Psychosomatics 2016:57:1–17

Review Article

Psychogenic Non-epileptic Seizures: An Updated Primer

Gaston Baslet, M.D., Ashok Seshadri, M.D., Adriana Bermeo-Ovalle, M.D., Kim Willment, Ph.D., Lorna Myers, Ph.D.

Background: *Psychogenic non-epileptic seizures are the most common paroxysmal event misdiagnosed as epilepsy. They significantly affect quality of life, functional status, and use of medical resources.* **Objective:** *The goal of this review is to provide guidance to psychiatrists and other mental health professionals in the understanding and practical management of this condition.* **Results:** *An abundance of new reports on the pathogenesis and effective treatments have become available over the last decade, yet specific barriers impede the fluid transition to treatment and remain an important challenge in the management of patients with psychogenic non-epileptic seizures. In the context of these difficulties, we initially present background information on psychogenic non-epileptic seizures covering their historic context, epidemiology, etiologic factors (including psychiatric, neuromedical, and neuropsychological factors), and current neurobiological models. Updated evidence-based treatments are discussed along with data on long-term outcomes. We also provide practical tools to help clinicians navigate differential diagnoses, establish their interdisciplinary roles, communicate the diagnosis, deliver treatment, and sort out commonly encountered challenges in the management of this condition.*

(Psychosomatics 2016; 57:1–17)

INTRODUCTION

Psychogenic non-epileptic seizures (PNES) are sudden involuntary episodes of any combination of altered movement, sensation, or awareness that bear resemblance to epileptic seizures, but are not accompanied by epileptiform electrical discharges, and are presumed to be associated with a psychological origin. In the last decade, advances have been made in the neurobiological understanding and evidence-based treatments for this condition. Despite this progress, many barriers interfere with successful outcomes, as discussed in our "Challenges" section. The goal of this primer on PNES is to reach mental health professionals in charge of managing this condition, who are encouraged to assimilate the presented information in the context of the difficulties usually encountered in their practices. A broad range of topics related to PNES is covered in this review, including updated information and practical tools to help manage patients with PNES at their various stages of care. For more detailed background information on the topic, the reader should refer to the textbook *Gates and Rowan's Nonepileptic Seizures*,[1] currently in its third edition.

History and Nosology

PNES represent a neuropsychiatric condition that is at the intersection of neurology and psychiatry. Jean

Received August 28, 2015; revised October 10, 2015; accepted October 12, 2015. From Department of Psychiatry, Brigham and Women's Hospital, Boston, MA (GB); Harvard Medical School, Boston, MA (GB, KW); Department of Psychiatry, Mayo Clinic, Rochester, MN (AS); Department of Neurology, Rush University Medical Center, Chicago, IL (AB-O); Department of Neurology, Brigham and Women's Hospital, Boston, MA (KW); Northeast Regional Epilepsy Group, New York, NY (LM); Send correspondence and reprint requests to Gaston Baslet, M.D., Department of Psychiatry, Brigham and Women's Hospital, Harvard Medical School, 221 Longwood Avenue, Boston, MA 02115; e-mail: gbaslet@partners.org

Martin Charcot, a French neurologist, characterized "hysteria" as a condition in which patients presented with similar impairments to those caused by identifiable brain lesions, but that were due to psychological trauma. Pierre Janet, Josef Breuer, and Sigmund Freud developed the concept of dissociation as a defense against psychological distress that is associated with memories of trauma, converted into somatic or cognitive symptoms and unconscious to the patient.[2]

Names previously given to this condition include hystero-epilepsy, pseudoseizures, and behavioral spells. These names have now been abandoned either because they are vague or pejorative. The accepted terms in the medical community are now "psychogenic non-epileptic seizures" (PNES) or "non-epileptic (or dissociative) attack disorder." The fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) classifies PNES as a subtype of conversion disorder or functional neurological symptom disorder (FNSD).[3] Functional neurological symptoms are not voluntarily produced, but are rather presumed to be unconsciously elaborated. This differentiates FNSD from factitious disorder or malingering, which, by definition, requires the volitional elaboration of symptoms.[3]

Epidemiology

The incidence of PNES is estimated between 1.4 and 4.9 per 100,000 per year and the prevalence between 2 and 33 per 100,000.[4] Up to 30% of admissions to epilepsy monitoring units are diagnosed with PNES at discharge.[5]

The mean latency from initial manifestation to diagnosis is 5–7 years.[4] Episodes of recurrent, prolonged PNES (also called "non-epileptic psychogenic status" and defined as episodes lasting more than 30 min) occur in one-third of patients with PNES, with three-quarters of patients with PNES reporting at least one non-epileptic psychogenic status episode in their lifetime.[6]

The risk of misdiagnosis and iatrogenic complications from inappropriate treatment is substantial. PNES lead to a significant effect on quality of life, high rates of disability, excessive medical use, and unaddressed psychological problems.[6]

PNES can be seen across the age span, with onset occurring more commonly between the second and fourth decades of life.[7] They are more common in women at a ratio of 3:1 during their reproductive years.[8] PNES in the preadolescent and geriatric age groups are equally distributed between both sex groups.[8,9]

DIFFERENTIAL DIAGNOSIS

PNES is the most common condition mistaken as epilepsy. Epileptic seizures occur owing to abnormal excessive or synchronous neuronal activity in the brain. The clinical manifestations of epileptic seizures are diverse and anatomically related to the area of the brain affected by the seizure. Paroxysmal events that resemble epileptic seizures can have diverse etiologies. Table 1 summarizes the most common conditions to be considered when evaluating patients with paroxysmal episodes.

A structured interview acquiring a detailed semiologic description of the events strengthens the pretest probability of the diagnostic video electroencephalography (EEG) evaluation (the gold standard to establish the diagnosis). Noteworthy semiologic characteristics associated with PNES include preserved awareness during a bilateral motor event, eye fluttering, and responsiveness to bystander intervention during the event.[10] Other clinical signs of variable clinical significance include: prolonged (>2 min) motor events followed by complete recovery and a fluctuating course of motor phenomena. None of the clinical signs by themselves have a strong enough diagnostic value unless the psychiatric, neurological, and neurophysiologic backgrounds are taken into account.

As opposed to most epileptic seizures, EEGs acquired during PNES do not show electrographic changes supportive of epileptiform activity. Instead, the EEG during PNES reveals preserved background rhythms seen in normal EEGs and normal reactivity, often contaminated by the movement and muscle artifact during the event. There are epileptic seizures that show minimal or no changes in the EEG during the time of the spell; these seizures usually arise from areas of the brain (mesial or basal cortices of the brain) that are hard to sample with scalp EEG electrodes. Frontal lobe seizures may present a particular diagnostic challenge. Seizures arising from the dorsolateral aspect of the frontal lobe may have manifestations of activation of primary motor cortices such as forced eye version (contralateral activation of the frontal eye