUS DATA SETS: extensive observational findings, but a paucity of controlled treatment data. Psychosocial stressors, whose full impact may lie outside a patient's awareness, often underlie NES. These stressors, along with patient's learned patterns of coping, may bring forth or potentiate comorbid psychiatric disorders. Patients with NES often have dysfunction in emotion regulation and family dynamics, as well as unemployment/disability. High percentages of comorbid disorders such as major depressive disorder, post-traumatic stress disorder, and cluster B personality with impulsivity (all disorders associated with serotonin system function) also exist in the NES population. **The preliminary observational evidence suggests that specific psychotherapies and pharmacotherapy directed at comorbid conditions may be the most effective treatment for NES.**

Epilepsy Behav. 2002 Oct;3(5):455-459.

Quality of life outcome is associated with cessation rather than reduction of psychogenic nonepileptic seizures.

Quigg M, Armstrong RF, Farace E, Fountain NB.

The outcome of psychogenic nonepileptic seizures (NES) is usually judged by recurrence of spells, but functional outcome or quality of life (QOL) is less well described. We tested the hypothesis that a decrease in NES recurrence yields corresponding improvement in QOL. Patients with NES were diagnosed with continuous video-EEG. We determined spell rate and QOL through a telephone interview at least six months after diagnosis. Thirty subjects consented to a follow-up interview (mean 17.4+/-1.5 months between diagnosis and interview). The rate of NES per week decreased significantly, and 10/30 (33%) had complete resolution. QOL, measured by the QOLIE-10 scale, did not improve proportionately with reduction in NES. However, subjects who reported a cessation of NES noted a significantly better total QOLIE-10 score (20.7+/-2.2) than those with continuing NES (27.4+/-1.6, P=0.02 by unpaired t test).
Cessation rather than reduction of NES is associated with better QOL outcome.

Epilepsy Behav. 2003 Feb;4(1):13-8.

Psychopathologies in patients with nonepileptic seizures with and without comorbid epilepsy: how different are they?

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The underlying psychopathology in patients with nonepileptic seizures (NES) is diverse and poorly understood. The prevalence of epilepsy in NES patients is higher than in the general population, so epilepsy can be understood as a risk factor for NES. The question emerges if psychopathology differs in NES patients with and without epilepsy. **Retrospective data concerning psychopathology and personality in both groups show two differences: (1) somatoform disorders are more prevalent in NES-only patients and (2) personality disorders are more typical in NES patients with epilepsy and resemble the pattern of psychopathology found in epilepsy-only patients. If true, then NES in epilepsy patients may be associated with an epilepsy condition. Consequently, in studies of psychopathology in epilepsy patients, patients with comorbid nonepileptic seizures have to be included.**

Epilepsy Behav. 2000 Oct;1(5):362-363.

Congenital Adrenal Hyperplasia Presenting as Nonepileptic Seizures.

Gates JR.

Epilepsy Behav. 2000 Feb;1(1):2-6.

Nonepileptic Seizures: Time for Progress.

Gates JR.

Ann Neurol. 2003 Mar;53(3):305-11.

Outcome in psychogenic nonepileptic seizures: 1 to 10-year follow-up in 164 patients.

Reuber M, Pukrop R, Bauer J, Helmstaedter C, Tessendorf N, Elger CE.

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Our knowledge of longer term outcome in psychogenic nonepileptic seizures (PNESs) patients is limited; we know less still about factors predicting prognosis. This study was intended to describe outcome in a large cohort and to identify predictive clinical and psychological factors to generate new ideas for treatment. One hundred sixty-four adult patients with PNESs (66.7%) responded to outcome, personality, and psychosymptomatology questionnaires (Dimensional Assessment of Personality Pathology-Basic Questionnaire [DAPP-BQ], Dissociative Experiences Scale, and Screening Test for Somatoform Symptoms) a mean of 11.9 years after manifestation and 4.1 years after diagnosis of PNES. Additional clinical data were retrieved from hospital records. The responses showed that 71.2% of patients continued to have seizures and 56.4% were dependent on social security. Dependence increased with follow-up. Outcome was better in patients with greater educational attainments, younger onset and diagnosis, attacks with less dramatic features, fewer additional somatoform complaints, and lower dissociation scores. **Better outcome was associated with lower scores of the higher order personality dimensions "inhibitedness," "emotional dysregulation," and "compulsivity" but not "dissocial behavior" (DAPP-BQ). Outcome in PNESs is poor but variable.** Clinical and personality factors can be used to provide an individualized prognosis. By generating a patient-specific profile, they show particular maladaptive traits or tendencies that can identify goals for psychological therapy.

Epilepsia. 2003 Jan;44(1):64-8.

Psychogenic, nonepileptic seizures associated with video-EEG-verified sleep.

Orbach D, Ritaccio A, Devinsky O.

PURPOSE: Nonepileptic seizures (NES) are expressions of a psychiatric disease state, usually conversion disorder, that mimic epileptic seizures (ES) but are not associated with the neurophysiologic changes of epilepsy. Conversion has not been demonstrated to emerge from the sleeping state. Emergence out of sleep is usually considered a virtual exclusion criterion for NES, signifying the presence instead of ES. We sought to test this hypothesis. **METHODS:** We retrospectively reviewed the video-EEG of all patients admitted to our epilepsy unit over a 3-year period, who were suspected of manifesting NES. We examined the relation between NES and the patients' sleep/wake state in this cohort. Two epileptologists blindly reviewed an intermixture of cases suspected to represent NES emerging out of sleep, together with control cases. Classification of each case was made independently. **RESULTS:** We found that in a small minority of patients (<1%), NES began either while the patient was sleeping, or within several seconds of arousal, well before a plan to simulate a seizure could likely have been formulated in the wakeful state. **CONCLUSIONS: In some cases, NES are not the product of the awake mind, but rather represent a psychiatric condition that can be manifest in sleep.**

Epilepsia. 2003 Feb;44(2):236-42.

Quality of life in psychogenic nonepileptic seizures.

Szaflarski JP, Hughes C, Szaflarski M, Ficker DM, Cahill WT, Li M, Privitera MD.
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PURPOSE: Psychogenic nonepileptic seizures (PNESs) are events that alter or seem to alter the neurologic function and, in their appearance, resemble epileptic seizures (ESs). In patients with ESs the psychological and medical aspects of epilepsy greatly influence the health-related quality of life (HRQOL). The relation between these factors and PNESs is not well established. In this study, we compared HRQOL in patients with PNESs with that of patients with ESs. **METHODS:** We evaluated 105 patients admitted to the Epilepsy Monitoring Unit of University Hospital between January 20, 2001, and January 20, 2002. Only patients with the definite diagnosis of ESs or PNESs were analyzed (n = 85). Patients completed an epilepsy-specific quality-of-life instrument (QOLIE-89), the Profile of Mood States (POMS), and Adverse Events Profile (AEP). We used t tests and regression analyses to contrast HRQOL in PNESs and ESs and to elucidate the main factors associated with HRQOL in patients with PNESs. **RESULTS:** In our sample, 45 patients had PNESs, and 40 had ESs. The overall HRQOL and scores on 13 of 19 QOLIE-89 subscales were significantly lower (i.e., worse) in PNES than in ES patients. AEP and scores on five of six POMS subscales also were worse in PNES patients than in ES patients. PNES versus ES diagnosis, POMS depression/dejection, and AEP were significant predictors of HRQOL, jointly explaining 65% variation in HRQOL. The lower HRQOL in PNESs versus ESs was in part explained by depression and AEP. **CONCLUSIONS: Patients with PNESs have a lower HRQOL and worse mood problems than do patients with ESs.** This disadvantage is primarily due to depression and medication side effects, although these factors influence QOL in much the same way in PNES and ES patients. These baseline HRQOL data on patients with PNESs can be used to evaluate the effects of treatment in this patient population.

22: *Epilepsia*. 2003 Feb;44(2):141-2.

Comment on: *Epilepsia*. 2003 Feb;44(2):236-42.

Determinants of health-related quality of life in adults with psychogenic nonepileptic seizures: are there implications for clinical practice?

Birbeck GL, Vickrey BG.

23: *Acta Neurochir (Wien)*. 2002 Sep;144(9):901-7; discussion 907.

New-onset psychogenic seizures after intracranial neurosurgery.

Reuber M, Kral T, Kurthen M, Elger CE.

BACKGROUND: Patients with physical brain abnormalities have an increased risk of developing psychogenic nonepileptic seizures (PNES). Here we describe patients who developed PNES after intracranial neurosurgery for indications other than the control of refractory epileptic seizures and explore whether neurosurgical intervention is at risk factor for PNES. **METHOD:** We searched the database of 372 patients diagnosed with PNES at our department over the last 10 years and identified 17 patients (4.6%) in whom PNES first started after intracranial neurosurgery. Surgical procedures included the complete or partial resection of a meningioma, AV malformation, cavernoma, plexus papilloma, neurinoma, astrocytoma, oligodendroglioma, dysontogenetic cyst, the drainage of a brain abscess and removal of a subdural hematoma. PNES were documented by ictal video-EEG, ictal EEG, or ictal observation and examination in all cases. The diagnosis of additional epileptic seizures were confirmed by ictal EEG/video-EEG, or

made on the basis of a clinical assessment by an experienced epileptologist. FINDINGS: Five patients had purely psychogenic postoperative seizure disorders, twelve had epileptic and psychogenic attacks. Median age at neurosurgery was 32 years (range 5-54), median latency between surgery and onset of PNES was 1 year (range 0-17 years). INTERPRETATION: **PNES may develop after intracranial neurosurgery undertaken for other indications than the control of refractory epileptic seizures. Younger patients with a history of pre-operative psychiatric problems or epileptic seizures and surgical complications may be at higher risk. A diagnosis of PNES should be considered in patients who develop refractory seizures after neurosurgery.**

Pediatrics. 2002 Oct;110(4):e46.

Paroxysmal nonepileptic events in children and adolescents.

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OBJECTIVE: Paroxysmal nonepileptic events (PNEs) are frequently encountered in children and adolescents; however, there is little information concerning the relative frequency of various types of these disorders. We report our experience with PNEs in a group of children and adolescents who underwent prolonged video-electroencephalographic monitoring.

METHODS: During a 6-year period, 883 patients were monitored in the Pediatric Epilepsy Monitoring Unit and 134 patients (15.2%) were documented to have PNEs on the basis of a typical spell recorded during monitoring. Their hospital charts were reviewed and videotapes of these events were analyzed. **RESULTS:** Patients were divided into 3 age groups: 1) the Infant, Toddler, and Preschool Group (2 months-5 years) that comprised 26 patients. The most common diagnoses were stereotyped movements, hypnic jerks, parasomnias, and Sandifer syndrome. Concomitant epilepsy was present in 12 patients (46%). 2) The School-Age Group (5-12 years) consisted of 61 patients. The most frequent diagnoses were conversion disorder (psychogenic seizures), inattention or daydreaming, stereotyped movements, hypnic jerks, and paroxysmal movement disorders. Fifteen patients (**25%**) **had concomitant epilepsy**. 3) The Adolescent Group (12-18 years) consisted of 48 patients, of whom 40 patients (**83%**) **were diagnosed with conversion disorder**. Nine patients (19%) had concomitant epilepsy. **CONCLUSIONS: In our patients with PNEs, conversion disorder was seen in children >5 years old and its frequency increased with age, becoming the most common type of PNEs among adolescents. In adolescents, conversion disorder was more common in females, whereas males predominated in the school-aged group. Concomitant epilepsy with nonepileptic events occurred in all 3 age groups to a varying extent.**

Arch Neurol. 2002 Sep;59(9):1491.

Comment on:

* Arch Neurol. 2001 Dec;58(12):2063-5.

* Arch Neurol. 2001 Dec;58(12):2065-6.

* Arch Neurol. 2001 Dec;58(12):2066-7.

Nonepileptic seizures: an honest approach to provocative testing is feasible.

McGonigal A, Oto M, Russell AJ, Greene J, Duncan R.

Epilepsia. 2002 Sep;43(9):1013-20.

Interictal EEG abnormalities in patients with psychogenic nonepileptic seizures.

Reuber M, Fernandez G, Bauer J, Singh DD, Elger CE.

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PURPOSE: To examine interictal EEG abnormalities in patients with psychogenic nonepileptic seizures (PNESs). **METHODS:** (a) Retrospective study of EEG reports of 187 consecutive patients with PNES seen at the Department of Epileptology, Bonn, Germany; (b) Blinded, multirater comparison of EEGs of all PNES patients with no other clinically recognizable cause of EEG disturbance (n = 50) and healthy controls (n = 50). **RESULTS:** Of 187 consecutive patients with PNESs, 57 patients had PNESs and epilepsy (PNES+E), and 130 patients, PNESs alone. The diagnosis of additional epilepsy was based on ictal (video-) EEG or on the critical assessment of all clinical data by an experienced epileptologist. Retrospective review of all available EEG reports showed that 92.9% of patients in the PNES+E and 53.8% in the PNES-only group had one or more abnormal EEGs (median number of EEGs per patient, three; range, one to 42). In the PNES-only group, EEG changes were nonspecific in 42.3% of patients. Only 50 of 130 patients with PNESs alone had no other clinically recognizable cause of EEG disturbance and entered the controlled study. In this study, 18% of patients and 10% of controls had abnormal EEGs. The frequency of epileptiform EEG changes was similar to that in previous population studies in both groups (2.0%). **CONCLUSIONS:** PNESs often occur in patients with organic brain disease. Even in patients with PNESs alone and no clinically recognizable cause of EEG disturbance, nonspecific abnormalities are found 1.8 times as often as in healthy controls. Interictal EEG changes are common in patients with PNESs and, in isolation, should not be interpreted as evidence of epilepsy.

Neuropsychol Rev. 2002 Mar;12(1):31-64.

A review of diagnostic techniques in the differential diagnosis of epileptic and nonepileptic seizures.

Cragar DE, Berry DT, Fakhoury TA, Cibula JE, Schmitt FA.

The diagnosis of psychogenic nonepileptic seizures (PNES) is complex. Long-term electroencephalogram monitoring with video recording (video EEG) is the most common method of differential diagnosis of epilepsy and PNES. However, **video EEG is complex, costly, and unavailable in some areas.** Thus, alternative diagnostic techniques have been studied in the search for a diagnostic method that is as accurate as video EEG, but more cost effective, convenient, and readily available. This paper reviews the literature regarding possible diagnostic alternatives and organizes findings into 7 areas of study: demographic and medical history variables, seizure semiology, provocative testing, prolactin levels, single photon emission computed tomography, psychological testing, and neuropsychological testing. For each area, the literature is summarized, and conclusions about the accuracy of the technique as a diagnostic tool are drawn. **Overall, it appears unlikely that any of the reviewed alternative techniques will replace video EEG monitoring; rather they may be more successful as complementary diagnostic tools. An important focus for further investigations involves combinations of diagnostic techniques for the differential diagnosis of epilepsy and PNES.**

Epilepsia. 2002;43 Suppl 3:60-4.

The spectrum of nonepileptic events in children.

Paolicchi JM.

Nonepileptic events (NEE) are common in children, and can be difficult to distinguish from epileptic events. Several strategies can assist in differentiation. The first is an age-based approach to the differential of commonly presenting EEs in neonates, infants, and adolescents. The next strategy is to identify key elements of the patient's history to narrow the possibilities, and third is a rational approach to ancillary testing. There are additional challenges to the diagnosis and evaluation of NEEs in patients with cognitive impairments or mental retardation (MR). **Twenty to 25% of neurologically normal patients (34), and up to 60% of children with MR (35) referred for an evaluation of seizures, have NEE.** In most instances, the clinical history leads to the diagnosis, and ancillary testing serves as confirmation. But in certain populations, neonates, children with concurrent epilepsy, children in whom pseudoseizures are suspected, and children with MR, early use of video-EEG telemetry is indicated to establish the diagnosis and avoid overtreatment with antiepileptic drugs (AEDs).

Epilepsia. 2002 Feb;43(2):193-8.

Psychiatric comorbidity and hostility in patients with psychogenic nonepileptic seizures compared with somatoform disorders and healthy controls.

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PURPOSE: To investigate the prevalence of psychiatric comorbidity and level of anxiety, depression, and aggression in patients with psychogenic nonepileptic seizures compared with those in patients with somatoform disorders and healthy controls. **METHODS:** Twenty-three patients with psychogenic nonepileptic seizures (PNESs) and 23 age- and sex-matched patients with somatoform disorders (SDs) underwent a clinical and a semistructured psychiatric interview (MINI) and filled in the Hospital Anxiety and Depression scale (HAD) and the Aggression Questionnaire (AQ). Twenty-three sex- and age-matched controls without psychopathology also underwent a clinical interview and completed the HAD and AQ. **RESULTS:** PNES reported more minor head injuries in the past than did the two comparison groups, and more unspecific EEG dysrhythmias were observed on EEG. Twenty-one PNES patients and 18 with SDs had comorbid psychiatric diagnoses. However, the mean number of comorbid psychiatric diagnoses was higher in the PNES group (1.9 +/- 0.3 compared with 1.5 +/- 0.5 in the SD group; $p = 0.003$). Ten PNES patients additionally had a somatoform pain disorder, and seven had an undifferentiated somatoform disorder. Both patient groups reported significantly higher levels of anxiety, depression, and anger than did the healthy controls, but the PNES patients had significantly higher level of hostility than both comparison groups. **CONCLUSIONS: Increased psychiatric comorbidity is known to be associated with poorer response to regular interventions, and hostility is associated with more hostile coping patterns, often interfering with treatment compliance. Thus the increased prevalence of soft neurologic signs and comorbid psychiatric disorders and increased hostility as well in the PNES group, emphasizes that assessment and treatment of patients with PNES referred to a**

tertiary center requires an integrated approach involving both neurologic and psychiatric resources.

Curr Neurol Neurosci Rep. 2001 Jul;1(4):381-9.

Etiology, diagnosis, and treatment of nonepileptic seizures.

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Psychogenic nonepileptic seizures (NES) can be classified into five categories. This review focuses on NES associated with emotional conflict, by far the most common and important group. Etiology is speculative, but the background histories of these patients are often similar. The presence of a trauma history, depression, post-traumatic stress symptoms, and the use of dissociation plus cognitive dysfunction possibly point to an organic etiology. The presentation of NES in children and adults is discussed, along with the differential diagnosis. The diagnostic differential is lengthy, with epileptic seizures of frontal lobe origin presenting a unique challenge. Diagnostic procedures are reviewed with an emphasis on the utility of hypnosis with seizure induction. Presenting the diagnosis to the patient, the role of the neurologist, and the role of the mental health consultant are reviewed. Issues in the doctor-patient relationship are also addressed, as well as the overall prognosis.

Epilepsia. 2001 Nov;42(11):1472-5.

Peripheral WBC count and serum prolactin level in various seizure types and nonepileptic events.

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PURPOSE: To analyze effects of different types of seizures and nonepileptic events as well as effects of seizure duration and lapse between the time of seizure and blood collection on serum prolactin level and peripheral white blood cell (WBC) count. **METHODS:** We prospectively collected blood samples from all patients admitted to our Epilepsy Monitoring Unit at baseline and after an event. Blood samples were analyzed, and serum prolactin level and WBC count were determined. Statistical analyses were performed to evaluate the relation of each type of seizure, its duration, and time lapse between a seizure and collection of blood sample to the serum prolactin level and peripheral WBC count. **RESULTS:** Serum prolactin level increases above twice the level at baseline after a complex partial seizure or a generalized seizure. Peripheral WBC count is elevated above the upper limit of normal in about one third of cases after a generalized seizure. In generalized seizures, the length of a seizure is positively associated, whereas the lapse time between the seizure onset and blood draw is negatively correlated with the increase in WBC count. Thus the longer the seizure and quicker the blood draw, the higher the WBC count. **CONCLUSIONS:** We conclude that complex partial or generalized seizures are associated with an increase in serum prolactin level. Peripheral WBC count increases significantly after a generalized seizure and is probably transient in nature.

Neurology. 2002 Feb 26;58(4):636-8.

Erratum in: Neurology 2002 Jun 11;58(11):1708.

Ictal heart rate differentiates epileptic from non-epileptic seizures.

Opherk C, Hirsch LJ.

Video-EKG-EEG recordings of 67 epileptic seizures and 38 psychogenic nonepileptic seizures were reviewed. Ictal heart rate (HR) was higher during and after epileptic seizures for both convulsive and nonconvulsive spells ($p < 0.01$). When analyzing quiet staring spells separately, it was possible to identify which spells were epileptic in origin with a positive predictive value of 97% by using a cutoff of a $>$ or $=30\%$ increase in HR over baseline. **It was concluded that documenting an increase in HR during a spell of unresponsiveness usually can distinguish between epileptic and psychogenic causes.**

Neurology. 2002 Feb 12;58(3):493-5.

Diagnostic delay in psychogenic nonepileptic seizures.

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Delay to diagnosis was studied in 313 consecutive patients with psychogenic nonepileptic seizures (PNES). On average, patients with PNES were diagnosed 7.2 years after manifestation (SD 9.3 years). Younger age, interictal epileptiform potentials in the EEG, and anticonvulsant treatment were associated with longer delays. Other patient factors did not explain the great variability of the time to diagnosis, suggesting that physician factors contributed to delays.

Arch Neurol. 2001 Dec;58(12):2066-7.

Comment in: Arch Neurol. 2002 Sep;59(9):1491.

Comment on: Arch Neurol. 2001 Dec;58(12):2063-5.

* Arch Neurol. 2001 Dec;58(12):2065-6.

The confluence of quality of care, cost-effectiveness, pragmatism, and medical ethics in the diagnosis of nonepileptic seizures: a provocative situation for neurology.

Whitaker JN.

Arch Neurol. 2001 Dec;58(12):2065-6.

Comment in: Arch Neurol. 2001 Dec;58(12):2066-7.

* Arch Neurol. 2002 Sep;59(9):1491.

Provocative testing should not be used for nonepileptic seizures.

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Arch Neurol. 2001 Dec;58(12):2063-5.

Comment in: Arch Neurol. 2001 Dec;58(12):2066-7.

* Arch Neurol. 2002 Sep;59(9):1491.

Provocative techniques should be used for the diagnosis of psychogenic nonepileptic seizures.

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Neurology. 2002 Mar 26;58(6):990; author reply 990-1.

Comment on: Neurology. 2001 Sep 11;57(5):915-7.

How many patients with psychogenic nonepileptic seizures also have epilepsy?

LaFrance WC.

Neurology. 2001 Sep 11;57(5):915-7.

Comment in: Neurology. 2002 Mar 26;58(6):990; author reply 990-1.

How many patients with psychogenic nonepileptic seizures also have epilepsy?

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The proportion of patients with psychogenic nonepileptic seizures (PNES) who also have epilepsy has been reported to vary from 10% to over 50%. The authors reviewed all 32 patients diagnosed with PNES in our EEG-video monitoring unit over a period of 1 year, and only 3 (9.4%) had interictal epileptiform discharges to support a coexisting diagnosis of epilepsy. Thus, the authors believe that only a small proportion of patients with PNES have coexisting epilepsy.

J Neuropsychiatry Clin Neurosci. 2001 Summer;13(3):367-73.

Comment in: J Neuropsychiatry Clin Neurosci. 2002 Fall;14(4):468.

* J Neuropsychiatry Clin Neurosci. 2003 Fall;15(4):456; author reply 456-7.

Nondominant hemisphere lesions and conversion nonepileptic seizures.

Devinsky O, Mesad S, Alper K.

To explore the hypothesis that lateralized hemispheric dysfunction may contribute to the development of conversion symptoms, the authors studied frequency of unilateral cerebral physiological or structural abnormalities in 79 consecutive patients with conversion nonepileptic seizures (C-NES), who were also compared with two groups of epilepsy patients without C-NES. Sixty (76%) of the C-NES patients had unilateral cerebral abnormalities on neuroimaging, of which 85% were structural. Ictal or interictal epileptiform abnormalities on EEG were found in 78% of C-NES patients and focal slowing in another 10%. Fifty (63%) of the C-NES patients had both structural and epileptiform abnormalities. Among the 60 with unilateral abnormalities, 43 (71%) had right hemisphere structural lesions or physiologic dysfunctions (C-NES>non-C-NES, $P<0.02$). **This study supports prior studies and clinical observations that cerebral dysfunction can contribute to the pathogenesis of conversion disorder, and that nondominant hemisphere dysfunction may play a greater role.**

Epilepsia. 2001 Mar;42(3):398-401.

Clinical features and prognosis of nonepileptic seizures in a developing country.

Silva W, Giagante B, Saizar R, D'Alessio L, Oddo S, Consalvo D, Saidon P, Kochen S.

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PURPOSE: To determine the predictive value of clinical features and medical history in patients with nonepileptic seizures (NESs). **METHODS:** One hundred sixty-one consecutive ictal video-EEGs were reviewed, and 17 patients with 41 NESs identified. NES diagnosis was defined as paroxysmal behavioral changes suggestive of epileptic seizures recorded during video-EEG without any electrographic ictal activity. Clinical features, age, sex, coexisting epilepsy, associated psychiatric disorder, social and economic factors, delay in reaching the diagnosis of NES, previous treatment, and correlation with outcome on follow-up were examined. **RESULTS:** The study population included 70% female patients with a mean age of 33 years. Mean duration of NESs before diagnosis was 9 years. Forty-one percent had coexisting epilepsy. The most frequent NES clinical features were tonic-clonic mimicking movements and fear/anxiety/hyperventilation. The most common psychiatric diagnosis was conversion disorder and dependent and borderline personality disorder. Seventy-three percent of patients with pure NESs received antiepileptic drugs (AEDs), and 63.5% of this group received new AEDs. Fifty-nine percent of the patients received psychological/psychiatric therapy. At follow-up, 23.5% were free of NESs. **CONCLUSIONS:** All seizure-free patients had two good prognostic factors: having an independent lifestyle and the acceptance of the nonepileptic nature of the episodes. Video-EEG monitoring continues to be the diagnostic method to ensure accurate seizure classification. Establishing adequate health care programs to facilitate access to new technology in public hospitals as well as the implementation of continuous education programs for general practitioners and neurologists could eventually improve the diagnosis and treatment of patients with NESs.

Neurology. 2001 Mar 27;56(6):823.

Comment on: Neurology. 2000 Oct 10;55(7):1061-2.

MRI evidence of mesial temporal sclerosis in patients with psychogenic nonepileptic seizures.

Lowe MR, De Toledo JC, Rabinstein AA, Giulla MF.

Neurology. 2000 Dec 26;55(12):1904-5.

Induction of psychogenic nonepileptic seizures without placebo.

Benbadis SR, Johnson K, Anthony K, Caines G, Hess G, Jackson C, Vale FL, Tatum WO 4th. sbenbadi@hsc.usf.edu

The diagnosis of psychogenic nonepileptic seizures (PNES) can only be made with EEG-video monitoring. The authors describe a provocative technique without placebo. Patients with a clinical suspicion for PNES underwent an **activation procedure using suggestion, hyperventilation, and photic stimulation. Of 19 inductions performed, 16 (84%) were successful in inducing the habitual episode. The authors' technique had a sensitivity comparable to those using placebo (e.g., saline injection), but does not have disadvantages.**

Neurology. 2000 Nov 28;55(10):1561-3.

Four-year incidence of psychogenic nonepileptic seizures in adults in hamilton county, OH.

Szaflarski JP, Ficker DM, Cahill WT, Privitera MD. jerzy.szaflarski@uc.edu

In this retrospective study, the incidence of psychogenic nonepileptic seizures in Hamilton County, OH, between 1995 and 1998 was determined. The mean incidence of psychogenic nonepileptic seizures was **3.03/100,000**, with the highest incidence in 1998 (4.6/100,000). Most patients with the diagnosis of psychogenic nonepileptic seizures were aged 25 to 45 years (4.38/100,000).

Curr Treat Options Neurol. 2000 Nov;2(6):559-570.

******Nonepileptic Seizures. (Treatment)**

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The primary goal of treatment in nonepileptic seizures (NES) is to improve the patient's quality of life by terminating seizure production or reducing seizure frequency. Initial treatment consists of explaining the diagnosis and its psychological nature to patients without judging them or giving the NES excessive attention. Next, help patients identify stresses and refer them for mental health treatment. Neurologists should continue to see patients intermittently to wean anticonvulsants, and encourage compliance with mental health care. Psychiatric treatment of NES has the following three aims: **1) Help patients identify and eliminate contributing stresses. 2) Teach better coping mechanisms and increased expression of suppressed feelings that are being communicated somatically. 3) Diagnose and treat comorbid psychiatric conditions such as depression, anxiety, dissociation, or post-traumatic symptoms. The mainstay of psychiatric treatment for NES is some kind of individual or family psychotherapy or hypnosis. Selective serotonin reuptake inhibitor antidepressant medications (first-line drugs) or tricyclic antidepressants (second-line drugs) may be needed to treat comorbid depression, panic, or post-traumatic stress disorder (PTSD), but medications should nearly always be combined with psychotherapeutic approaches. Benzodiazepines should be used only with psychotherapy to teach better coping. Families or caregivers may need to learn behavior modification to minimize covert environmental rewards for NES. With proper diagnosis and treatment, about 45% of patients will become seizure-free, and another one third of patients will show reduced seizure frequency.**

Neurology. 2000 Oct 10;55(7):1061-2.

Comment in: Neurology. 2001 Mar 27;56(6):823.

MRI evidence of mesial temporal sclerosis in patients with psychogenic nonepileptic seizures.

Benbadis SR, Tatum WO 4th, Murtagh FR, Vale FL. sbenbadi@hsc.usf.edu

Epilepsia. 2000 Oct;41(10):1330-4.

Nonepileptic seizure outcome varies by type of spell and duration of illness.

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PURPOSE: To determine whether differences in clinical manifestations of psychogenic nonepileptic events are associated with differences in outcome and whether the length of illness before diagnosis correlates with outcome. METHODS: **We reviewed ictal videotapes and**

EEGs in 85 patients diagnosed with exclusively nonepileptic psychogenic seizures during inpatient CCTV-EEG monitoring at the University of Michigan between June 1994 and December 1996. They were classified into groups of similar ictal behaviors. Fifty-seven of these patients were available to respond to a follow-up telephone survey about their condition 2-4 years after discharge. We examined demographics, baseline EEG abnormalities, and outcome of treatment interventions. We also evaluated whether interventions were more likely to succeed if patients were diagnosed early in the course of the illness. **RESULTS: We found that the largest groups consisted of patients with motionless unresponsiveness ("catatonic," n = 19) and asynchronous motor movements with impaired responsiveness ("thrashing," n = 19). Infrequent signs included tremor, automatisms, subjective events with amnesia, and intermittent behaviors. There was a higher incidence of baseline EEG abnormalities in the thrashing group (31%) than in the catatonic group (0%). There was a higher incidence of complete remission of spells in the catatonic group (53%) than in the thrashing group (21%). Patients who had a more recent onset of seizures (most often within 1 year) were much more likely to have remission of spells after diagnosis. CONCLUSIONS: Classification of nonepileptic seizures is useful in predicting outcome and may be valuable in further investigation of this complex set of disorders.**

Epilepsia. 2000 Jul;41(7):895-7.

Should patients with psychogenic nonepileptic seizures be allowed to drive?

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PURPOSE: To investigate the risk of driving accidents in patients with psychogenic nonepileptic seizures. **METHODS:** First, a survey was conducted in 82 physician-members of the American Epilepsy Society to determine what they recommend in patients with psychogenic seizures in regard to driving privileges. Second, we studied a population of 20 patients with proven psychogenic nonepileptic seizures diagnosed by prolonged EEG-video monitoring. We **obtained the patients' driving records** from the Wisconsin Department of Transportation. We used 1991 Wisconsin crash data as the reference year. We compared the expected number of motor vehicle crashes with the observed number of crashes. χ^2 with Yates' correction for continuity was used to test for statistical significance. **RESULTS:** Of the 82 physicians questioned, 37 (45%) responded. Among respondents, the distribution was as follows: 49% applied the same restrictions as for patients with epilepsy; 32% did not place patients under any restrictions; and 19% decided on a case-by-case basis. The total number of reported crashes in the sample was eight, with no fatal crashes. This was not statistically significant (corrected χ^2 , 0.53) compared with the expected number of motor vehicle crashes for the sample. **CONCLUSIONS: This small series does not support the use of driving restrictions for patients with psychogenic nonepileptic seizures.**

Neurology. 2000 Jul 12;55(1):120-1.

Nonepileptic seizures in pregnancy.

DeToledo JC, Lowe MR, Puig A.

The authors report five patients with recurrent psychogenic seizures (PS) during pregnancy, with multiple emergency room visits and continued intake of antiepileptic drugs obtained from various sources, despite awareness of the psychogenic nature of their attacks and

the risks of antiepileptic drug use in pregnancy. These patients demonstrate that preexisting PS may persist during pregnancy, and there will be patients who continue to take antiepileptic drugs despite awareness of the risks inherent to these treatments. **New-onset or persisting PS with pregnancy can be indicative of serious emotional conflicts, and the child should be considered at risk.**

Psychosomatics. 2000 May-Jun;41(3):221-6.

Stress and other psychosocial characteristics of patients with psychogenic nonepileptic seizures.

Tojek TM, Lumley M, Barkley G, Mahr G, Thomas A.

Research on psychogenic nonepileptic seizures (PNES) has focused on childhood abuse, but less is known about other stressors and psychosocial risk factors. The authors compared 25 patients with PNES with 33 control subjects with epilepsy on stressful life events and other risk factors for somatoform disorders. Compared with control subjects, patients with PNES reported significantly more prevalent and stressful negative life events (including adulthood abuse) and more current rumination, stress-related diseases, somatic symptoms, bodily awareness, and marginally more anxiety and depression. However, the relationship of many of these variables to PNES was accounted for by life stress. Groups did not differ on illness worry, alexithymia, or psychotic symptoms. **The results suggest that PNES are part of a larger pattern of somatic symptoms responses to a wide range of negative events, including stress in adulthood.**

Epilepsia. 2000 May;41(5):610-4.

Cluster analysis of clinical seizure semiology of psychogenic nonepileptic seizures.

Groppe G, Kapitany T, Baumgartner C.

PURPOSE: To develop an objective classification of psychogenic nonepileptic seizures (NES) based on cluster analysis of clinical seizure semiology. METHODS: We studied the clinical seizure semiology in 27 patients with psychogenic NES documented by prolonged video-EEG monitoring. We analyzed the following clinical symptoms: clonic and hypermotor movements as well as trembling of the upper and/or lower extremities, pelvic thrusting, head movements, tonic posturing backward of the head, and falling. We used cluster analysis to identify symptoms occurring together in a systematic way and thus tried to achieve a clinical classification of psychogenic NES. RESULTS: We could identify three symptom clusters. **Cluster 1 was characterized by clonic and hypermotor movements of the extremities, pelvic thrusting, head movements, and tonic posturing of the head, and therefore was named "psychogenic motor seizures."** Cluster 2 comprised trembling of the upper and lower extremities and was termed "psychogenic minor motor or trembling seizures." Cluster 3 consisted of falling to the floor as the only symptom and was referred to as "psychogenic atonic seizures." CONCLUSIONS: Our study represents the first study to analyze the clinical semiology of psychogenic NES by cluster analysis, which should be useful for an objective classification of psychogenic NES. **This classification should allow both a better characterization of psychogenic NES and an easier differential diagnosis against specific epileptic seizures.**

Epilepsia. 2000 Apr;41(4):447-52.

A comparative study of trauma and posttraumatic stress disorder prevalence in epilepsy patients and psychogenic nonepileptic seizure patients.

Rosenberg HJ, Rosenberg SD, Williamson PD, Wolford GL 2nd.

PURPOSE: This study tests the hypothesis that trauma histories, including histories of physical and sexual abuse, and posttraumatic stress disorder (PTSD) are more prevalent in psychogenic non-epileptic seizure (NES) patients than in epilepsy patients. **METHODS:** Thirty-five inpatients with intractable seizures were evaluated for trauma history and PTSD. After these assessments, patients were diagnosed as having either epileptic or nonepileptic seizures through EEG monitoring. **RESULTS:** NES diagnosis correlated with PTSD and total number of lifetime traumas, adult traumas, and abuse traumas. **Contrary to previous hypotheses, reported childhood sexual abuse (CSA) did not correlate significantly with NES diagnosis. However, CSA predicted PTSD in a discriminant analysis.** **CONCLUSIONS:** We found evidence for the hypothesized relations between trauma, abuse, PTSD, and NES diagnosis. However, elevated levels in both seizure-disorder groups suggest that routine assessment for abuse, trauma, and PTSD might facilitate medical care and treatment for all intractable seizure patients.

Epilepsia. 2000 Mar;41(3):332-7.

Improved prediction of nonepileptic seizures with combined MMPI and EEG measures.

Storzbach D, Binder LM, Salinsky MC, Campbell BR, Mueller RM.

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PURPOSE: Nonepileptic seizures (NESs) are frequently mistaken for epileptic seizures (ESs). Improved detection of patients with NESs could lead to more appropriate treatment and medical cost savings. Previous studies have shown the MMPI/MMPI-2 to be a useful predictor of NES. We hypothesized that combining the MMPI-2 with a physiologic predictor of epilepsy (routine EEG; rEEG) would result in enhanced prediction of NES. **METHODS:** Consecutive patients undergoing CCTV-EEG monitoring underwent rEEG evaluation and completed an MMPI-2. Patients were subsequently classified as having epilepsy (n = 91) or NESs (n = 76) by using standardized criteria. **Logistic regression was used to predict seizure type classification.** **RESULTS:** Overall classification accuracy was 74% for rEEG, 71% for MMPI-2 Hs scale, and 77% for MMPI-2 Hy scale. The model that best predicted diagnosis included rEEG, MMPI-2, and number of years since the first spell, resulting in an overall classification accuracy of 86%. **CONCLUSIONS:** **The high accuracy achieved by the model suggests that it may be useful for screening candidates for diagnostic telemetry.**

Neurology. 2000 Feb 22;54(4):969-70.

Psychogenic status epilepticus in children: psychiatric and other risk factors.

Pakalnis A, Paolicchi J, Gilles E.

The authors studied six children with repetitive psychogenic seizures severe enough to mimic status epilepticus. All received IV antiepileptic drugs in an emergency setting. Most had a family history of epilepsy. Affective and anxiety disorders predominated as comorbid psychiatric

diagnoses. Acutely stressful situations precipitated all episodes of nonepileptic status epilepticus. With aggressive psychotherapeutic intervention and pharmacologic treatment of their underlying psychiatric diagnosis, the patients improved.

J Neuroimaging. 1999 Oct;9(4):210-6.

The role of quantitative ictal SPECT analysis in the evaluation of nonepileptic seizures.

Spanaki MV, Spencer SS, Corsi M, MacMullan J, Seibyl J, Zubal IG.

Nonepileptic seizures may represent difficult diagnostic problems. Identifying their presence and frequency is critical for determining appropriate treatment. The authors investigated the value of quantitative perfusion changes as measured by ictal single-photon emission tomography (SPECT) difference images in differentiating nonepileptic from epileptic seizures. Eleven patients with a clinical suspicion of nonepileptic events had ictal and interictal technetium-99m hexamethylpropylene amine SPECT scans during continuous audiovisual surface electroencephalogram (EEG) monitoring. The authors analyzed perfusion difference images based on registration, normalization, and subtraction of ictal and interictal SPECT images. The difference images were registered to each patient's magnetic resonance imaging scan to anatomically localize ictal perfusion changes. Three of 11 patients also carried the diagnosis of epilepsy and were taking antiepileptic medication. Five patients were taking antiepileptic drugs, but the diagnosis of epilepsy was not confirmed. In all patients, continuous video EEG monitoring revealed no ictal EEG findings. In nine of these patients, visual interpretation of ictal SPECT was suggestive of localized increased ($n = 6$) or decreased perfusion ($n = 3$). In all patients, however, no blood flow changes were noted on quantitative SPECT analysis with injections performed during the seizure-like event, suggesting the diagnosis of pseudoseizures. The authors' results suggest that quantitative ictal SPECT analysis is a useful tool in the diagnosis of nonepileptic seizures.

J Neuropsychiatry Clin Neurosci. 1999 Fall;11(4):458-63.

Predictive factors for outcome of nonepileptic seizures after diagnosis.

Ettinger AB, Dhoon A, Weisbrot DM, Devinsky O.

The aim of this study was to **assess prognosis among adult patients with nonepileptic seizures (NES) and to determine predictor variables for resolution of NES after diagnosis. Six to 9 months** after receiving a video-EEG-documented diagnosis of NES, 43 adults responded by telephone interview to a detailed, structured questionnaire probing history of the episodes, psychiatric factors, socioeconomic variables, relationships, reactions to receiving the diagnosis, and potential history of litigation. At follow-up, **only 18.6% were episode-free, 55.8% had improved, 16.3% reported no change, and 9.3% reported greater frequency of episodes. Patients who reported having many friends currently or having good relationships with friends as a child were significantly more likely to be episode-free. Subjects with pending litigation were significantly less likely to experience a reduction in episodes.**

OLDER NES END??? Check rest of doc...