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Psychogenic Movement Disorders and Motor Conversion: A roadmap for collaboration between Neurology and Psychiatry

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Abstract

BACKGROUND—There are a host of vague terms to describe psychologically-mediated symptoms that mimic neurological disease, such as “functional,” “non-organic,” “psychogenic,” or “medically unexplained.” None of these terms have a direct translation in psychiatric classification, and psychiatrists are often faced with patients who do not believe in a psychological origin for their symptoms.

OBJECTIVE—Within the framework of psychogenic movement disorders, we discuss the roadblocks to effective collaboration and treatment in these patients and the current state of the literature regarding diagnosis and treatment.

RESULTS—We describe the approach to these patients from the perspective of neurology and psychiatry, illustrating the differences in terminology and categorization.

CONCLUSION—Psychogenic movement disorders represent a unique opportunity for these fields to collaborate in the care of a potentially curable but significantly disabling disorder.

Keywords

Conversion Disorder; Hysteria; Psychogenic Movement Disorder; Stress - Psychological/psychology

INTRODUCTION

Psychogenic movement disorders are characterized by the presence of abnormal movements or absence of normal movement not attributable to an organic neurologic disorder and considered to be psychologically mediated. A large movement disorder clinic estimated the prevalence of psychogenic movement disorders to be 5.3%, a rate higher than both the prevalence of Huntington disease and restless leg syndrome in the same clinic.¹ While

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recent imaging research has pointed to an abnormal network of neuronal activation,² the mainstay of treatment for these patients remains psychotherapy.³

Psychogenic movement disorders have been called a “crisis for neurology” as patients are often unaccepting of the diagnosis, few treatments exist, and few patients have been shown to improve in the published case series.⁴ Worsening this already grim picture is lack of discourse between neurology and psychiatry regarding these patients; while this is an ideal disease model for partnership between psychiatry and neurology, there are significant differences between the two fields' perspectives towards this disorder that make collaboration difficult. Differences in terminology alone begin to illustrate this divide: the term “psychogenic movement disorder” has gained popularity among many neurologists and is presented as a separate chapter in movement disorder textbooks, but this phrase has little diagnostic specificity for psychiatrists and is not found in the current Diagnostic and Statistical Manual of Psychiatry (DSM-IV-TR) or textbooks of psychiatry.^{5, 3, 6} The differences between neurology and psychiatry go beyond terminology and extend into nosology, as not all patients with psychogenic movement disorders meet criteria for its closest approximation in the DSM-IV-TR, conversion disorder with motor symptom or deficit.

Even when collaborative efforts are made between interested neurologists and psychiatrists, these patients present a unique dilemma in treatment. Many patients lack clear psychological distress.⁷ In psychogenic movement disorders this is particularly problematic. The neurologist is sometimes unable to offer a definitive test to the patient to “prove” the neurological diagnosis (although neurophysiologic testing can be helpful in some cases),⁸ and suggests to the patient the appropriate treatment is to refer the patient to psychiatry, but the psychiatrist to whom the patient is referred is faced with a patient who may have ongoing abnormal movements, who denies any psychological symptoms and refuses to believe that the movements are “in my mind.” Patients who are resistant to the possibility that there may be a psychologic etiology of their illness may be confused as to why they are now having to see a psychiatrist and resist the formation of a therapeutic alliance. If the psychiatrist is also unsure of the diagnosis, this compounds the problem. The patient's firmly held belief that they have an “organic” neurologic illness may lead them to drop out or be discharged from psychiatric care, much to the frustration of both neurologists and psychiatrists.

With greater awareness for psychogenic movement disorders in the literature as well as in clinical practice, more neurologists will feel supported in making the diagnosis and referring these patients to psychiatry. With a greater understanding of the psychogenic movement disorder terminology, comorbidities in psychogenic movement disorder patients, and treatment options, psychiatrists may be better able to care for these patients. To this end, we review the current literature regarding diagnosis, comorbidities and treatment in psychogenic movement disorders for the purpose of aiding psychiatrists who will encounter these patients in consultation and in the clinic.

DIAGNOSIS: WHAT THE PSYCHIATRIST SAYS

Reviewing the terminology used for these patients reveals the complexity of the diagnosis as well as the difficulty in finding adequate categories to capture the range of psychopathology in these patients. While many physicians consider psychogenic movement disorders to overlap with conversion disorder, there are several ways in which these diagnoses are not fully aligned (table 1, column 1). The DSM-IV-TR Criterion B for conversion disorder states that “psychological factors are judged, in the clinician's belief, to be associated with the symptom or deficit because conflicts or other stressors precede the initiation or

exacerbation of the symptom or deficit.”⁵ The physician is thus required to make a judgment regarding the etiology of the movements, which implies that the psychiatrist must consider the entire neurological differential diagnosis. Dependent on the patient's reporting of stressors in temporal relationship to the onset of conversion symptoms, this criterion is not only subject to recall bias but will also overlook those patients who minimize or deny psychological stressors. While the requirement of an “association” is an improvement from the previous DSM edition in which the physician was required to determine causality, it remains one of the only diagnoses outside of the atheoretical stance of the DSM-IV.

The psychiatrist is further expected in Criterion C of conversion disorder to rule out malingering or factitious disorder, a task that can be difficult for many psychiatrists (who may feel distant or removed from their neurology training) to undertake when the patient is presenting with primary motor symptoms. In so doing, the psychiatrist must look for the presence of secondary gain and whether the motivation is conscious (as in the case of malingering) or unconscious (as in the case of factitious disorder). While some patients may clearly demonstrate secondary gain, determining the motivation for secondary gain can be quite difficult, if even possible. Probing for this information can often create an adversarial stance between the patient and the psychiatrist, which may be particularly damaging if the patient is not fully accepting of the psychological origins of the disease.

Furthermore, debates within the psychiatry community about how conversion disorder should be classified only add to the confusion surrounding diagnosis of this disorder. A recent movement in the psychiatric literature has called for the inclusion of conversion disorders under the rubric of dissociative disorders in future DSM manuals, as they are listed in the current edition of the International Classification of Disease (ICD-10). Several authors have argued that the overlap between conversion disorder and dissociative disorder is greater than that between conversion disorder and somatoform, given the rates of dissociative symptoms reported in several studies of patients with conversion disorder.^{9, 10} Supporting this statistical association is the assumption that these disorders share similar etiologic processes: the conversion patient fails to accurately integrate sensorimotor feedback from their abnormal movements, while the patient with dissociative amnesia fails to integrate memories into conscious awareness. The arguments for this grouping are based on reports of dissociative disorders in heterogeneous conversion populations, however, with the majority of the sample drawn from psychogenic non-epileptic seizures.¹⁰

Shifting the classification of conversion disorder from the heading of somatoform disorders to dissociative disorders would have implications for the significance of any lifetime stress in these patients that may be associated with the onset of symptoms. This new classification may require a new understanding of the role of stressful events in the diagnosis. The current conversion disorder diagnosis requires that “conflicts or other stressors precede the initiation or exacerbation of the symptom,”⁵ thus placing emphasis on the patient's recent past; as described in one of the major texts used by psychiatric trainees, “the primary evidence for the psychological cause consists of a temporal relationship between symptom onset and psychologically meaningful environmental precipitants or stressors.”³ This suggests that the current diagnosis of conversion does not specifically address remote trauma such as childhood abuse, which is common to dissociative disorders. While many of the case series of psychogenic movement disorders or motor conversion document precipitating or exacerbating life events of these patients,^{7, 11–19} only one of these studies reports rates of distant life events such as childhood abuse or trauma.¹⁹ Large prospective studies with formal psychiatric involvement will be needed in order to truly assess the prevalence of both remote and recent precipitating events in psychogenic movement disorders, as well as whether these patients are more aptly described as having dissociative or conversion disorder.

In summary, significant questions remain for the psychiatrist of how to categorize or understand the heterogeneous presentations that all currently fall under the same diagnosis of conversion disorder. The uncertainty around the definition and classification of conversion disorder only contributes to the psychiatrists own unease in treating any type of conversion disorder and may be a barrier to clinicians willingness to treat these patients.

DIAGNOSIS: WHAT THE NEUROLOGIST SAYS

As the divide between neurology and psychiatry has widened, an unfortunately small number of neurologists are aware of the difficulties with classifying conversion disorder or meeting conversion disorder criteria. The acceptance of the term “psychogenic movement disorders” by the neurology community illustrates this lack of awareness. In a recent survey, Espay et al.²⁰ showed that the majority of neurologists used “psychogenic” rather than “conversion” to describe these patients, although they would also use other terms when talking to the patient. In a departure from the conversion disorder criteria used by psychiatrists, the majority of neurologists surveyed said that they did not feel that the presence of clear psychiatric distress was a factor in making the diagnosis. In fact, the leading diagnostic guidelines used in the diagnosis of psychogenic movement disorders focuses not on well-defined, symptom-based criteria, but rather on the level of clinical certainty as to the psychogenic origin of the abnormal movement symptoms (table 1, column 2). Additionally, in all published series, a substantial number of patients do not have identifiable distress. (The lack of distress can certainly be the case although this might also be the result of a “complete conversion”.) While agreement upon diagnostic criteria and the inclusion of psychogenic movement disorder as a diagnosis in the next version of the DSM would obviate the need to “translate” this term into a diagnosis recognized by the DSM, it may not solve the issue of how to treat patients who do not display overt psychopathology.

The earliest papers regarding psychogenic movement disorder described this as a diagnosis of exclusion, which could not be made until the “appropriate exclusion of possible organic causes for each symptom.”¹⁹ Many neurologists continue to practice in this fashion, as demonstrated by the survey by Espay et al.,²⁰ in which a majority of responders would “exclude a range of organic conditions” first before confirming the diagnosis of psychogenic movement disorder. Many reviewers have proposed basing the diagnosis instead on the presence of clear clinical phenomenology, as medicalizing every complaint with an exhaustive evaluation is not only unnecessary and often returns some false positive findings, but also puts the patient at great expense as well as at risk for procedural complications. Thus authors have recommended magnetic resonance imaging for structural or demyelinating lesions and blood work to evaluate thyroid, renal and liver function as well as to rule out Wilson disease.²¹ These recommendations are supported by the recent literature showing that rates of missed “organic” diagnoses in these patients have declined over the past 50 years, although this data should be reviewed with caution given the possibility of more cases of misdiagnosis that are never published.²²

From the perspective of the movement disorders neurologist, moving towards a “positive” diagnosis of psychogenic movement disorder is empowering, and allows the physician to spend a greater deal of time discussing the diagnosis with the patient without postponing this conversation while awaiting test results. In light of the less exhaustive workup that is now recommended within the neurology literature, the psychiatrist to whom this patient is referred may feel increasingly unsure about “positive” diagnoses that are made without a full battery of neurologic tests, especially when prominent articles on the subject within the psychiatric literature contain long lists of organic causes which must first be ruled out.²³

It may be helpful to neurologist and psychiatrists alike to remember that while movement disorders may seem to suffer disproportionately among neurologic subspecialties due to any “definitive” tests used in making a diagnosis, all other movement disorders diagnoses are also made in this fashion, “an exercise in clinical phenomenology,” as one author has stated.²⁴ Furthermore, there are guidelines for each type of movement phenomenon to aid the neurologist in differentiating between organic and psychogenic (see Peckham and Hallett for historical, clinical and electrophysiological clues to the diagnosis of psychogenic movement disorder by movement type)²¹ and such publications will likely contribute to a greater number of “positive” diagnoses.

TREATMENT: WHAT THE NEUROLOGIST DOES

While the majority of the treatment may fall to the psychiatrist, a crucial first step is in the delivery of the diagnosis by the neurologist. Too frequently psychogenic movement disorder patients are encountered who have had negative interactions with physicians upon learning this diagnosis that will continue to color their perception of the diagnosis and suggested treatment for some time. Neurologists should avoid comments that suggest to the patient that there is nothing “biologically” wrong with the patient. Rather, neurologists should suggest to the patient that they are clearly suffering from a concerning set of movement symptoms and that often times the best treatment for these disorders is to focus on managing the distress associated with adjusting to this illness. While the patient may not want to recognize that the movements followed a precipitating stressor, it is frequently possible to engage the patient in recognizing how the stress associated with movements has remade the “life world.”²⁵ In this way, the neurologist has the opportunity to show the patient that he or she is referring the patient to a psychiatrist out of concern for the patient's overall welfare. While psychogenic movement disorder has gained in recognition, there is still a greater need within the neurology community to accept the importance of communicating this diagnosis appropriately.

While many neurologists use the term “psychogenic movement disorder,” some authors have encouraged the use of the term “functional” when speaking to patients regarding this diagnosis. In a survey of patients presenting to a neurology clinic, Stone et al²⁶ demonstrated that patients found the word “functional” to be least offensive, compared to “medically unexplained,” “psychosomatic,” “hysterical,” “symptoms all in the mind,” “depression associated” or “stress related.” Using the term “functional” may be another way in which the neurologist can convey empathy when delivering the diagnosis.

TREATMENT: WHAT THE PSYCHIATRIST DOES

After a diagnosis of psychogenic movement disorder is made by a neurologist and the patient is referred to psychiatry, it is with the hope that some deeply held inner conflict (as described in the conversion disorder criteria) will in time be revealed, and with the insight gained from this psychological revelation the abnormal movements will be amenable to psychotherapy. For patients resistant to the idea of exploring unresolved conflicts which may be contributing to the psychogenic movement disorder, neurologists hope that the patient will at least receive evaluation and treatment of psychiatric comorbidities that may exist, in the hopes that treatment will improve the movements. The data on psychiatric comorbidity in psychogenic movement disorder patients is largely based on small case series, but illustrative in how common concurrent psychopathology is in patients with psychogenic movement disorders. In many of the early case series, the most common Axis I disorder was depression, ranging from 19% to 57%.^{7, 11–19, 27–33} Feinstein et al. conducted a prospective study evaluating psychogenic movement disorder patients specifically for psychiatric comorbidities and found anxiety disorders to be more common in their cohort

with a point prevalence of 38%.⁷ This finding is reflected by the antidepressant treatment study by Voon et al. in which any anxiety disorder was also the most common Axis I diagnosis at 52%.³³ While not all of these studies attempted to document Axis II diagnoses, the incidence of personality disorders in the available data in psychogenic movement disorders ranges from 12% to 53%.^{7, 11–13, 19, 27, 28, 30}

In prospective studies from Feinstein and Voon, conducted with structured psychiatric interviews, both found a greater proportion of patients with comorbid anxiety disorders. The increased prevalence of anxiety in these two studies may also be explained in part by their non-hierarchical approach to psychiatric diagnosis, in which more than one Axis I condition could be met. More striking than the reported diagnoses is that almost all studies, even those with formal psychiatric evaluations, describe some proportion of patients in which no psychopathology could be found, ranging from 21% to 56%.^{7, 11–19, 27, 29, 30, 32} This cohort represents the greatest challenge for neurologists and psychiatrists. Neurologists have little in the way of interventions and medications to offer these patients, and psychiatrists have no symptoms with which to form an alliance or target psychological treatment.

Once the diagnosis of psychogenic movement disorder as well as any other psychiatric comorbidities has been made, the psychological treatment of conversion, somatoform or dissociative disorders has largely centered in recent years on cognitive behavioral (CBT) or psychodynamic psychotherapy.^{34–36} Hinson et al conducted a single-blind clinical trial of psychotherapy in ten patients with psychogenic movement disorder in which patients received 12 weeks of treatment with one-hour weekly outpatient psychodynamic psychotherapy. Patients received antidepressant or anxiolytic drugs if they had comorbid psychiatric diagnoses. Means for psychogenic movement disorder rating scale (PMDRS), function scores, Hamilton depression scores, and Beck anxiety scores were all improved.²⁸ A similar improvement was seen in patients who received cognitive behavioral therapy for medically unexplained symptoms, in which 79 patients were randomly assigned to receive either CBT or optimum medical management. The CBT intervention group reported lower intensity of physical symptoms and a higher recovery rate on follow-up as measured by questionnaire.³⁷ One case report describes the use of CBT by LaFrance et al for psychogenic movement disorder in a similar method to that in psychogenic non-epileptic seizures, using a manual-based therapy to focus on “taking control of movements” and “mood-cognition-environment connections” with success in one patient.³⁸

While there are several reports of treatment of conversion disorder using neuroleptics, such a trial would likely be unwise in the psychogenic movement disorder population given the possibility of a neuroleptic-induced movement disorder.³⁹ In the only prospective treatment trial of motor conversion with antidepressants, Voon et al treated 15 patients with either citalopram or paroxetine.³³ Patients were switched to venlafaxine if they did not respond to the initial antidepressant. Two subgroups were observed in the study: ten patients were considered to have “primary psychogenic movement disorder,” all of whom had Axis I comorbid diagnoses. The remaining five patients were labeled “psychogenic movement disorder plus other somatoform disorder,” diagnosed with primary hypochondriasis, somatisation, and probable factitious disorder or malingering, and only 40% of these patients had comorbid Axis I diagnoses. Eight of ten patients in the “primary psychogenic movement disorder” group had significant improvements in scales of clinical global impression, depression and anxiety, and seven had a complete remission. The group with “psychogenic movement disorder plus other somatoform disorder” did not show improvement. Few patients received concurrent psychotherapy in this study, leading the authors to conclude that this treatment effect was likely due to medication alone. This study considered psychogenic movement disorder to be a “subtype” of conversion disorder, and as such applied a more inclusive treatment strategy to patients with psychogenic movement

disorders than attempting to match them exactly to DSM criteria. The findings illustrate the possibility that those patients with other psychopathology, as in the “psychogenic movement disorder plus other somatoform disorder” group, may be not only more difficult to diagnose psychiatrically but also potentially more difficult to treat.

COLLABORATIVE CARE FOR THE PATIENT WITH A PSYCHOGENIC MOVEMENT DISORDER

By a great margin, the most successful treatment regimens are those carried out at specialized inpatient centers in the United Kingdom and Canada that employ a multidisciplinary team to treat conversion disorder. In one report, 81% of patients treated from 1 week to 6 months at such a center had resolution of their symptoms.⁴⁰ This number stands in stark contrast to the published reports of chronic conversion disorder or psychogenic movement disorder in the U.S., with 44%–90% of patients experiencing persistence of symptoms years after presentation.^{7, 41, 42} While the outpatient setting is clearly less ideal for treatment of these patients, more prospective treatment studies would be necessary to know how many of these patients never presented for psychiatric treatment, and how many would be considered actual treatment “failures.” Several case series have identified a significant number of these patients who are naive to psychiatry despite the prevalence of psychiatric comorbidities, and yet it is clear that many patients choose not to follow through with the referral to psychiatry or psychology. The antidepressant study by Voon et al identified several patients who had received inadequate trials of antidepressants, and in their sample four of the “primary psychogenic movement disorder” patients only responded after being switched to venlafaxine.³³ These findings illustrate the clinical importance of alliance building and motivating these patients to see psychiatrists and to commit to treatment, even when results are not immediate.

The diversity of reported therapeutic trials in psychogenic movement disorder or motor conversion demonstrate the way in which physicians could attempt to collaborate in these patients' care. Two studies of physical therapy by Ness and Speed showed complete resolution in 3 patients and 10 patients respectively.⁴³ Indeed, physical therapy might well be important in patients with complaints of balance or gait problems, weakness or incoordination. One case report by Van Neunen describes a dramatic response to acupuncture in a patient with chronic, treatment-resistant psychogenic movement disorder.⁴⁴ In a randomised controlled treatment trial of hypnosis,⁴⁸ patients received either hypnosis or psychotherapy alone and were told that either treatment was equally effective. While the hypnosis group had a greater response, both groups showed significant improvement independent of the treatment modality.⁴⁵ In a published abstract, EMG biofeedback was used as a treatment in 15 patients with psychogenic tremor, with success in 9 patients.⁴⁶ One case report of repetitive TMS (rTMS) over the right motor cortex documented a dramatic recovery in a patient with psychogenic dysphonia, and a series of 8 patients in an rTMS study showed improvement in 6 (although two patients only had temporary improvement).^{47, 48} There is one case report of a successful use of placebo in psychogenic blepharospasm.⁴⁹ While the use of placebo without the patient's consent is often considered unethical, the argument has been made in the neurologic literature that physicians treating psychogenic disorders could make appropriate use of placebos in diagnosis and treatment.⁵⁰

A PATH FORWARD: HOW MULTIDISCIPLINARY CARE CAN BE IMPROVED

While working within the current U.S. outpatient treatment model, there are several steps that could be implemented to bridge the gap between psychiatry and neurology in caring for patients with psychogenic movement disorders. Drawing on the differences outlined above,

as well as the potential therapies emerging in the psychiatric and neurologic literature, we propose several points that could enhance collaboration between the two fields.

1. Proposed DSM-V criteria

Proposals for the DSM-V, while still in preliminary stages, would eliminate the requirement for a psychological stressor to be “associated with” the abnormal movements of motor conversion disorder. [personal communication] This new conceptualization of conversion disorder would remove one substantial barrier between the specialties, as there would likely no longer be any patients diagnosed with PMD who did not also meet criteria for conversion disorder. Significant issues may still remain, however, in that patients without any apparent psychological disturbance will continue to present a therapeutic challenge to psychiatrists and psychologists.

2. Common terminology

A movement toward a common terminology for these types of patients would allow for more appropriate cross-talk between disciplines. The neurological community has embraced the term “psychogenic movement disorder,” including two multidisciplinary conferences that have been held on this topic and the manuscripts to emerge from those meetings. The proposed criteria for the DSMV, as mentioned above, continues to use the term “conversion disorder.” Adding to this divide is the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10), for which “functional neurological disorders” is a proposed classification with subheadings according to the nature of the disorder (e.g., abnormal movements). [personal communication] Given the favor that some patients have shown for “functional,”²⁶ as well as its possible inclusion in the ICD-10, it may become more appropriate for neurologists to describe PMD as a “functional movement disorder” and allow the psychiatrist to confirm the diagnosis of motor conversion.

3. Cross-disciplinary educational interventions

Adaptation of new criteria and terminology will certainly require an educational outreach within both disciplines. Efforts should be made to educate residents and post-graduate physicians about consensus guidelines for terminology and diagnosis. The use of ACGME and ACCME requirements would aid in this effort.

4. Creation of specialty care clinics

The issues highlighted above demonstrate the need for collaboration at major academic medical centers between psychiatry and neurology in caring for these patients. Such centers of expertise would provide direct collaboration in patient care, serve as launching pads for trainees interested in these disorders, and would become the natural focal point for research into these disorders.

CONCLUSIONS

Without the means to hospitalize patients with psychogenic movement disorders indefinitely, or to meet as a team regularly to discuss treatment, U.S. neurologists and psychiatrists must still forge a path towards improved outpatient treatment. Although psychogenic movement disorder patients are often difficult to engage in psychiatric care, the prospective studies of psychotherapy and antidepressants in those psychogenic movement disorder patients who follow through with psychiatric referral show considerable promise in an otherwise grim clinical picture. These successes demonstrate the care with which these patients must be diagnosed and referred, often through a collaboration between neurologists and psychiatrists, as few patients appear to improve without intervention.

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REFERENCES

1. Jankovic J. Treatment of hyperkinetic movement disorders. *Lancet Neurol.* 2009; 8:844–856. [PubMed: 19679276]
2. Nowak DA, Fink GR. Psychogenic movement disorders: aetiology, phenomenology, neuroanatomical correlates and therapeutic approaches. *Neuroimage.* 2009; 47:1015–1025. [PubMed: 19426818]
3. Stern, TA.; Massachusetts General Hospital. MD Consult LLC.; Massachusetts General Hospital comprehensive clinical psychiatry. 1st ed. Mosby/Elsevier; Philadelphia, PA: 2008.
4. Hallett M. Psychogenic movement disorders: a crisis for neurology. *Curr Neurol Neurosci Rep.* 2006; 6:269–271. [PubMed: 16822346]
5. American Psychiatric Association. American Psychiatric Association. Task Force on DSM-IV.: Diagnostic and statistical manual of mental disorders : DSM-IV-TR. 4th Edition. American Psychiatric Association; Washington, DC: 2000.
6. Fahn, S.; Jankovic, J. Principles and practice of movement disorders. Churchill Livingstone Elsevier; Philadelphia: 2007.
7. Feinstein A, Stergiopoulos V, Fine J, Lang AE. Psychiatric outcome in patients with a psychogenic movement disorder: a prospective study. *Neuropsychiatry Neuropsychol Behav Neurol.* 2001; 14:169–176. [PubMed: 11513100]
8. Hallett M. Physiology of psychogenic movement disorders. *J Clin Neurosci.*
9. Bowman ES. Why conversion seizures should be classified as a dissociative disorder. *Psychiatr Clin North Am.* 2006; 29:185–211. x. [PubMed: 16530593]
10. Brown RJ, Cardena E, Nijenhuis E, Sar V, van der Hart O. Should conversion disorder be reclassified as a dissociative disorder in DSM V? *Psychosomatics.* 2007; 48:369–378. [PubMed: 17878494]
11. Binzer M, Andersen PM, Kullgren G. Clinical characteristics of patients with motor disability due to conversion disorder: a prospective control group study. *J Neurol Neurosurg Psychiatry.* 1997; 63:83–88. [PubMed: 9221972]
12. Binzer M, Kullgren G. Motor conversion disorder. A prospective 2- to 5-year follow-up study. *Psychosomatics.* 1998; 39:519–527. [PubMed: 9819952]
13. Deuschl G, Koster B, Lucking CH, Scheidt C. Diagnostic and pathophysiological aspects of psychogenic tremors. *Mov Disord.* 1998; 13:294–302. [PubMed: 9539344]
14. Factor SA, Podskalny GD, Molho ES. Psychogenic movement disorders: frequency, clinical profile, and characteristics. *J Neurol Neurosurg Psychiatry.* 1995; 59:406–412. [PubMed: 7561921]
15. Jankovic J, Vuong KD, Thomas M. Psychogenic tremor: long-term outcome. *CNS Spectr.* 2006; 11:501–508. [PubMed: 16816790]
16. Kim YJ, Pakiam AS, Lang AE. Historical and clinical features of psychogenic tremor: a review of 70 cases. *Can J Neurol Sci.* 1999; 26:190–195. [PubMed: 10451741]
17. Lang AE. Psychogenic dystonia: a review of 18 cases. *Can J Neurol Sci.* 1995; 22:136–143. [PubMed: 7627915]
18. Lang AE, Koller WC, Fahn S. Psychogenic parkinsonism. *Arch Neurol.* 1995; 52:802–810. [PubMed: 7639632]
19. Williams DT, Ford B, Fahn S. Phenomenology and psychopathology related to psychogenic movement disorders. *Adv Neurol.* 1995; 65:231–257. [PubMed: 7872143]
20. Espay AJ, Goldenhar LM, Voon V, Schrag A, Burton N, Lang AE. Opinions and clinical practices related to diagnosing and managing patients with psychogenic movement disorders: An international survey of movement disorder society members. *Mov Disord.* 2009; 24:1366–1374. [PubMed: 19425106]

21. Peckham EL, Hallett M. Psychogenic movement disorders. *Neurol Clin.* 2009; 27:801–819. vii. [PubMed: 19555832]
22. Stone J, Smyth R, Carson A, Lewis S, Prescott R, Warlow C, Sharpe M. Systematic review of misdiagnosis of conversion symptoms and “hysteria”. *BMJ.* 2005; 331:989. [PubMed: 16223792]
23. Krem MM. Motor conversion disorders reviewed from a neuropsychiatric perspective. *J Clin Psychiatry.* 2004; 65:783–790. [PubMed: 15291655]
24. Reich SG. Psychogenic movement disorders. *Semin Neurol.* 2006; 26:289–296. [PubMed: 16791775]
25. Kleinman, A. *The illness narratives: suffering, healing, and the human condition: Basic Books.* 1989.
26. Stone J, Wojcik W, Durrance D, Carson A, Lewis S, MacKenzie L, Warlow CP, Sharpe M. What should we say to patients with symptoms unexplained by disease? The “number needed to offend”. *BMJ.* 2002; 325:1449–1450. [PubMed: 12493661]
27. Crimlisk HL, Bhatia K, Cope H, David A, Marsden CD, Ron MA. Slater revisited: 6 year follow up study of patients with medically unexplained motor symptoms. *Bmj.* 1998; 316:582–586. [PubMed: 9518908]
28. Hinson VK, Weinstein S, Bernard B, Leurgans SE, Goetz CG. Single-blind clinical trial of psychotherapy for treatment of psychogenic movement disorders. *Parkinsonism Relat Disord.* 2006; 12:177–180. [PubMed: 16364676]
29. Koller W, Lang A, Vetere-Overfield B, Findley L, Cleeves L, Factor S, Singer C, Weiner W. Psychogenic tremors. *Neurology.* 1989; 39:1094–1099. [PubMed: 2761704]
30. Monday K, Jankovic J. Psychogenic myoclonus. *Neurology.* 1993; 43:349–352. [PubMed: 8437701]
31. Morgan J, Mir P, Mahapatra R, Bhatia K, Sethi K. Psychogenic parkinsonism: Clinical features of a large case series. *Movement Disorders.* 2004; 19:S345–S346.
32. Ranawaya R, Riley D, Lang A. Psychogenic dyskinesias in patients with organic movement disorders. *Mov Disord.* 1990; 5:127–133. [PubMed: 2325674]
33. Voon V, Lang AE. Antidepressant treatment outcomes of psychogenic movement disorder. *J Clin Psychiatry.* 2005; 66:1529–1534. [PubMed: 16401153]
34. Kihlstrom JF. Dissociative disorders. *Annu Rev Clin Psychol.* 2005; 1:227–253. [PubMed: 17716088]
35. Kroenke K. Efficacy of treatment for somatoform disorders: a review of randomized controlled trials. *Psychosom Med.* 2007; 69:881–888. [PubMed: 18040099]
36. Ruddy R, House A. Psychosocial interventions for conversion disorder. *Cochrane Database Syst Rev.* 2005; CD005331. [PubMed: 16235402]
37. Speckens AE, van Hemert AM, Spinhoven P, Hawton KE, Bolk JH, Rooijmans HG. Cognitive behavioural therapy for medically unexplained physical symptoms: a randomised controlled trial. *BMJ.* 1995; 311:1328–1332. [PubMed: 7496281]
38. LaFrance WC Jr, Friedman JH. Cognitive behavioral therapy for psychogenic movement disorder. *Mov Disord.* 2009; 24:1856–1857. [PubMed: 19562779]
39. Rampello L, Raffaele R, Nicoletti G, Le Pira F, Malaguarnera M, Drago F. Hysterical neurosis of the conversion type: therapeutic activity of neuroleptics with different hyperprolactinemic potency. *Neuropsychobiology.* 1996; 33:186–188. [PubMed: 8840341]
40. Rosebush, P.; Mazurek, M. The treatment of conversion disorder. In: Hallett, M., editor. *Psychogenic movement disorders.* Lippincott Williams & Wilkins; Philadelphia: 2005. p. 289-301.
41. Stone J, Sharpe M, Rothwell PM, Warlow CP. The 12 year prognosis of unilateral functional weakness and sensory disturbance. *J Neurol Neurosurg Psychiatry.* 2003; 74:591–596. [PubMed: 12700300]
42. Thomas M, Vuong KD, Jankovic J. Long-term prognosis of patients with psychogenic movement disorders. *Parkinsonism Relat Disord.* 2006; 12:382–387. [PubMed: 16737838]
43. Ness D. Physical therapy management for conversion disorder: case series. *J Neurol Phys Ther.* 2007; 31:30–39. [PubMed: 17419887]

44. Van Nuenen BF, Wohlgemuth M, Wong Chung RE, Abdo WF, Bloem BR. Acupuncture for psychogenic movement disorders: treatment or diagnostic tool? *Mov Disord.* 2007; 22:1353–1355. [PubMed: 17486612]
45. Moene FC, Spinhoven P, Hoogduin KA, van Dyck R. A randomized controlled clinical trial of a hypnosis-based treatment for patients with conversion disorder, motor type. *Int J Clin Exp Hypn.* 2003; 51:29–50. [PubMed: 12825917]
46. Levy, J.; Thomas, M. *Psychogenic Movement Disorders.* 2006. Biofeedback therapy for psychogenic movement disorders; p. 343
47. Chastan N, Parain D, Verin E, Weber J, Faure MA, Marie JP. Psychogenic aphonia: spectacular recovery after motor cortex transcranial magnetic stimulation. *J Neurol Neurosurg Psychiatry.* 2009; 80:94. [PubMed: 19091717]
48. Dafotakis M, Schonfeldt-Lecuona C, Fink GR, Nowak DA. Psychogenic tremor. *Fortschr Neurol Psychiatr.* 2008; 76:647–654. [PubMed: 18988148]
49. Lim EC, Ong BK, Seet RC. Is there a place for placebo in management of psychogenic movement disorders? *Ann Acad Med Singapore.* 2007; 36:208–210. [PubMed: 17450268]
50. Shamy MC. The treatment of psychogenic movement disorders with suggestion is ethically justified. *Mov Disord.* 25:260–264. [PubMed: 20063430]

Table 1

Comparison of diagnostic criteria from the psychiatric and neurologic perspectives

DSM-IV-TR Diagnostic Criteria for “Conversion disorder, with motor symptom or deficit”	Neurologic Categories of Diagnostic Certainty for “Psychogenic movement disorder” (<i>adopted from Williams, 1995</i>) ¹⁹
<p>A. One or more symptoms or deficits affecting voluntary motor function that suggest a neurological condition.</p> <p>B. Psychological factors are judged to be associated with the symptom or deficit because the initiation or exacerbation of the symptom or deficit is preceded by conflicts or other stressors.</p> <p>C. The symptom or deficit is not intentionally produced or feigned.</p> <p>D. The symptom or deficit, after appropriate investigation, is not fully explained by a general medical condition, or by the direct effects of a substance, or as a culturally sanctioned behavior or experience.</p> <p>E. The symptom or deficit causes clinically significant distress or impairment in social, occupational, or other important areas of functioning or warrants medical evaluation.</p> <p>F. The symptom or deficit is not limited to pain or sexual dysfunction, does not occur exclusively during the course of Somatization Disorder, and is not better account for by another mental disorder.</p>	<p>A. Documented psychogenic movement disorder: persistently relieved by psychotherapy, suggestion, or placebo; movements abate when patient is unaware of being observed (although this may be present in malingering or factitious disorder)</p> <p>B. Clinically established psychogenic movement disorder: movements are inconsistent over time or incongruent with clinical presentation of an organic movement disorder; this may be supported by the presence of other definitely psychogenic signs (false weakness, false sensory findings, self-inflicted injuries), multiple somatizations, or an obvious psychogenic disturbance</p> <p>C. Probable psychogenic movement disorder: 1) patients in whom movements are inconsistent or incongruent with an organic movement disorder but in whom there are no other features to provide support for the psychogenic diagnosis; 2) patients in whom abnormal movements are consistent and congruent with an organic movement disorder, but in whom other definitely psychogenic physical signs are present (see above); 3) patients in whom the movements are consistent and congruent with an organic movement disorder, but in whom multiple somatizations are present</p> <p>D. Possible psychogenic movement disorder: suspected if an obvious psychiatric disturbance is present in a patient with abnormal movements that are consistent and congruent with an organic movement disorder; may have inappropriate affect, discrepancy between movement disorder and reported disability, or presence of secondary gain</p>