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# Functional (Psychogenic) Movement Disorders – Clinical Presentations

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## Abstract

Functional or psychogenic movement disorders are common and disabling, and sometime difficult to diagnose. The history and physical exam can give positive features that will support the diagnosis, which should not be based solely on exclusion. Some clues in the history are sudden onset, intermittent time course, variability of manifestation over time, childhood trauma, history of other somatic symptom and secondary gain. Anxiety and depression are common, but not necessarily more than the general population. On examination, distraction and suggestibility may be present. There are specific signs that should be looked for with different types of movements. For example, with tremor, change in frequency over time and entrainment are common features. With myoclonus, the movements might be complex in type with long latencies to stimulus induced jerks. Gait disorders show good balance despite claims to the contrary. Functional dystonia still remains a challenging diagnosis in many circumstances, although fixed dystonia is one sign more likely to be functional.

### Keywords

Functional movement disorder; psychogenic movement disorder; conversion; tremor; myoclonus; dystonia; gait disorder

Functional (or psychogenic) movement disorders are those thought to be due to a psychological cause, although in fact the full pathophysiology is not really known [1–4]. Most patients, by DSM-5 terminology, are mainly categorized as Conversion Disorder, or Functional Neurological Symptom Disorder, under the general category of Somatic Symptom and Related Disorders. This is an involuntary disorder. Much less frequently, patients may be making the movements voluntarily to satisfy a psychological need; this is called factitious disorder. Rarely, patients may be making the movements voluntarily to achieve a specific goal, such as the acquisition of drugs. In this case, there is not a fundamental psychiatric problem, and the disorder is referred to as malingering. Patients

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with functional movement disorders are frequent in neurological practice, and there can be significant disability and suffering [5]. Making the diagnosis is often challenging. There is a tendency to think of all the patients as having voluntary control, and that the disorder is not "real", but a large majority have conversion disorders not under voluntary control. Neurologists, researchers and even psychiatrists have not had much interest in these patients, and, in fact, do not even like to take care of them. In a survey of neurologists of what types of patients they liked to treat, psychogenic (functional) neurological disorders ranked last of 20 diagnoses [6]. They are certainly difficult and often require more time than the average patient. Given their frequency, their utilization of medical resources, and their suffering, this disorder is clearly important.

Patients with functional movement disorders may also have an organic disorder. This is estimated to be about 10%. Together with the difficulty in making the diagnosis, the concern about malingering, and the patients' dislike of being given a psychiatric diagnosis, neurologists are often fearful of making the diagnosis. Patients latch onto the neurologist's uncertainty, and continue to seek other tests and other doctors to find the undiagnosed organic condition. Hence it is important to know how to make the diagnosis, when to continue to do further testing and when to come to a firm conclusion.

It is important to deal with the issue of involuntary versus voluntary up front. Can the neurologist or psychiatrist tell whether the disorder is conversion, on the one hand, or factitious or malingering, on the other hand? This is to ask, can doctors tell when patients are lying? They say the disorder is involuntary, but it really is voluntary. This is very difficult to do, and there are not even good laboratory tests that can reliably determine lying. Secret surveillance can reveal the answer, but this is generally not undertaken by doctors, only lawyers and detectives. Fortunately, factitious and malingering are uncommon, and, in practice, it is reasonable to consider all patients as having conversion until disproved.

There are many clues to the diagnosis, both in the history and in the physical examination. Almost none are 100% diagnostic, so it is important to appreciate the whole picture. Moreover, it is certainly best to make a positive diagnosis rather than a diagnosis of exclusion. Movement disorders are very diverse, and just because it has not been seen before does not make it functional.

## Taking the History (Table 1)

The time course of the disorder is particularly important. Many patients will specify an exact moment when the disorder began, and it might well be maximal and unchanged in severity since that moment. The moment can be described as apparently random, although could be during (or immediately after) a period of stress. Sometimes there will be a trigger. An example is a patient whose disorder began when a co-worker threw a paperclip at her, hitting her by surprise on the back of the neck. The disorder may come and go over periods of time. It began suddenly, lasted 2 months, then went away for 6 months, only to return again. These transitions can appear random or, confusingly, may appear to be due to drugs. "The doctor prescribed a certain drug, the disorder went away, but then the drug completely stopped working." This could well be a placebo effect.

The nature of the disorder might have changed significantly over time. It began as a tremor, but then the tremor went away and was replaced by jerking or a fixed posture. It began in the right arm, but then the arm got better and the disorder developed in the left arm and leg.

The disorder might come and go paroxysmally without explanation, or there might be certain circumstances where the disorder is better or worse. The jerks only occur when sitting or lying; they never occur when standing or walking ("which is good since they don't cause me to fall").

Concurrent stress, anxiety and depression need to be asked about, and when present, of course, can be important. However, such factors are often denied. With more probing questions, perhaps on subsequent visits, these factors might emerge later. The patient did not really like his job, the patient's husband was occasionally abusive, a child was into drugs. However, such information may never emerge, and that can be for two reasons, one, there is no such factor, or, two, the conversion is so "complete" that the psychological symptom is masked.

It is also important, however, to ask about early life trauma and stressors. Physical, sexual, and psychological trauma in childhood can have a lasting effect. Such an influence can not only be on psychological functioning and health, but directly on brain development. Early life increased steroids in the blood will reduce the development of the hippocampus and amygdala. There is even evidence now that trauma experienced by the patient's mother during the pregnancy can influence brain development. In one study of 64 patients compared with healthy volunteers and patients with focal hand dystonia, there were higher rates of childhood trauma, specifically greater emotional abuse and physical neglect, greater fear associated with traumatic events, and a greater number of traumatic episodes [7].

There may well be a history of prior medical disorders that could be functional. There may have been a large number of operations for unclear reasons or with negative findings or lack of effect. In some patients there is ongoing litigation, perhaps concerning a trauma that triggered the disorder, and this always raises concern about a possible malingering diagnosis.

The possibility of secondary gain should be asked about. Does the disorder produce more attention from a spouse? Does the disorder mean that the patient does not have to return to a job that he did not like? Is the amount of money received with disability insurance more, or more secure, than what the patient might get by working? Does the patient not even know how to get a job or what job he has sufficient expertise to do?

There could well be a complaint of fatigue with associated hypersomnolence or insomnia. Almost always there is a sense that the disability exceeds the apparent neurologic deficit.

## The Physical Examination (Table 2)

While taking the history, the patient's behavior needs to be carefully observed. Sometimes the involuntary movements will not be present at all during the history, but suddenly appear when doing the examination. Alternatively, the movements could be very active at the

beginning of the interview and then fade away completely. A patient might say that a paroxysmal movement occurs only once a week, but then will occur frequently during the examination. The spontaneous movements are important. Tremor might go away when taking off the shoes. Movements might stop with the distraction of doing a cognitive test.

It is important to get a sense of the patient's level of depression and anxiety. There might well be a mismatch between the history and examination in this regard. The patient's facial expression is important. He might cry when discussing a feature of the history or trying to do a specific task. There is a high concordance of depression and anxiety, more the latter. While these factors are likely important [8], it has not always been possible to show that they are more frequent than in control populations [7, 9]. This may point to a general problem about life in the modern world!

The patient's personality should be evaluated, although this has not necessarily proven to be valuable in differential diagnosis. The finding of "la belle indifference" is not that frequent. In one large study, no personality feature was statistically significantly different [7]. The only possible trend was for increased neuroticism, a tendency to experience negative emotional states.

In the physical examination itself, there might be general clues. The disorder going away with distraction is very useful. The disorder appearing or getting worse with attention to it is the opposite sign. Recently we reported, the "Whack-a-mole" sign: the involuntary movements of one body part are suppressed by holding it, and, in apparent reaction, the involuntary movements occur more in other limbs [10]. In some patients, although the movements are "involuntary" they can be produced or suppressed by the examiner's suggestion.

Tremor is one of the most common forms of functional movement disorder. It has been documented with instrumental monitoring that patients believe that their tremor is present more of the time than it actually is [11]. Specific clinical features include the presence in rest, posture and action, which is rare for any organic tremor. Tremor tends to be absent in the fingers. The frequency might vary from time to time, and, importantly, it might be entrainable. This is an valuable clinical test which is done by asking patients to tap at different frequencies with one body part while observing the tremor in another body part. The tremor might take up the frequency of the voluntary tapping, or, at least, change in frequency. There might also be some apparent difficulty for the patient to actually tap at the requested frequency [12]. Of course, there cannot be entrainment unless there is the voluntary tapping. A variation on this is the "ballistic movement test" where one limb, on command, makes a quick movement [13]. Functional tremor might well pause in this circumstance.

Myoclonus is also common and includes exaggerated startle-like responses. Many patients with functional jerks have movements that are actually too slow or too complex to be organic myoclonus, but this is the best categorization for them. Another feature, when there is stimulus sensitivity, is long and variable delay from the stimulus. When patients have

apparent stimulus sensitivity to somatosensory stimulation, one “trick”, in a series of taps, is to stop the tendon hammer just short of contact – often there might be a response anyway.

Psychogenic dystonia is also common, but this might be the most difficult to diagnose. The general rules, such as sudden onset and variability, can be applied. One type, often functional, is fixed dystonia [14]. Most organic dystonia, particularly at onset, is dynamic and perhaps only action induced. A particular problem is post-traumatic fixed dystonia, often seen together with complex regional pain syndrome (CRPS) [15]. The nature of this disorder is hotly debated, with most authorities believing that most of the patients are psychogenic [16].

Psychogenic parkinsonism occurs but is not that common. Thoughtful assessment of the manifestations will often show that the signs and symptoms are not typical [17, 18]. For example, there will not be the sequence effect with repetitive movements and increased tone will not have cogwheeling [19].

Functional gait disorders are a common presentation. Most of these disorders look strange, incongruent with known gait disorders, but this criterion is difficult to apply. One subjective assessment that is often useful is that the balance of the patients is much better than the claim. There are common patterns of psychogenic gait disorders, such as knee buckling, and this can be helpful [20, 21].

## Laboratory assessment

It is beyond the scope of this chapter, but there are a number of clinical neurophysiological studies that can extend the neurologic examination [22]. Such studies are most helpful with tremor and myoclonus. Imaging can also be useful such as a DAT scan in the evaluation of a patient with parkinsonism. The laboratory by providing more positive evidence can increase the certainty of the diagnosis.

## Note on etiology

A discussion of pathophysiology is also beyond the scope of this chapter, but it is crucial to note that it is vital to keep in mind that the etiology of functional movement disorders is multifactorial. The bio-psycho-social model, commonly now considered in psychiatry, is likely relevant. Thus, while doing the examination, these factors are helpful to consider in putting the whole case together. What is the biological nature of the patient, what psychological and social factors are relevant?

## Note on treatment

A few comments on treatment are worthwhile. The first issue upon making the diagnosis is telling the patient [23]. This is usually not easy. Patients are reluctant to accept the diagnosis, become angry, and go to the next doctor. Each patient must be approached individually. The terminology may be important and is controversial. Some authorities use the term psychogenic, since it is highly likely that psychological factors are relevant and that they must be approached for a successful treatment. Others prefer the term functional; and

even though that can be considered ambiguous, it conveys the idea of a disorder of brain function (not structure), and the term may be more acceptable to patients [24]. Moreover, functional is the term used in DSM-5. In any event, the method of describing what the condition is, something about its cause, and how it can be treated is likely more important than the term used, since patients will likely find out all the terms anyway. Showing the patients the physical signs used to make the diagnosis can be helpful [25].

Psychotherapy of some sort seems necessary for most patients [2], and cognitive behavioral therapy is currently popular. Physiotherapy and pharmacotherapy should also be considered [26].

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## Highlights

- The diagnosis of functional movement disorders should be based on positive features
- Clues to the diagnosis in the history include sudden onset and variability over time.
- General clues on the physical examination include distractibility and suggestibility.
- Each type of movement disorder has distinct features that help with the diagnosis.

**Table 1**

Historical features suggestive of a functional etiology

| |
|---|
| Onset at a precise moment in time |
| Waxing and waning course; even temporary complete remission |
| Change in the nature of the movement over time |
| Migration of the disorder around the body |
| Paroxysmal nature |
| Presence of the disorder only in certain circumstances |
| History of stress, anxiety or depression |
| History of prior possible functional disorders |
| Secondary gain |
| Fatigue |
| Disability exceeds the symptoms |

**Table 2**

Physical examination features suggestive of a functional etiology

| |
|---|
| Signs not present during the history and appear during the examination |
| Disappearance of the disorder with distraction |
| Appearance of the disorder with attention to it |
| Disappearance of the disorder when doing a task such as taking off the shoes |
| Suggestibility |
| Whack-a-mole sign; appearance or worsening of an involuntary movement in a distant body part when the ongoing involuntary movement is suppressed by holding it down |
| Tremor present at rest, posture and action |
| Tremor varying in frequency and entrainable |
| Myoclonus with appearance of exaggerated startle |
| Myoclonus that is actually slow or complex in nature |
| Stimulus sensitive myoclonus with long reaction time |
| Stimulus sensitive myoclonus occurring despite stopping the stimulus short of contact |
| Fixed dystonia |
| Gait displays good balance despite claims to the contrary |