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Physical precipitating factors in functional movement disorders

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ABSTRACT

Background: A traditional explanation for functional (psychogenic) neurological symptoms, including functional movement disorders (FMD), is that psychological stressors lead to unconsciously produced physical symptoms. However, psychological stressors can be identified in only a proportion of patients. Patients commonly reported a physical event at onset of functional symptoms. In this study, we aim to systematically describe physical events and surrounding circumstances which occur at the onset of FMD and discuss their potential role in generation of functional symptoms.
Methods: We recruited 50 consecutive patients from a specialized functional movement disorders clinic. Semi-structured interviews provided a retrospective account of the circumstances in the 3 months prior to onset of the FMD. Questionnaires to assess mood disturbance and life events were also completed.
Results: Eleven males and 39 females were recruited. Forty (80%) patients reported a physical event shortly preceding the onset of the FMD. The FMD occurred after an injury in 11 patients and after an infection in 9. Neurological disorders (n = 8), pain (n = 4), drug reactions (n = 3), surgery (n = 3) and vasovagal syncope (n = 2) also preceded the onset of the functional motor symptom. 38% of patients fulfilled criteria for a panic attack in association with the physical event.
Conclusions: In our cohort, physical events precede the onset of functional symptoms in most patients with FMD. Although historically neglected in favour of pure psychological explanation, they may play an important role in symptoms development by providing initial sensory data, which along with psychological factors such as panic, might drive subsequent FMD.

1. Introduction

Functional neurological symptoms, including functional (psychogenic) movement disorders (FMD), are typically explained as resulting from psychological stressors which lead to unconsciously produced physical symptoms. In keeping with this formulation, several authors have found functional symptoms to be associated with early childhood trauma [1–3] or have highlighted the aetiological importance of emotional stress or recent life events [4–6]. Indeed, it was not possible to make a diagnosis of conversion disorder according to DSM IV criteria, without the presence of a psychological stressor that precedes the onset of physical symptoms.

However, many patients with functional neurological symptoms do not report psychological stressors prior to the onset of symptoms. For example, a recent study found few differences in self-reported recent life events or past experience of sexual or physical abuse in patients with FMD, compared to healthy controls and patients with organic movement disorders [7].

In contrast, many patients with FMD report physical events such as injury or illness at the time of onset of their symptoms. The most illustrative example is fixed dystonia in which abnormal postures typically appear after a minor injury of the affected limb [8]. Although the possibility that physical injury per se might be sufficient to precipitate a functional symptom has been mentioned [9], previous studies have generally proposed that an underlying psychological trauma or stressor is more likely to be the most important triggering factor.

In this study, we aim for the first time to systematically describe physical events (not just but including physical injuries) and surrounding

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circumstances which occurred at the onset of functional symptoms in a cohort of 50 consecutive patients with FMD as well as the surrounding circumstances. We discuss the potential role of these events in symptoms development within modern neurobiological models.

2. Methods

2.1. Participants

We recruited 50 new consecutive patients referred to the Functional Movement Disorders Specialist Clinic at the National Hospital for Neurology and Neurosurgery, London, from January 2011 until December 2011. Patients fulfilled criteria for clinically established or documented FMD [10]. We included all those with FMD, even if it was associated with other functional neurological symptoms (e.g. weakness, non-epileptic attacks). Approval was obtained from the NHNN/ION Joint Ethics Committee and all patients provided written consent to participate according to the Declaration of Helsinki.

2.2. Semi-structured interviews

Face to face interviews were carried out by two of the authors (MJE and IP). We collected information on sex, age, marital status, presenting symptoms, work status, presence of a disease model either at work or among family and friends, receipt of financial benefits and the presence of litigation. The interview also provided a retrospective account of the tempo of onset, associated symptoms and circumstances prior to onset of the FMD. Only physical events within 3 months before the onset of the FMD were included for consideration. Operational criteria were used to describe the presence of a panic attack (DSM-IV criteria for panic disorder) [6] at the onset of symptoms.

2.3. Questionnaires

Following the interview, participants were asked to take away and complete two questionnaires regarding their mood and the presence of life events within the 3 months prior to the onset of the FMD and send them back by post. For those patients who failed to return the questionnaires in two weeks, a phone call was made as a reminder. The Hospital Anxiety and Depression rating scale (HADS) was used with reference to their mood the week prior to testing [11]. The occurrence of life events were assessed by the 82 items Life Events Questionnaire (LEQ) [12]. This is a self-report questionnaire addressing life events in the categories of health, work, school, residence, love and marriage, family and close friends, parenting, personal or social, financial and crime or legal matters. Patients are asked to indicate whether each event is considered "good" or "bad"; and rate the impact of the event on a 4-point scale (0–3). We used the negative events score (the sum of the impact ratings for all items designated as "bad" by the patient: range from 0 (no impact) to a maximum of 246).

3. Results

Eleven males and 39 females were consecutively included. Demographic and clinical characteristics are shown in Table 1.

3.1. Tempo of onset

Twenty seven patients (54%) reported a sudden onset of symptoms (seconds–minutes). Eighteen patients (36%) developed symptoms in hours — 1 day and only 5 patients reported a gradual onset (more than 1 day to maximal symptoms).

Table 1
Demographic characteristics of the patients (n = 50).

Age (years), mean (SD)	39.8 (11.9)
Gender, n (%)	
Female	39 (78)
Male	11 (22)
Marital status, n (%)	
Single	19 (38)
Cohabiting/married	27 (54)
Divorced	4 (8)
Educational level, n (%)	
≤16 years	22 (44)
To 18 years	17 (34)
Graduate	11 (22)
Current employment status, n (%)	
Employed	8 (16)
Unemployed	8 (16)
Off sick	11 (22)
Medically retired	16 (32)
Student	3 (6)
Unknown	4 (8)
Symptoms duration (years), mean (SD)	5.7 (6.1)
Type of FMD, n (%)	
Fixed dystonia	15 (30)
Tremor	8 (16)
Myoclonus	4 (8)
Mobile dystonia	3 (6)
Paroxysmal FMD with retained consciousness	2 (4)
Parkinsonism	1 (2)
Gait disturbance	1 (2)
Tics	1 (2)
Combination of ≥2 FMD	15 (30)
Potential sources of symptom modelling, n (%)	
Health care worker	8 (16)
Family/friends	10 (20)
Both	2 (4)
Home disability adaptations, n (%)	21 (42)
Family acting as a carer, n (%)	34 (68)
Benefits, n (%)	25 (50)
Litigation, n (%)	3 (6)

SD = standard deviation. FMD = functional movement disorders.

3.2. Physical precipitating factors

From a total of 50 patients, 40 (80%) patients reported a physical event within the three months prior to the onset of the FMD. Three patients did report a physical event which was related to the functional symptom (injuries in the same limb where the FMD appeared) but these occurred before the 3 month period that we set as inclusion criteria. One patient did not remember the exact timing between the physical event and the onset of the symptoms.

Time from physical event to onset of FMD in those 41 patients was of minutes in 8 (16%) patients, approximately one day in 6 (12%) patients, two days in 4 (8%) patients, within the first week in 7 (14%) patients, one month in 9 (18%) patients and within the 3 months prior to onset in 6 (13%) patients.

The FMD occurred after an injury in 11 (22%) patients. The injuries were mainly of soft tissues, but some patients experienced more serious injury leading to fracture. In 9 (18%) patients, FMD first started after an infection, most commonly a flu-like illness. In another 8 (16%) patients functional symptoms appeared following a neurological disorder (severe episode of migraine (n = 3), brachial neuritis (n = 1), Bell's palsy (n = 1), carpal tunnel syndrome (n = 1), restless legs syndrome (n = 1) and after a pituitary haemorrhage (n = 1)). In 4 (8%) patients, pain appeared to be an important factor at onset (either an episode of acute pain even though there was no specific injury, or exacerbation of chronic pain). Three (6%) patients presented with functional symptoms after experiencing a drug reaction, two of them after an acute dystonic reaction secondary to dopamine receptor blockers used as antiemetic and one patient after jerks induced by fluoxetine. Three (6%) patients developed FMD after major surgery (tendon transfer operation, surgery to relieve cauda equina syndrome and a tensor fascia