



Functional (psychogenic) movement disorders associated with normal scores in psychological questionnaires: A case control study



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ABSTRACT

Objective: Functional movement disorders (FMDs) fall within the broader category called functional neurological symptom disorder (FNSD). New DSM-5 criteria for FNSD no longer require the presence of a 'psychological conflict' suggesting that some patients with FMD may not have obvious psychological comorbidity. We studied patients with FMD in comparison to patients with a neurological movement disorder (MD) and healthy controls (HC) to identify whether there is a subgroup of patients with FMD who have normal psychological test scores. **Methods:** We assessed self-rated measures of depression/anxiety (SCL-90), dissociation and personality disorder (PDQ-4) in patients attending neurological clinics and healthy controls. The proportion of patients scoring within normal ranges was determined, and the levels of somatic and psychological symptoms were compared between the three groups.

Results: Among the FMD group, 39% (20/51) scored within the normal range for all measures compared to 38% (13/34) of MD subjects and 89% (47/53) of healthy controls. There were no differences in overall scores in the SCL-90 and PDQ-4 between FMD and MD patients. FMD patients also did not differ from controls on a self-rated measure of personality pathology.

Conclusion: Our data show that a substantial proportion of patients with FMD score within the normal range in psychological questionnaires, lending some support to the new DSM-5 criteria.

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Introduction

Debate about diagnostic criteria for functional neurological symptoms was revitalized with the advent of DSM-5 [1,2]. Functional neurological symptoms include neurological symptoms which are internally inconsistent or incongruent with neurological disease but are not the result of intentional feigning. The DSM-IV-TR criteria [3] for conversion disorder required the presence of a 'psychological stressor' in line with a Freudian idea that these symptoms originate from a psychological conflict. In DSM-5 'conversion disorder (functional neurological symptom disorder (FNSD))' the requirement for a psychological stressor as a diagnostic criterion has been abandoned, although the potential relevance of psychological factors are still highlighted in the text.

High levels of general psychopathology such as depression, anxiety, abnormal coping strategies, personality disorders are typically reported in a large proportion of patients with conversion disorder [4–13]. However, controlled studies of functional movement disorders and non-epileptic seizures have at times struggled to show expected differences in psychopathology [12,14,15]. In addition, the proportion of patients without obvious psychological symptoms are sometimes not identified in studies which typically only report mean values of self-rated measures without extracting the proportion of patients that score within normal ranges on psychological tests. In ICD-10, FMD are classified within dissociative disorders. Dissociative symptoms have been found to be more common in patients with a range of functional neurological disorders than controls in some studies [16] but not in others [11,14,17].

Diagnostic criteria for functional movement disorders originating from the neurological field [18–21] have never required psychological factors to be present. Those working in clinical neurology often

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encounter patients in whom the psychiatrist can find 'no disorder' [22]. In one survey of 519 neurologists, 50% of respondents reported that psychiatrists, psychologists, or rehabilitation specialists sometimes (35%), often (14%) or always (1%) question the neurologists' original diagnosis and recommend the neurological basis for the disorder be reconsidered.

This prospective study aimed to analyze the proportion of patients scoring within normal limits on questionnaire tests of psychopathology within a group of patients diagnosed with functional movement disorder (FMD, i.e. movement disorder or functional paresis) by movement disorder neurologists (TvL). We compared these results to patients with 'neurological' movement disorder (MD) to control for the secondary effects of having a medical condition, and to healthy controls (HC).

Method

Subjects

This study was approved by the Medical Ethical Committee at the University Medical Centre Groningen, the Netherlands and performed according to The Code of Ethics of the World Medical Association (declaration of Helsinki; version Seoul 2008). Patients were recruited from the outpatient neurology clinics of the University Medical Center of Groningen (TvL). All patients gave informed written consent. The clinical diagnosis was made after a neurological examination by neurologists specialized in movement disorders (TvL). Additional neurophysiological examination (motor-evoked potentials, electromyography) and/or clinical neuroimaging (MRI, PET, SPECT, or CT) were carried out at the discretion of the assessing neurologist. Questionnaires were given to patients to fill out at home after their hospital visit and were re-collected by mail within the following weeks. Two previous studies [6,7] describe an initial subset of patients who participated in this study. Additional patients with functional movement disorder (FMD) and movement disorder (MD) were recruited between September 2011 and February 2012 at the Movement Disorders Outpatient Clinic of the Department of Neurology of the University Medical Center Groningen. The sample was not consecutive. All patients were diagnosed with FMD or MD except for those where severe cognitive impairment was evident. Healthy controls were included by asking the spouse of MD patients to also fill out the questionnaires themselves. They were only included if they answered negatively to a question about whether they were currently being treated for a mental disorder or chronic somatic illness. Patients with a SCOPA-COG (screening for impaired memory, attention, visuospatial functions and executive functioning [23]) score of 22 or less were excluded (i.e. this cutoff indicates severely impaired cognitive functioning).

Procedure and materials

Psychological dissociative symptoms were assessed with the Dutch version of the Dissociation Questionnaire (DIS-Q; [24]), including four scales: (1) identity confusion, (2) loss of control, (3) amnesia, and (4) heightened concentration/absorption.

The Somatoform Dissociation Questionnaire (SDQ-20; [25]) was used as an inventory for somatic dissociative symptoms. 'Somatic dissociative symptoms' is a synonym for 'functional neurological symptoms': the questionnaire was developed based on the dissociative theory on FNSD. It contains items such as 'I am paralyzed for a while' or 'I have an attack that resembles an epileptic fit'.

General psychopathology was assessed with the Dutch version [26] of the Symptom Check List (SCL-90; [27]), consisting of the following subscales: somatization, sleeping disorders, agoraphobia, depression, anxiety, inadequacy, sensitivity, hostility, and psychoneuroticism.

The level of personality pathology was screened by means of the Personality Diagnostic Questionnaire (PDQ-4; [28]), including 12

subscales (paranoid, schizoid, schizotypal, histrionic, narcissistic, borderline, antisocial, avoidant, dependent, obsessive-compulsive, depressive, passive-aggressive) as well as a total scale for personality pathology.

Statistical analyses

Between-group differences in demographic variables were tested for age and education (ANOVA), sex (Kruskal-Wallis), and diagnosis (Chi-square). Means, SD, and percentage of clinically abnormal scores were calculated for PDQ-4, SCL-90, DIS-Q, and SDQ-20 (total scores and subscales) for each group (see Table 2).

Because data was collected in a clinical sample, missing data were inevitable. As there was no evidence for systematically missing values (i.e. missing at random), to obtain maximum power subjects with missing data on one of the questionnaires were included in our analyses.

The presence of clinically relevant psychological symptoms was established by using published clinical norm scores for PDQ-4 (>25; [29]), SCL-90 (males >131, females >150; [30]), DIS-Q (>2.5; [31]), and SDQ-20 (>28; [32]). To provide a detailed psychological description of our sample, the percentage of patients and controls that scored above the normal scores (i.e. indicating presence of psychopathology) was calculated for each questionnaire. Subsequently, we calculated the total percentage that scored *below* the cutoff values on the DIS-Q, PDQ-4, and SCL-90 for each patient group and the HC. The subgroup that was identified in this way did not have any clinically relevant psychological symptom scores on the questionnaires used and was of interest for our main analysis (identifying subgroup with normal psychological test scores).

Associations between psychological characteristics (dissociation, general psychopathology, and personality pathology) were calculated for all three groups (Pearson's r).

The Kolmogorov-Smirnov test showed that not all variables were normally distributed. However, we performed parametrical tests, as MANOVA is known to be robust for deviations from normality. A MANOVA was performed with diagnosis (FMD, MD, and HC) as grouping variable and the total SCL-90, PDQ-4, DIS-Q, and SDQ-20 scores as dependent variables ($n = 133$). Post hoc analyses were performed with univariate ANOVAs and LSD multiple comparisons if the MANOVA showed a significant effect, to investigate differences per questionnaire and at group levels. Finally, to control for the effects of personality psychopathology, and general psychological distress MANCOVA was performed to include PDQ-4 and SCL-90 total scores as covariates in the comparison of both groups on DIS-Q and SDQ-20 total scores. ANCOVAs and repeated contrasts were used as follow-up analysis.

Results

Fifty-five participants with functional movement disorder (FMD), 34 participants with movement disorder (MD) and 52 healthy controls (HC) were included. Demographic information, educational data, and symptom category are listed in Table 1. No significant differences were found in age, education, and sex in the three groups.

Table 2 shows the clinical scores on all psychological questionnaires in raw scores as well as in percentage of subjects that fall into the clinically abnormal range. The FMD and MD groups demonstrated a different range and proportion of different test scores (Chi-square: 195.22, $p < .001$).

A subgroup of subjects was identified that scored within the normal range on the DIS-Q, SCL-90, and PDQ-4 questionnaires: 39% (20 out of 51) of FMD subjects scored within the normal range, 38% (13 out of 34) of MD subjects and 89% (47 out of 53) of HC subjects on the questionnaires.

Psychological dissociation was consistently and significantly related to general psychopathology and also to symptoms of personality disorders within all three groups (see Table 3 for significant associations). Somatic and psychological dissociative symptoms were associated in the FMD group ($r = 0.45$, $p < .001$) and in normal controls ($r = 0.32$, $p < 0.05$), but not in MD ($r = 0.12$, n.s.). Somatic dissociation was related to psychological functioning, as measured with the SCL-90 and PDQ-4, only in the FMD group (see Table 3).

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