

# 16 Functional (Psychogenic) Movement Disorders

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## ***Introduction***

Functional (psychogenic) disorders are common throughout neurological practice, and functional movement disorders (FMD) are a particularly common presentation. While they are often thought of as difficult to diagnose with confidence, but there are a number of clinical findings and targeted investigations that can aid diagnosis. Evidence regarding the best approach to treatment is still developing, but decent explanation of the diagnosis in a manner the patient can understand is clearly a rate limiting step in any move towards successful treatment. This is the job of the neurologist, and hence developing an understanding of this disorder is clearly important for all neurologists.

## ***Definitions***

One of the first issues to consider is the lack of consensus on what to call functional movement disorders. We have a number of words at our disposal, from “hysteria” (with all its unfortunate connotations regarding the source of these problems being the uterus), to functional, supratentorial, non-organic, and the latest contender: medically unexplained symptoms. We know already what patients think about these words, thanks to Stone et al (2002), and their study of “the number needed to offend”. Patients attending a neurology clinic were asked “if your doctor said you had X, would you think he was suggesting that you were (or had) Y. Words which patients felt meant that the doctor was suggesting that they were “putting it on”, “mad”, or that “symptoms were all in the mind” were judged offensive. Of the commonly used euphemisms for psychogenic illness, “functional” came out best of all, with “hysteria” and “medically unexplained symptoms” causing almost the same amount of “offence”. The word “psychogenic” was not specifically tested in this piece of research, although the word “psychosomatic” was, and scored badly.

Within the movement disorders medical community, “psychogenic movement disorders” is the most commonly used phrase. However, it is critical to realise that use of this term presupposes an aetiology which is unproven, and indeed may not be correct. For these reasons and in line with recent changes in DSM5 and proposed changes in ICD the word functional will be used in this chapter. For a discussion of the pros and cons of available terminology, see Edwards et al 2013.

## ***Diagnostic Criteria***

In broad terms, FMD are disorders of movement (usually involving extra movement, but also a reduction of movement, including weakness and fixed dystonic postures) where it is possible to demonstrate the possibility of normal function, even though the patient appears unable to access this. For example, in functional weakness, the patient may not be able to extend at the hip, but when flexing at the contralateral hip, the hip extensors turn on (Hoover's sign). Here the patient demonstrates abnormal function, but examination shows that normal function is possible. In functional tremor, the patient cannot stop their arm from shaking when asked to, but when doing a distraction manoeuvre (such as externally paced tapping) the arm briefly stops trembling. Again, normal function is shown to be possible in a patient who is unable access this themselves. More formal diagnostic criteria, which indicate the degree of certainty in the diagnosis, have been suggested by Fahn and Williams (1988), and although they too are somewhat problematic to apply, do seem to have reasonable specificity and sensitivity.

The Fahn Williams criteria divide PMD into four categories:

- **Documented\***: persistent relief by psychotherapy, suggestion or placebo has been demonstrated, which may be helped by physiotherapy, or the patient was seen without the movement disorder when believing him- or herself unobserved

- **Clinically established\***: the movement disorder is incongruent with a classical movement disorder or there are inconsistencies in the examination, plus at least one of the following three: other psychogenic signs, multiple somatisations, or an obvious psychiatric disturbance
- **Probable**: the movement disorder is incongruent or inconsistent with typical movement disorder, or there are psychogenic signs or multiple somatisations
- **Possible**: evidence of an emotional disturbance.

*\*these two categories have been combined into “clinically definite”.*

In practice it is fairly unusual to see a patient with a “documented” PMD – most patients will fall into the “clinically established” or “probable” category. The category of “possible” PMD is really too vague to be of much clinical use. As an aid to apply these criteria, the following examples are given:

*Features that may be incongruent with a classical movement disorder include:* paroxysmal symptoms, abrupt onset, distractibility or suggestibility, astasia-abasia gait, entrainment of tremor to the frequency of repetitive movements, fixed dystonic postures, atypical stimulus sensitivity.

*Other psychogenic signs include:* “give-way” weakness, “false” weakness e.g. positive Hoover’s sign, non-organic patterns of sensory loss, distractibility, non-epileptic attacks.

*Somatizations* refer to multiple somatic symptoms (e.g. pain, gastrointestinal symptoms, sexual symptoms) where symptoms cannot be explained by a known medical condition, or where the complaints are in excess of those that would be expected from the history, physical examination and investigations.

More recently (Gupta and Lang, 2009), it has been suggested that these criteria should be changed, first to remove the possible category, second to remove references to psychological features (as these are common in organic movement disorders), and third to include a category of “laboratory supported” where specific tests (such as tremor studies, assessment of pre-movement potentials – see below) provide positive diagnostic support.

### ***Psychiatric Diagnoses in FMD***

Historically, two broad psychiatric diagnoses were used (rather loosely in some cases) to categorise the phenomenon of functional symptoms, including FMD: conversion disorder and somatization disorder. Conversion disorder was defined by the presence of neurological-disease incongruent neurological symptoms affecting movement or sensation (not pain) and the ability to devise a psychological formulation for how a stressor triggered the onset of symptoms. Somatization disorder was characterised by a long history (often extending back into late childhood or early teenage years) of multiple physical complaints affecting many different systems. Both these disorders are thought of as “unconscious” thus differentiating them from factitious disorder (deliberate production of symptoms for psychological gain) and malingering (where symptoms are deliberately produced for external/material gain). These diagnostic frameworks have been updated in DSM 5, where conversion disorder has been renamed “Functional Neurological Symptom Disorder/Conversion Disorder”. The biggest change is that the requirement for a psychological stressor has been removed, and the emphasis has been firmly placed on the presence of positive symptoms and signs of a functional disorder. In addition the requirement for exclusion of malingering has been removed (as why should it only apply to these patients and not people presenting with other symptoms?). It has been mooted that in the next iteration of the ICD, functional neurological disorder will appear for the first time in the neurology section as well as where it has previously been in the psychiatry section. A separate diagnostic category of somatic symptom disorder has been generated where somatic symptoms (including pain and fatigue) which may or may not be due to a functional cause incur undue distress to the patient. The division between “conversion” symptoms (weakness, FMD, non-epileptic attacks, sensory loss) and somatic symptoms (pain, fatigue, cognitive difficulties) is not necessarily helpful – these symptoms all commonly co-occur.

## ***How Common are FMD?***

Functional illness in general is very common, accounting for as much as 20% of all consultations in primary and secondary care. FMD form a small proportion of the burden of functional medical problems in general, and in general movement disorder clinics FMD account for about 2-5% of consultations. In tertiary movement disorder clinics such patients are much more common, accounting for 20-30% of consultations.

In terms of presentation, the commonest FMDs seen are functional tremor and functional dystonia, between them accounting for about 70% of all patients. Functional myoclonus and gait disturbance account for most of the remaining cases. Functional parkinsonism is rare, although Parkinson's disease is often considered as a possible differential diagnosis in patients with unexplained tremor. Functional tics and chorea are also very rare.

## ***An Approach to Patients with FMD***

So how should one approach the patient with a possible functional movement disorder? Maybe one should exhaustively investigate such patients for any possible organic illness, however remote the likelihood. The history of movement disorders is littered with organic conditions previously labelled as psychogenic. Patients with cervical dystonia were said to be manifesting their psychological stress by "turning away" from their problems. Patients with writer's cramp were said to be manifesting inner sexual conflict by being unable to hold phallic shaped object (a pen!). This initially investigative approach may avoid the need to reinvestigate the patient at a later stage and could be thought of as reassuring to the patient (and the physician). However, this "machine gun" approach to investigation can be directly harmful to a patient with functional movement disorder. Exhaustive and often invasive testing delays diagnosis, carries risks, and tends to reinforce the idea in the mind of the patient that the doctor has no real idea of what is wrong. Testing of this sort not infrequently also throws up spurious abnormal results which may lead to erroneous diagnoses.

It is clear that avoidance of making a diagnosis can be detrimental to patient outcome, leading to chronic symptoms and possible iatrogenic harm. All our medical diagnoses (by and large) are based on a judgement of probability, and it is no different for patients with functional symptoms. The diagnosis should also be based on a rational approach primarily based on a thorough knowledge and familiarity with the range of organic movement disorders and their presentation AND learning specific clinical skills which can positively identify clinical signs that do not happen outside the setting of functional neurological symptoms. Targeted and limited investigations that have value in distinguishing functional from other (relevant) causes of movement disorders may sometimes need to be performed, and in many cases this can lead to sufficient diagnostic certainty.

It is very important to recognize that a common risk factor for the development of functional neurological disorder is the presence of other (neurological or non-neurological) medical problems. Upwards of 15% of people with "organic" neurological problems have additional functional symptoms. It is therefore important not to overlook the contribution of other illness to the overall burden of symptoms. Likewise, it is dangerous to assume that new symptom in people with FND are always due to the functional disorder. Open minded clinical assessment is very important in this patient group.

## **Elliot Slater and Long-Term Follow-up of Hysteria**

In 1965 Elliot Slater published two influential papers regarding 10 years follow-up on patients diagnosed with "hysteria". Fifty percent of patients were said to have developed clear cut psychiatric or organic neurological conditions during follow-up. This study encouraged the reluctance of many clinicians to diagnose psychogenic illness, for fear of missing an underlying organic diagnosis.

However, Slater relied on telephone interview with patients as a method of discovering if a new organic diagnosis had been made. The issue was revisited in 1998 in a six year follow up of 73 patients diagnosed with psychogenic neurological symptoms, with face-to-face interview and analysis of GP and hospital records conducted to determine if an organic diagnosis had been made that explained the original symptoms. Only 3 cases were found to have organic diagnoses that explained

their original symptoms at follow up. This has been further proven in meta-analysis and a very large follow-up study as part of a Scottish epidemiology study of functional neurological illness. The message from this and other follow-up studies of patients diagnosed in the modern era with functional neurological problems is that mis-diagnosis is not as common as may be feared, and in the right circumstances the diagnosis of FMD can be made confidently.

## ***Medical History***

The history of both current complaint and past medical history may be revealing. While most organic movement disorders (with the exception of some secondary movement disorders, e.g. due to vascular lesions, and rare disorders such as rapid-onset dystonia-parkinsonism) have an insidious onset with gradual progression to maximum severity, FMD characteristically have an abrupt onset with rapid progression to maximum severity. Previous episodes of a movement disorder in the same or another limb may have occurred with complete or partial remissions, which occur rarely in organic movement disorders (although partial remissions can be seen in cervical dystonia), and paroxysmal exacerbations are common. In addition, organic movement disorders are usually consistent over time with little change in the phenotype (although they may progress). The phenotype of the FMD, on the other hand, may have been inconsistent over time, with a complete change in the nature of the abnormal movement. There may also have been other functional symptoms, putting the current presentation in the context of a wider functional illness. This may not be the first episode of FMD, and previous unexplained medical symptoms are frequently unearthed when a careful history is taken. These may include other “functional” syndromes, such as fibromyalgia, atypical chest pain, or irritable bowel syndromes (Wessely et al, 1999) or other medically unexplained symptoms, which may have resulted in a number of investigations and treatments, including operations (Cohen et al, 1953). For example, inflammation may have been absent following an appendicectomy for severe abdominal pain, or an episode of unexplained prolonged fatigue may have occurred previously. Other pertinent information in the illness history includes the frequency of general practice attendances (the average number of annual GP attendance per year in the UK is 4 for men and 5 for women) and the frequency of requests for referral for a specialist opinion, which can be an indicator for the diagnosis.

The history may also be informative in other respects. There may have been an obvious stressors in the past or more recently around symptom onset. However, this type of information should be treated with caution as psychological conflicts are common in the population, and the coincidence between past psychological trauma and the presentation may be spurious.

More recently, emphasis has been placed on the physical events that occur at onset of functional neurological symptoms, for example illness or injury. These may provide an important trigger in the absence of any psychological trauma, for the onset of symptoms. The importance of childhood or recent emotional trauma and personality disorders in the genesis of FMD has been further questioned by a recent study (Kranick et al, 2011) where a large cohort of patients with FMD did not have significantly more childhood or recent traumatic events or personality disorder than a control population of organic dystonia patients. Of course physical events have a psychological consequence, but the available data paint a complex picture of triggering events which should be taken into account in diagnostic explanation.

## ***Examination***

The physical examination concentrates on three aspects:

1) *Absence of “hard” neurological signs.* A diagnosis of a PMD should not be made in the presence of hard neurological signs. However, as mentioned above, functional overlay may exist co-morbidly with an underlying organic illness. In addition, pseudo-neurological signs are not uncommon, including pseudo-clonus, reduced reflexes in a rigidly held limb, or pseudo-Babinski (often as a delayed, prolonged plantar extension), which can mislead the examiner. Care is required in the interpretation of such findings, but recognizing the possibility of a pseudo-neurological sign will facilitate the recognition of a functional disorder.

2) *The presence of other functional signs*, such as functional weakness (positive Hoover’s sign), non-anatomical sensory loss or excessive startle response. In movement disorders, extreme slowness may be seen which is, unlike bradykinesia, not fatiguing and without a decrement in the amplitude of the movement. There may be consistent past-pointing in an otherwise normal (sometimes excessively slow) finger nose test, and other tasks may simply not be completed, e.g. stopping two inches early in the finger-nose-test. The most useful sign is probably Hoover’s sign, which has been shown to have acceptable sensitivity and specificity (Ziv et al, 1998). This is performed by assessing the power of extension of a leg that is otherwise paralysed when the other, “good” leg is flexed. Caveats apply to all these signs. For example, give-way weakness may be seen if the movement causes pain, and sensory disturbance not following a nerve or radicular distribution is common in Parkinson’s disease and often predates the onset of motor symptoms. In addition, classical signs such as midline splitting, splitting of vibration sense, and la belle indifference have poor sensitivity and specificity and are therefore of limited value in assessing these patients (Stone et al, 2002).

3) *Signs of functional movement disorders*. There are a number of specific, positive features, which suggest a diagnosis of a functional movement disorder. These include fluctuations during the examination, particularly an increase with attention and suggestion and decrease with distraction; the ability to trigger movements with unusual or non-physiological interventions (e.g. trigger points on the body); incongruence with the presentation of a recognized organic movement disorders; discrepancy between objective signs and disability (e.g. a patient with mild unilateral weakness who is bed or wheelchair bound); and discrepancy of symptoms and investigations excluding a pathophysiological correlate e.g. normal sensory evoked potentials in a patient reporting total loss of sensation in a limb. These clinical signs rest on the need for attention for clinical signs to manifest: if attention is taken away and movement is accessed in a more implicit fashion, then resolution of abnormal movement can be seen. Patients may also present with signs that are inconsistent with the known constraints of anatomy and physiology, but may be consistent with lay beliefs about the functioning of the nervous system. One example is tubular visual field defects where a field defect is the same diameter when examined close to the patient or far away, defying the laws of optics.

**Table 3 Features in history and examination that can be helpful in the diagnosis of PMD**

<b>History</b>
Sudden onset of symptoms with rapid progression
Waxing and waning of symptoms with sudden remissions and reappearances of symptoms, often in different body parts
Paroxysmal exacerbations of symptoms
Multiple additional neurological and systemic symptoms
<b>Examination</b>
Resolution or diminution of symptoms with distraction
Exacerbation of symptoms when the affected body part is examined
“Give-way” weakness of the limbs
Functional patterns of sensory disturbance
Functional patterns of speech disturbance
Excessive response to startle
Disability out of proportion to examination findings
Functional gait disturbance (see below)

### ***Gait Disturbance in FMD***

Gait disturbance is a common accompaniment to FMD. It is often the single most useful clinical feature that discriminates between functional and organic movement disorders, and a thorough assessment of gait is essential. A variety of gait problems are seen, alone or in combination, including:

- *Astasia/Abasia* (also known as “tightrope walker gait” or “walking on ice gait”): Here the patient dramatically veers from side to side when walking, often waving the arms at the same

time. Patients seem all the time to be about to lose their balance, but tend not to. In fact, such gait demonstrates very good balance, as the patient is able to shift their centre of gravity quickly from side to side without falling

- *Narrow base*: In contrast to many other patients with poor balance, patients with psychogenic gait disturbance tend to walk with a narrow, rather than a broad base
- *Hesitation*
- *Dramatic response to Romberg's test and tests of postural stability*
- *Excessive slowness*

### ***Specific Clinical Aspects of FMD***

As well as the features mentioned above, there are aspects of the clinical examination that can be helpful in the diagnosis of FMD which depend on the movement disorder that is present:

#### **Functional Tremor**

- Present at rest, posture and on action
- Variable amplitude and frequency
- Entrain or significantly alters with movement of another limb. It is very important to get patients to do externally paced not self-paced movements (for example tapping in time with your hand).
- Worsens when limb is examined.

#### **Functional Dystonia**

- Often a precipitating factor e.g. minor trauma
- Unusual distribution of dystonia given the age at onset (e.g. generalized dystonia in an adult)
- Fixed postures rather than the typical mobile postures of organic dystonia
- Severe pain
- Absence of task/position specificity
- Absence of sensory geste
- Poor response to botulinum toxin.

#### **Functional Myoclonus**

- Dramatic stimulus-sensitivity of jerks (although stimulus-sensitivity can be seen in organic myoclonus)
- Variability in distribution of jerks from day to day.

#### **Functional Parkinsonism**

- Tremor is often a prominent feature, and has features typical of other psychogenic tremors
- "Rigidity" has the characteristics of voluntary stiffness, and the resistance often changes depending on how fast the limb is moved
- Although movements may be slow, the progressive fatiguing of movement seen with organic akinesia is usually absent. Movements are often extremely slow when the patient is being examined, but less so when they are distracted
- Symptoms are usually symmetrical
- Gait is often bizarre, with slowness and unsteadiness combined. Reduction in arm swing may occur, but usually because the arms are held tightly at the sides
- Testing of postural stability often leads to dramatic loss of balance and falls

## *Useful Bedside Tests in FMD*

There are some bedside tests that can be helpful in the assessment of patients with a suspected PMD. The usefulness of these tests depends very much on the type of movement disorder. They are most useful for patients with tremors and jerks, and least helpful for patients with fixed abnormal postures.

**Distractibility/Entrainment:** Ask the patient to make a rhythmic movement with an unaffected limb at a different frequency to the tremor. In psychogenic tremor, this tends to cause the tremor to change. It may stop, become intermittent, or adapt (entrain) to the new frequency. Sometimes patients are unable to perform the tapping task with their apparently “good” hand. This is also a clinical sign.

**Loading:** The majority of organic tremors improve with loading of the affected limb. If patients with psychogenic tremor of the arm are given weights to hold, their tremor usually worsens.

**Restraint:** In patients with functional tremor or myoclonus, if the shaking limb is deliberately restrained by the examiner, the tremor tends to worsen and spread to other parts of the body.

## *Specific Investigations for FMD*

There are some specific tests that can be helpful in the positive diagnosis of FMD. As with the bedside tests listed above, these tests are most helpful in patients with tremors or jerks, and least helpful in patients with fixed abnormal postures. Some of the electrophysiological tests described below are time consuming and/or need specific neurophysiological expertise.

**Electromyography:** Organic myoclonic jerks are typically caused by very brief (<50ms) bursts of muscle activity (although brainstem myoclonus can be of longer duration). An EMG burst pattern of less than about 50-75ms supports the diagnosis of organic myoclonus.

In patients with tremor, electromyography can be used to assess tremor frequency, and, more accurately than at the bedside, to assess the impact on tremor frequency of tapping at a different frequency with another limb – these tests have now been developed into proposed laboratory criteria for functional/psychogenic tremor – see Schwingenshuch et al 2013).

**Pre-movement EEG potentials:** Prior to normal voluntary movement, a slow rising wave is seen in the EEG called the Bereitschaftspotential (BP). This can be looked for by performing an EEG during EMG recording of a number of jerks. The EEG trace shortly before each jerk is then selected and averaged, and this may reveal the presence of a BP in functional myoclonus. If jerks are too frequent (>1 every 4-5 seconds), then it will be difficult to record a BP.

**“Back-averaging” of jerks:** In cortical myoclonus, jerks will be preceded by a cortical discharge, which can be recorded on EEG. A single discharge will be impossible to pick out amongst the background EEG activity. Therefore EEG is performed during EMG recording of a number of jerks. The EEG trace shortly before each jerk is then selected and averaged, and this will have the effect of revealing any underlying cortical discharge. The finding of such a cortical discharge is clearly incompatible with functional myoclonus. However, the absence of such a discharge does not mean that the jerks are due to functional myoclonus, as organic subcortical/brainstem myoclonus is not associated with cortical discharges. Note that it will be impossible to perform back-averaging if the jerks are very infrequent.

**Dopamine transporter imaging (DAT):** In particular patients with suspected functional tremor and/or parkinsonism, DAT imaging can be helpful. A normal DAT scan effectively rules out the diagnosis of Parkinson’s disease and many atypical parkinsonian conditions such as progressive supranuclear palsy or multiple system atrophy. However, such scans are normal in many organic conditions causing tremor (e.g. essential tremor, dystonic tremor) and parkinsonism (e.g. dopa-responsive dystonia, drug-induced parkinsonism).

## *Pathophysiology*

As detailed above, historical views that linked (childhood) trauma to the later development of physical symptoms have been challenged both for their lack of specificity and sensitivity and for the enormous “explanatory gap” that they leave. Functional symptoms must be implemented in the brain somehow –

it is not sufficient to say that they are “psychological”. Of course a particular person’s symptoms may be best understood on a psychological level, but there are other levels of explanation which are often relevant too.

This aspect of functional neurological symptoms is still in its infancy, but for recent reviews of this topic see Edwards et al, 2013, Brown et al 2017.

## ***Management***

The management of patients with FMD requires no less attention than symptoms due to other neurological illness. It is however important to recognise the potential dangers of unnecessary investigations and treatments once a diagnosis of FMD has been made. For patients with prolonged illness and non-acceptance of the diagnosis this may be difficult to achieve, and close cooperation between GPs, neurologists and psychiatrists may be required. On the other hand, it is important to bear in mind that unlike many neurological conditions this is a potentially treatable disorder and can be successfully managed. This pre-supposes however, that a patient has been given a reasonable explanation for their symptoms and has been offered reasonable treatment. It is **not** abnormal illness behaviour for a patient to continue to seek answers to their illness if it has never been explained to them what is wrong and they have never been offered appropriate treatment. The issue of overlay and emergence of new non-functional illness in patients with FMD means that open minded clinical assessment is very important if new symptoms develop.

### **Explaining the diagnosis**

It is not sufficient for the clinician to reach the diagnosis of a functional movement disorder and then to fail to communicate this to the patient. Particularly in the days before letters were routinely copied to patients, it was not uncommon to find that patients with FMD (and other functional neurological problems) were fobbed off with a vague explanation for their symptoms and the rather frightening news that despite the symptoms all the tests were normal (leaving the patient with the impression that something must have been missed as how can the tests be normal if the symptoms are still there). There would then be a rather caustic letter to the GP with an undertone of a clear clinical impression of a lack of moral fibre on the part of the patient.

There are many factors that make clinicians unwilling to discuss the diagnosis. Patients with functional illness may have a rather confrontational approach to the consultation, and appear to have fixed ideas regarding the organicity of their symptoms, and seem unlikely to accept a different explanation. Patients often have a very complex and established role based on their illness, often involving family members and social services, and so the situation just seems too difficult to unravel. The clinician may feel that no treatment is available, and no hope of recovery, therefore there is no reason to give the diagnosis. Consultations with those with FMD are often long, and the clinician may feel that there is simply no time left to embark on a long discussion regarding functional illness. The clinician may feel uncertain of the diagnosis.

However, it is important to note that the reaction of some patients to the diagnosis may have a lot to do with how they have been treated by other medical practitioners who may have dismissed their symptoms or told them the problem was “all in the mind”. However, some FMD are treatable, and in those who fail to improve or who do not accept they have a FMD, a clear diagnosis greatly assists the process of “containment”.

The best approach is to make a positive diagnosis of a functional disorder, and communicate this clearly to the patient. This has the advantage of providing a clear answer to the question both the patient and the referring doctor have i.e. “what is wrong with me/ my patient?” This is better than a perhaps more typical explanation that “all the tests are normal, so it’s nothing to worry about”. This latter explanation fails to appreciate that the symptoms are very real, and the fact that the doctor “can’t find anything wrong”, is a source of stress, not reassurance. It can be helpful to show people the clinical signs that led to making the diagnosis (for example distractibility of tremor, Hoover’s sign), as an example of how the diagnosis has been made in a positive manner.

There are now a number of papers giving advice about diagnostic explanation. For example (Stone, 2016; Carson et al, 2016). The basic principle is just to “be normal”. Remember that we rarely explain neurological illness on the basis of **why** it happened, because this is often uncertain and probably different between different people. Instead we concentrate on **how** the brain has gone wrong and we design most treatments that way too. So, tell people what they have: “you have a functional tremor”, tell them (and show them) how you made the diagnosis: “did you see how your tremor stopped when your attention was distracted”, tell them what that means: “that means the basic wiring of the nervous system is intact, but there is a problem with the way your brain is controlling movement”, tell them you believe them: “I believe your symptoms, I don’t think you are imagining them or putting them on”, give them confidence in the diagnosis: “this is a common problem and I have seen it many times before”, and provide reasonable expectations about treatment: “There is a real possibility that things can improve, but it is not likely to be quick or easy”. It may be appropriate to discuss risk factors, including psychological factors, but do so in a way which respects the fact that they are generally risk factors that confer vulnerability, not the direct cause.

## Treatment

Unfortunately treatment services are poorly organised and it can often be difficult to get physical and mental health services to engage with people with FMD. Depending on the type of FMD, associated disability, psychiatric co-morbidity, and patient expectations, some helpful management strategies include:

- Addressing the symptoms themselves - physiotherapy, hydrotherapy, occupational therapy, speech therapy. There is now considerable evidence for the use of *specific* physiotherapy in treatment of FMD, in selected patients. See published guidelines: Nielsen et al 2014 and Nielsen et al 2017 for a randomised feasibility study.
- Maintaining preserved function to avoid further functional loss e.g. by physiotherapy
- Addressing the distress caused by the symptoms, e.g. cognitive-behavioural therapy, biofeedback, TENS or pain management techniques (if pain is present)
- “De-medicalisation” – although it is appropriate to address the symptoms pragmatically, efforts should be made to try to reduce and/or withdraw medications, and to avoid other hospital appointments.
- Antidepressants should be used when symptoms are related to depression or anxiety, or depression or anxiety developed as a consequence; in some cases, anti-depressant medication may be useful in the treatment of symptoms not obviously related to an anxiety or affective disorder. If antidepressants are to be used, it is better to use one with minimal somatic side effects, and thus an SSRI is often preferred
- Psychological therapy may be part of the treatment approach, often using Cognitive-Behavioural Therapy (CBT). Cognitive therapy addresses how an individual’s thoughts, beliefs and expectations influence the occurrence and experience of unexplained symptoms. Behaviour therapy is used to identify behaviours that may be contributing to the maintenance of symptoms. CBT often involves training patients in psychological techniques that help them to change the way they think about and react to illness and physical symptoms. Psychotherapy is often used to explore and address feelings and conflicts that are distressing.
- Inpatient treatment can be helpful in carefully selected patients. Such treatment usually involves a multi-disciplinary approach with graded physiotherapy and occupational therapy combined with psychological therapy.
- It is essential that all those involved in treatment communicate and work as a team providing a consistent approach to the symptoms.

## ***Prognosis***

There are few follow-up studies of FMD. The overall prognosis is often considered poor with persistence of the FMD over many years and a high rate of associated psychopathology (Lang, 1995; Feinstein et al, 2001). However, centres that can provide intensive treatment programs have reported considerably better outcome (Fahn and Williams, 1995). The prognosis of FMD is better in cases where there are few and mild symptoms with an acute onset, particularly if symptoms are preceded by traumatic or stressful events and if the duration of symptoms is short. The prognosis also appears to be better in younger patients with shorter duration of symptoms than in older patients with more chronic symptoms (Feinstein et al, 2001). At the opposite end of the spectrum, there are patients who continue to experience symptoms over time and often develop new symptoms related to other parts of their body. Some of these patients represent a considerable therapeutic challenge and may be helped by specialised centres with multidisciplinary input from psychiatrists, neurologists and therapists that are experienced in the management of these disorders. Such patients are also very vulnerable to unscrupulous medical and pseudo-medical practitioners who may offer tests and expensive "treatment" of no benefit.

## ***Conclusions***

FMD are common disorders which form part of the large burden of functional neurological problems. They present particular difficulties due to the lack of diagnostic tests for many organic movement disorders, and the diverse nature of organic movement disorders. However, armed with an understanding of the typical range of presentations of organic movement disorders, and common features of FMD on history, examination and investigation, clinicians should be able to make a positive diagnosis of FMD. Evidence to support particular treatment approaches is still lacking, but a pragmatic approach to symptom control which does not over-emphasise the contribution of emotional trauma, combined with a clear positive diagnosis and regular follow-up is a rational strategy.

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