# Psychogenic Tremor: Long-Term Outcome


## Joseph Jankovic, MD; Kevin Dat Vuong, MA; Madhavi Thomas, MD

Parkinson's Disease Center and Movement Disorders Clinic,
Department of Neurology, Baylor College of Medicine, Houston, Texas


## Abstract


**Objective:** To characterize psychogenic tremor (PT) and provide data on prognosis and long-term outcome in a large group of patients with PT followed in a movement disorders clinic.

**Methods:** Patients seen in our movement disorders clinic between 1990 and 2003 with the diagnosis of psychogenic movement disorder (PMD), who consented to be interviewed, were administered a structured questionnaire designed to assess current motor and psychological function.

**Results:** PT is the most common PMD, accounting for 4.1% of all patients evaluated in our clinic. We were able to obtain clinical information on 228 of 517 (44.1%) patients with PMD, followed for a mean of 3.4 ± 2.8 years. Among the 127 patients diagnosed with PT, 92 (72.4%) were female, the mean age at initial evaluation was 43.7 ± 14.1 years, and the mean duration of symptoms was 4.6 ± 7.6 years. The following clinical features were considered to be characteristic of PT: abrupt onset (78.7%), distractibility (72.4%), variable amplitude and frequency (62.2%), intermittent occurrence (35.4%), inconsistent movement (29.9%), and variable direction (17.3%). In the majority of patients some precipitating event could be identified prior to the onset of tremor, including personal life stress (33.9%), physical trauma (23.6%), major illness (13.4%), surgery (9.4%), or reaction to medical treatment or procedure (8.7%). Psychiatric co-morbidities included depression in 50.7% and anxiety in 30.7%. Evidence of secondary gain was present in 32.3%, including maintenance of a disability status in 21.3%, pending compensation in 10.2%, and litigation in 9.4%. Improvement in tremor, reported on a global rating scale at last follow-up by 55.1%, was attributed chiefly to "effective treatment by physician" and "elimination of stressors".

**Conclusion:** This largest longitudinal study of patients with PT provides information on the clinical characteristics and natural history of the most common PMD. The accurate diagnosis of PT is based not only on exclusion of other causes, but is dependent on positive clinical criteria, the presence of which should avoid unnecessary investigation. The prognosis of PT may be improved with appropriate behavioral and pharmacological management.


## Introduction

Psychogenic movement disorders (PMD) are increasingly encountered in specialty clinics. The annual incidence of PMD in the Baylor College of Medicine Movement Disorders Clinic has been increasing at an exponential rate [Table 1 and Figure 1]. Psychogenic tremor (PT), the most common form of PMD, is defined clinically as tremor or shaking not fully explained by organic disease (negative or exclusionary criteria) and by clinical characteristics that make the movement incongruent with any organic tremor (positive criteria). [1,2] Several authors have addressed the clinical phenomenology of PMD [3-6], but except for brief reports or abstracts [7] there are no published longitudinal studies of the natural history of PT. The primary aim of this study is to provide data on prognosis and long-term outcome of PT in a large group of patients followed in a movement disorders clinic.

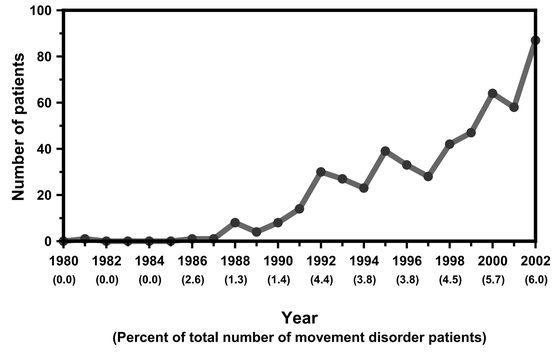
## Methods

Patients seen in the Baylor College of Medicine Movement Disorders Clinic between 1990 – 2003 with the diagnosis of PT were identified from the PMD database. These patients were initially contacted by phone and, if unable to reach, they were sent letters requesting an update of contact information. Telephone directory, internet search engines such as Yahoo.com, whitepages.com, and people search engines were used to locate the correct phone numbers. After obtaining an informed consent, a structured telephone interview was conducted with the patients who we were able to contact. Data from the telephone interview and chart review was used for this analysis. In addition, the Social Index and the McMaster Health Index were administered. Patients were also asked to provide a global impression and rate their overall condition compared to their initial, baseline, state as "better", "same", or "worse". The validity of the information entered in the database was verified by an independent reviewer (JJ) in 20% of randomly selected charts. For logistic modeling of long-term prognosis, this global rating was subsequently recoded as a dichotomous outcome variable (favorable = better; poor = same or worse).

*Table 1. Psychogenic Movement Disorders at Baylor College of Medicine*

| | N | % |
|---|---|---|
| New Patients (1988 – 2002) | 12625 | |
| Patients with Dx of PMD | 517 | 4.1 |
| PMD patients with follow-up | 228 | (44.1) |
| Duration of follow-up | 3.4 ± 2.8 yrs | |
| Tremor | 127 | 55.7 |
| Dystonia | 89 | 39.0 |
| Myoclonus | 30 | 13.2 |
| Tics | 15 | 6.6 |
| Gait disorder | 7 | 3.1 |
| Parkinsonism | 6 | 2.6 |

*Figure 1. Annual Incidence of PMD at Baylor College of Medicine [2]*




## Results

Among 12,625 patients evaluated in our movement disorders clinic between 1988 and 2002, 517 (4.1%) were diagnosed with PMD. Of all the PMD cases, we were able to obtain follow-up information either by examination in the clinic or by structured telephone interview in 228 (44.1%) patients, mean of 3.4 ± 2.8 years after the initial evaluation. The mean duration of symptoms among the 127 patients with PT, 92 (72.4%) of whom were female, was 4.6 ± 7.6 (median: 1.3; range: 0.01 – 40.7) years and the mean age at initial evaluation was 43.7 ± 14.1 (median: 42.4; range: 13.6 – 81.6) years. Table 2 summarizes the typical clinical features exhibited by our PT patients [Table 2].

Although many patients had a mixture of different movement disorders, PT was the predominant movement disorder in 55.7% of all PMD patients in whom follow-up data was available. Co-existent movement disorders included dystonia (39.0%), myoclonus (13.2%), tics (6.6%), gait disorder (3.1%), parkinsonism (2.6%), and non-specific dyskinesia (0.4%). Of the 127 PT patients, 82 (64.4%) were categorized as having clinically established PT, 23 (18.1%) probable, 15 (11.8%) documented, and 7 (5.5%) had possible PT.

In the majority of patients (76.4%) some precipitating event could be identified prior to the onset of tremor, including personal life stress (33.9%), physical trauma (23.6%), major illness (13.4%), surgery (9.4%), or reaction to medical treatment or proce-dure (8.7%). In addition, 56.7% of the patients had evidence of depression, 30.7% had anxiety, and 7.9% expressed suicidal ideation. Somatizations were present in 108 of 127 (85.0%) patients and included headache (49.6%), fatigue or exhaustion (48.8%), pain (48.0%), insomnia (40.9%), and memory loss (36.2%). Evidence of some secondary gain, present in 41 (32.3%), included the need to maintain a disability status in 21.3%, depen-dence on compensation in 10.2%, and pending litigation in 9.4%.

At last follow-up, 70 (55.1%) patients rated themselves improved on a global rating scale. The improvement was attributed to physician's prescribed treatment (48.7%), elimination of stressor(s) (19.5%), specific medication (14.6%), stress management (9.8%), biofeedback (7.3%), and psychotherapy (4.9%). Spearman correlation analysis identified several predictors of favorable or poor outcome [Table 3].

Based on the regression model, poorer outcome was predicted reliably by a factor of 1.22 ($CI_{95\%}$: 1.06, 1.41; $p < 0.007$) for every year of duration of PMD symptoms, 208.10 ($CI_{95\%}$: 7.38, 5870.81; $p < 0.002$) for those reporting dissatisfaction with the physician. Patients with poor or satisfactory social life perceptions were 118.51 ($CI_{95\%}$: 2.95, 4758.95; $p < 0.011$) and 13.15 ($CI_{95\%}$: 1.19, 145.78; $p < 0.036$) times more likely to report poorer outcomes than those with good social life perceptions, respectively. Positive social life perceptions correlated with stronger physical health ($p < 0.001$) and better McMaster Health Index ($p < 0.0001$). The regression model further suggests that while those complaining of exhaustion were generally at risk for poorer outcome by a factor of 0.12 ($CI_{95\%}$: 0.01, 1.31; $p = 0.081$), patients with any psychiatric co-morbidity may be at greater risk for poorer outcome by a factor of 20.26 ($CI_{95\%}$: 0.94, 435.54; $p = 0.055$) and those that have an identifiable precipitating event were 10.03 ($CI_{95\%}$: 0.84, 120.15; $p = 0.069$) times more likely to have poorer outcome.

*Table 2. Clinical Features of Psychogenic Tremor (N = 127)*

| Clinical Feature | N | % |
|---|---|---|
| Abrupt onset | 100 | 78.7 |
| Distractibility | 92 | 72.4 |
| Variable amplitude & frequency | 79 | 62.2 |
| Intermittent occurrence | 45 | 35.4 |
| Inconsistent movements | 38 | 29.9 |
| Variable direction | 22 | 17.3 |
| Irregular pattern | 15 | 11.8 |
| Suppressibility | 15 | 11.8 |
| Incongruous movements | 14 | 11.0 |
| Labelle indifference | 14 | 11.0 |
| Suggestibility | 13 | 10.2 |
| Sensory split | 12 | 9.4 |
| Entrainment | 10 | 7.9 |
| Active resistance to passive movement | 9 | 7.1 |
| Deliberate slowing | 9 | 7.1 |
| Non-patterned | 9 | 7.1 |
| Position induced | 8 | 6.3 |

## Discussion

This study provides longitudinal data on a large series of patients with PT, followed for over 3 years. One of the limitations of our study is that some patients refused to participate in the interview and, therefore, our sample may be biased toward milder cases. Sometimes referred to as "functional", "hysterical", "conversion reaction", or "medical unexplained" disorder, the term "psychogenic" is increasingly used to describe this group of patients without necessarily invoking a specific psychodynamic explanation or attributing the PMD to a particular somatoform, factitious, malingering or hypochondriacal disorder. While characteristic features, such as abrupt onset, distractibility, variable frequency, amplitude and direction, paroxysmal and intermittent occurrence, inconsistent movement, found in our patients, are useful clues [Table 2], the certainty of the final diagnosis is largely dependent on the experience of the examiner and the final outcome. Therefore, a long-term follow-up is critical in establishing the diagnosis of PMD.

Well designed, controlled therapeutic trials in PT are lacking and no consistently beneficial therapeutic approach in patients with PT has been demonstrated. In contrast to other series [3,5,6] in which less than a third of the patients improved, the more favorable prognosis reported in our series, 58.7% rated themselves as "better" on a global self-rating scale, may be due to a more aggressive treatment and longer, more than 3-year, follow-up. Of those who improved 41/70 (58.6%) listed the following reasons: effective treatment by the physician, elimination of stressor(s), specific medication, stress management, psychotherapy, or biofeedback. Dissatisfaction with the physician appears to be the strongest prognostic risk factor of poor long-term outcome for patients with PT. Therefore, gaining insight into underlying psychodynamic mechanisms of the PT is the first step toward effective treatment and favorable outcome.

*Table 3. Spearman Correlative Analysis of Psychogenic Tremor and Long-term Outcome*

| Long-term Outcome by Variable | Spearman's Rho | p |
|---|---|---|
| **Favorable outcome** | | |
| Effective treatment by the physician | 0.54 | 0.0001 |
| Presence of anxiety | 0.31 | 0.007 |
| Elimination of stressor(s) | 0.31 | 0.01 |
| Complying with instructions to follow-up with other physicians/therapists | 0.29 | 0.01 |
| Specific medication | 0.26 | 0.03 |
| **Poor outcome** | | |
| Dissatisfaction with the physician | 0.25 | 0.03 |
| Weaker physical health | 0.24 | 0.07 |
| Longer duration of PMD symptoms | 0.22 | 0.06 |
| History of smoking | 0.21 | 0.07 |

## Selected References


1. Williams DT, Ford B, Fahn S. Phenomenology and psychopathology related to psychogenic movement disorders. Adv Neurol 1995; 65:231-257.
2. Thomas M, Jankovic J. Psychogenic movement disorders: Diagnosis and management. CNS Drugs 2004 (in press).
3. Koller WC, Lang AE, Vetere-Overfield B et al. Psychogenic tremors. Neurology 1989; 39:1094-1099.
4. Factor SA, Podskalny GD, Molho ES. Psychogenic movement disorders: Frequency, clinical profile and characteristics. J Neurol Neurosurg and Psychiatry 1995;59: 409-412.
5. Deuschl G, Koster B, Lucking C, Scheidt C. Diagnostic and pathophysiological aspects of psychogenic tremors. Mov Disord 1998;13:294-302.
6. Kim YJ, Anthony S, Pakiam I, Lang AE. Historical and clinical features of psychogenic tremor: A review of 70 cases. Can J Neurol Sci 1999; 26 : 190-195.
7. Garza JA, Louis ED, Ford B. Long-term outcome of psychogenic movement disorders. Neurology 2001;56:A120.