EFFICACY OF CLINICAL HYPNOSIS IN FUNCTIONAL NEUROLOGICAL DISORDERS: EXPERIENCE IN A CONSECUTIVE SERIES OF 50 PATIENTS

EFICACIA DE LA HIPNOSIS CLÍNICA EN LOS TRASTORNOS NEUROLÓGICOS FUNCIONALES: EXPERIENCIA EN UNA SERIE CONSECUTIVA DE 50 PACIENTES

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Abstract

Functional neurological disorders (FND) are a relatively common cause of neurological disability. Hypnosis follows brain processes similar to FNDs and may have therapeutic utility in this entity. This study aims to increasing the empirical evidence for the use of clinical hypnosis in patients with FND. This study aims to contribute to increasing the empirical evidence of the use of clinical hypnosis in the treatment of patients. To do this, an open study of 50 consecutive patients with TNF was carried out. The hypnosis method developed by Loriedo was applied, which includes a prior neuropsychiatric evaluation, an exploration of the patient's resources during two sessions, and one to three sessions of hypnosis. The patients were evaluated using the global clinical impression scale: baseline, +1 month and +12 months. The results showed that, in the assessment of +1 month of treatment, 60% of the patients presented an improvement in symptoms (p <0.001) (25% recovery ad integrum). This improvement persisted and was amplified at 12 months, 68% of patients improved (p <0.001) (40% recovery ad integrum). No adverse effects were observed. No significant correlation of response to treatment at 12 months was found for the variables age (p = 0.409) or time of evolution (p = 0.154). Despite a better response in females, the relationship was not significant (p = 0.198). Our preliminary open study shows that clinical hypnosis can be a good therapeutic alternative in patients with TNF and should be part of the multidisciplinary treatment of this entity. New controlled studies are needed to confirm these findings.

Keywords: *hypnosis, hysteria, conversion disorder, dissociative disorder, psychogenic disorder, functional neurological disorder.*

Resumen

Los trastornos neurológicos funcionales (TNF) son una causa relativamente frecuente de discapacidad neurológica. La hipnosis sigue procesos cerebrales similares a los TNF y puede tener utilidad terapéutica en esta entidad. Este estudio pretende contribuir al apoyo empírico para el uso de la hipnosis clínica en pacientes con TNF. Para ello, se ejecuta un estudio abierto de 50 pacientes consecutivos con TNF. Se utiliza el método de hipnosis desarrollado por Loriedo que incluye una evaluación neuropsiquiátrica previa, una exploración de recursos del paciente durante dos sesiones y de una a tres sesiones de hipnosis. Los pacientes son evaluados mediante la escala de impresión clínica global: basal, +1 mes y +12 meses. Los resultados mostraron que en la valoración +1 mes del tratamiento, el 60% de los pacientes presentaron una mejora de los síntomas (p < 0.001) (25% recuperación ad integrum). Esta mejora persiste y se amplifica a los 12 meses: el 68% de pacientes mejoraron (p < 0.001) (40% recuperación ad integrum). No se observaron efectos adversos. No se halló una correlación significativa de respuesta al tratamiento a los 12 meses en las variables edad (p = 0.409) ni en el tiempo de evolución (p = 0.154). A pesar de una mejor respuesta en el sexo femenino, la relación no fue significativa (p = 0.198). Este estudio preliminar muestra que la hipnosis clínica puede ser una buena alternativa terapéutica en pacientes con TNF y debería formar parte del tratamiento multidisciplinar de esta entidad. Nuevos estudios controlados son necesarios para confirmar estos hallazgos.

Palabras Clave: *hipnosis, histeria, trastorno de conversión, trastorno disociativo, trastorno psicógeno, trastorno neurológico funcional.*

Functional neurological disorders (FND), also known as psychogenic disorders, conversion disorders or hysteria, are a classic entity that straddles neurology and psychopathology in *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-5; American Psychiatric Association, 2013). These terms have historically been applied to neurological disorders which manifest as physical symptoms that cannot be attributed to an organic cause and in which psychological factors are assumed to be involved. They are characterised as involuntary disorders caused by abnormal beliefs and expectations resulting from an altered sense of agency (subjective awareness that one is initiating, executing and controlling one's volitional actions). Attention is recurrently focused on symptoms, inducing a biased (even aberrant) interpretation of them based on personal reference models of said symptoms (American Psychiatric Association, 2013).

FNDs constitute a serious health problem and are among the most common causes of neurological disability (Carson & Lehn, 2016). They have an incidence of 4-12 per 100,000 people per year, with a prevalence of 50 per 100,000 people, based on a community register (Carson & Lehn, 2016). Unexplained neurological symptoms are common in daily clinical practice in neurological services, occurring in about 30% of patients, of which FNDs account for about 1-5%. These conditions are more common in women (75% of cases) (Binzer et al., 1997; Stone et al., 2009).

Although there is no apparent irreversible damage in such patients, the prognosis is often poor; long-term studies have found that symptoms persist in more than 60% of cases (Carson & Lehn, 2016). Patients with an FND show levels of disability and use of healthcare resources that are similar to or higher than those of patients with a neurodegenerative disease (Carson et al., 2011).

The psychological treatments offered include cognitive behavioural therapy, psychodynamic therapy and group psychotherapy, while physical treatment for motor disorders is based on physiotherapy (O'Neal & Baslet, 2018). Transcutaneous electrical nerve stimulation and transcranial magnetic stimulation treatments have also been assayed (Espay et al., 2018), but there is as yet no conclusive evidence that any therapeutic intervention is effective.

In the late 19th century, Jean Martin Charcot suggested that the brain processes responsible for hysteria were very similar to those that occur in the hypnotic state, and proposed clinical hypnosis therapy for such disorders (Charcot, 1889; Charcot & Marie, 1892). In the last 20 years, functional neuroimaging and neurophysiological studies have confirmed the similarity of brain function alterations in the hypnotic state and in FNDs (Bell et al., 2011; Cojan et al., 2009).

Camilo Loriedo has designed a specific ultra-brief hypnotic intervention consisting of a maximum of 3 sessions, based on the hypnosis meta-model developed by Milton Erickson (Erickson et al., 1976; Erickson & Rossi, 1979; see also compilation by Procter, 2001). Loriedo et al. (2010, 2011) has contended that the disorder arises from a basic relational conflict whose meaning underlies the symptom, which serves a relational function in the patient's life. His method represents an attempt

to standardise hypnosis therapy, enabling its replication by other professionals and facilitating its implementation in daily clinical practice (Badosa et al., 2017).

It is very difficult to conduct double-blind studies with this type of patient. Only two controlled studies with very small samples have been reported in which hypnosis therapy for patients with an FND showed positive results (Moene et al., 2002, 2003). Our aim with this naturalistic study was to provide evidence for the efficacy of this therapeutic technique in a consecutive series of patients diagnosed with an FND. We hope to stimulate future controlled studies that, on the basis of empirical criteria, will promote the practice of hypnosis with this type of patient.

Method

Patients

Between January 2010 and September 2019, 50 consecutive patients with a diagnosis of FND were treated by clinical hypnosis at the Neurology Service of the *Hospital de la Santa Creu i Sant Pau* (2010-2016) and the Parkinson's Unit of the Teknon Clinic in Barcelona (2016-2019). FND was diagnosed using DSM-IV-TR and DSM-5 criteria (as of 2014). Candidates for this therapy were excluded if the possibility of financial and/or legal gain was detected. In addition, hypnosis treatment was considered incompatible with simultaneous treatment with some form of psychotherapy. Patients being treated with a psychotropic drug continued to receive the same dosage throughout the treatment period and in the month following treatment. All patients signed an informed consent form before receiving ultra-brief hypnosis treatment following the therapeutic protocol designed by Camilo Loriedo et al. (2010, 2011).

Clinical Hypnosis Intervention

This consisted of three consecutive parts.

1- *Neurological and psychopathological assessment*

Patients were assessed by a neurologist (AG or RR) and a psychiatrist (JB) to confirm the diagnosis of FND and evaluate the patient's suitability for hypnosis therapy. The patient's hypnotic phenomena profile and suggestibility were also assessed to help guide the exploratory process and subsequent modulatory work.

To ensure intervention brevity, the suggestibility tests used did not include responses to a scale, but instead consisted of a series of suggestions covering three broad categories:

a) *Direct ideomotor and ideosensory* suggestions which induce experiences such as heaviness and involuntary arm levitation in the majority of participants;

b) *Ideomotor challenges* in which subjects are challenged, for example, to raise a hand despite overwhelming feelings of heaviness or to open tightly

closed eyelids;

c) *"Cognitive"* *suggestions* which affect higher level psychological processes and involve memory and perception (resulting in hallucinations or selective amnesia) and are less frequently experienced.

2- *Patient resource exploration*

The approach includes an exploration of the patient's own resources conducted prior to the hypnosis sessions, which consists of two 60- to 90-minute sessions aimed at gaining a greater knowledge of the patient's life situation and assessing their personality and emotional traits. The process is fundamental to establish a therapeutic alliance and to guide subsequent work with hypnosis. The therapist triggers an automatic and unconscious search for new associations in order to restructure a more stable frame of reference. Resource exploration induces a key process in therapy: the evocation and incorporation by the patient of skills capable of fostering restoration of the altered function (Erickson, 1980).

3- *Clinical hypnosis sessions*

The intervention is structured using a restricted therapeutic approach that limits sessions and exchanges to the absolute minimum necessary, which is conducive to active patient participation, and the risk of failure is accepted from the outset. The approach focuses on associating symptoms with the patient's principal conflict (Loriedo et al., 2010, 2011). Each hypnosis session lasts about 60 minutes. Depending on the therapeutic response, sessions can be held up to a maximum of three times separated by an interval of 2-4 weeks.

Therapeutic protocol. The intervention adopts a strategic approach, based on the meta-model of naturalistic hypnosis developed by Erickson (Erickson 1976; Erickson & Rossi, 1979; Procter, 2001). The naturalistic approach involves acceptance and use of the situation encountered, without trying to restructure it psychologically. The patient's presenting behaviour is viewed as a definite aid and a genuine component of trance induction, rather than as a potential obstacle. The work is process-driven rather than content-driven.

This approach can be seen as a three-step process:

1. Preparation: the therapist explores the patient's repertoire of experiences and provides constructive frames of reference to guide the patient towards change.
2. Activation and utilisation of the patient's own mental abilities during trance.
3. Cautious acknowledgement of evaluation and confirmation of change.

The procedure rarely uses direct suggestions to resolve symptoms, preferring autonomic response systems to provide suggestions that bypass the patient's consciousness. Involuntary responses result from the following process:

(1) Fixation of attention

Use of beliefs and behaviours to focus attention on the patient's internal realities. Presentation of the strange, astonishing and "surprising".

(2) Weakening of conscious schemas

Distraction, shock, surprise, doubt, confusion, dissociation or any other process that disrupts the patient's customary perspectives. Interruption of their normal daily awareness.

(3) Unconscious search

Implications, questions, puns and other forms of indirect suggestion. This also facilitates acceptance of direct suggestions because of the disruption and interruption of the patient's ordinary consciousness.

(4) Hypnotic response

Expression of their behavioural potentials, experienced as occurring involuntarily and autonomously.

The therapist facilitates the emergence of resources; untapped response systems that the patient has been unable to use voluntarily or intentionally. The use of therapeutic metaphors and hypnotic phenomena enables resources to be extracted and incorporated into current and future contexts. The patient has the opportunity to rehearse the use of his or her own capacities in trance, in situations where they are required. During a trance, habitual mental patterns are momentarily suspended and the patient is thus more willing to collaborate with the therapist's ideas or suggestions because of a natural tendency to regain lost balance.

Therapy design involves three important aspects for the patient:

a) Co-construction of treatment goals;
b) Determination of the pattern of symptom presentation;
c) Identification of the (possible) strategies to alter this pattern and how to communicate them, an aspect that is directly related to how the patient cooperates.

Bell et al. (2011) distinguish different styles of hypnotic response, characterised by varying degrees of automaticity in generating the response:

a) Subjects with a *focused* response style (attention is focused on the content of the suggestions) feel that the suggested effects happen by themselves.
b) Subjects with a *constructive* response style (actively working with the suggestion or engaging in goal-directed imagery) have a greater awareness of actively contributing to the suggested effects, even when the symptoms are experienced as involuntary and real.

Neurological Assessment

Post-intervention, patients were assessed for degree of neurological symptom intensity by the same neurologist who had conducted the initial assessment using the Clinical Global Impressions-Severity (CGI-S) scale (Guy, 1976). This is the most frequently used scale to assess changes in FNDs. Its main advantage is that it allows assessment of all FND symptoms, but it is also short and simple to administer and has been shown to be sensitive to clinical change in therapeutic studies of patients with an FND (Pick et al., 2020). It consists of 7 scores: 0 = *Not*

assessed; 1 = *Normal, not at all ill*; 2 = *Borderline mentally ill*; 3 = *Mildly ill*; 4 = *Moderately ill*; 5 = *Markedly ill*; 6 = *Severely ill*; 7 = *Among the most extremely ill of subjects*. In addition, at follow-up visits the patient scored the subjective Clinical Global Impressions-Improvement (CGI-I) scale (Guy, 1976), which also consists of 7 scores: 0 = *Not assessed*; 1 = *Very much improved*; 2 = *Much improved*; 3 = *Minimally improved*; 4 = *No change*; 5 = *Minimally worse*; 6 = *Much worse*; 7 = *Very much worse*. This neurological assessment was carried out pre-treatment and at one and twelve months after the last hypnosis session.

Statistical Analysis

Since an ordinal rating scale was used, we performed non-parametric tests. Friedman's test was used to compare the CGI-S scale score obtained pre-treatment, at one month and at twelve months; in addition, the initial score was compared independently with the score at one month and the score at twelve months using Wilcoxon's test. We also tested for a correlation (Spearman's non-parametric test) between the clinical response (difference between the pre-treatment score and the 1-month and 12-month scores) and the patients' clinical data. In all cases, the level of type I error was set at the usual 5% (alpha = 0.05). Analyses were performed using the IBM-SPSS statistical package.

Results

During the study period, 88 patients with a suspected FND were referred for treatment. After neuropsychiatric screening, 53 patients met the criteria for therapy. Three patients chose not to receive treatment despite meeting the inclusion criteria. Of the 35 excluded patients, an organic neurological disease was detected in 10 cases, while in another 15 cases, the psychiatric diagnosis was not FND (dissociative disorder in 12 cases, agoraphobia in 3 cases), and an economic or legal gain was detected in 10 patients.

Thus, 50 patients (mean age 42.9, standard deviation 14.3; 36 women, 70%) received clinical hypnosis treatment. Table 1 shows the clinical data of the patients in our series.

Table 1
Characteristics of Patients Treated with Clinical Hypnosis in our Series

Patient	Age	Sex	Psychopath.	Symptoms	Time since onset[a]	No. hypnosis sessions	CGI-S pre-treatment	CGI-S +1 month	CGI-S +12 months
1	52	F	-	Hemiparesis	60	3	5	4	3
2	73	M	-	Tremor	12	2	5	5	5
3	57	F	-	Hemiparesis	48	3	5	4	4
4	27	F	-	Dysphonia	4	3	4	2	1
5	32	F	-	Ataxia	24	3	5	3	1
6	30	F	-	Ataxia	9	3	5	2	2
7	31	M	-	Dystonia	24	3	4	3	3
8	33	F	+	Non-epileptic seizure	72	2	4	4	4
9	51	F	+	Hemiparesis	3	3	4	2	2
10	46	F	-	Ataxia	24	3	3	3	2
11	37	M	-	Non-epileptic seizure	9	1	5	4	3
12	33	F	-	Amnesia	24	3	6	6	6
13	55	F	-	Hemiparesis	8	3	6	3	2
14	35	F	-	Myasthenia	72	1	5	1	1
15	37	F	+	Tremor	132	3	5	5	5
16	45	M	-	Tremor	96	3	4	2	1
17	67	M	-	Non-epileptic seizure	12	1	4	1	1
18	66	F	-	Dystonia	72	3	4	1	1
19	59	F	-	Paraparesis	144	2	5	5	5
20	34	M	-	Parkinsonism	60	3	6	6	6
21	17	F	-	Paraparesis	10	3	6	1	1
22	26	F	-	Tremor	72	3	4	1	1
23	49	F	-	Myasthenia	48	2	5	2	1
24	70	F	-	Tremor	36	3	3	5	5
25	40	F	-	Non-epileptic seizure	120	3	7	5	5
26	39	M	-	Dysphonia	18	3	4	2	3
27	45	F	+	Non-epileptic seizure	24	2	6	4	5
28	49	F	-	Paraparesis	18	3	7	1	1
29	37	M	-	Myasthenia	84	1	5	5	5
30	56	F	-	Paraparesis	108	2	6	6	5

Patient	Age	Sex	Psychopath.	Symptoms	Time since onset[a]	No. hypnosis sessions	CGI-S pre-treatment	CGI-S +1 month	CGI-S +12 months
31	49	F	-	Hemiparesis	24	2	4	1	1
32	37	F	+	Ataxia	4	0	4	1	1
33	18	F	-	Tremor	4	1	3	1	1
34	69	F	-	Non-epileptic seizure	312	2	5	1	1
35	27	F	-	Paraparesis	14	3	7	5	5
36	53	M	+	Non-epileptic seizure	84	1	5	4	3
37	29	F	-	Paraparesis	3	1	4	2	1
38	71	F	+	Paraparesis	6	1	6	6	5
39	31	F	-	Paraparesis	8	1	5	5	5
40	42	F	-	Vertigo	12	1	4	1	1
41	52	F	-	Myasthenia	120	1	4	1	1
42	39	F	-	Tremor	12	2	5	2	1
43	47	M	-	Tremor	1	5	7	3	3
44	38	M	+	Pain	24	1	4	3	2
45	57	F	+	Ataxia	24	2	3	2	-9
46	17	M	-	Diplopia	3	2	5	4	3
47	37	M	-	Hemiparesis	24	2	5	4	4
48	38	F	-	Tremor	84	2	4	2	2
49	44	F	-	Hemiparesis	8	3	5	2	1
50	26	M	-	Non-epileptic seizure	20	1	5	1	1

Note: F: female; M: male; [a] months; CGI-S: Clinical Global Impression-Severity scale; psychopath.: associated psychopathology.

The mean time since onset was 43.5 months, with a standard deviation of 55.0 months. The median pre-treatment CGI-S score was 5 (range 3-7). Eight patients (16%) had an associated psychopathology (depressive syndrome in six patients, bipolar disorder in two patients). These eight patients were being treated with psychotropic drugs: tricyclic antidepressants (2), serotonin reuptake inhibitors (4), lithium (1) and topiramate (1). The remaining patients in the study with no associated psychopathology did not receive any psychotropic drugs.

The type of neurological symptom varied widely, the most common being tremor, paraparesis, non-epileptic seizure, hemiparesis, gait disorder and myasthenia. Twelve patients received a single hypnosis session, sixteen received two sessions and twenty-two received three sessions. Five patients (10%) did not enter hypnotic

trance in any of the three sessions.

At the 1-month post-treatment assessment, a significant improvement was observed: the median CGI-S score was 3 (range 1-7), obtaining a $p < 0.001$ in the Wilcoxon test. All patients who showed an improvement at one month after their final hypnosis session maintained or increased their level of improvement at the 12-month assessment, with a median CGI-S of 2 (range 1-7), which was significantly different from the baseline score ($p < 0.001$) (Figure 1). Results for the subjective CGI-I scale at the 1-month visit after the end of hypnosis indicated that 60% showed clinical improvement of symptoms (scores 1, 2 or 3) (25% *ad integrum* recovery, score = 1). At the 12-month assessment, subjective clinical improvement occurred in 68% of cases (40% *ad integrum* recovery). Complete recovery from symptoms occurred immediately after a hypnosis session in 50% of cases, while for the rest, improvement was progressive in the days following the hypnosis session. In patients with *ad integrum* recovery at the 1-month assessment, no relapse of symptoms was observed at the 12-month follow-up. No adverse effects of therapy were detected.

Figure 1
Clinical Global Impression-Severity Scale (CGI-S) scores at baseline, +1 month and +12 months
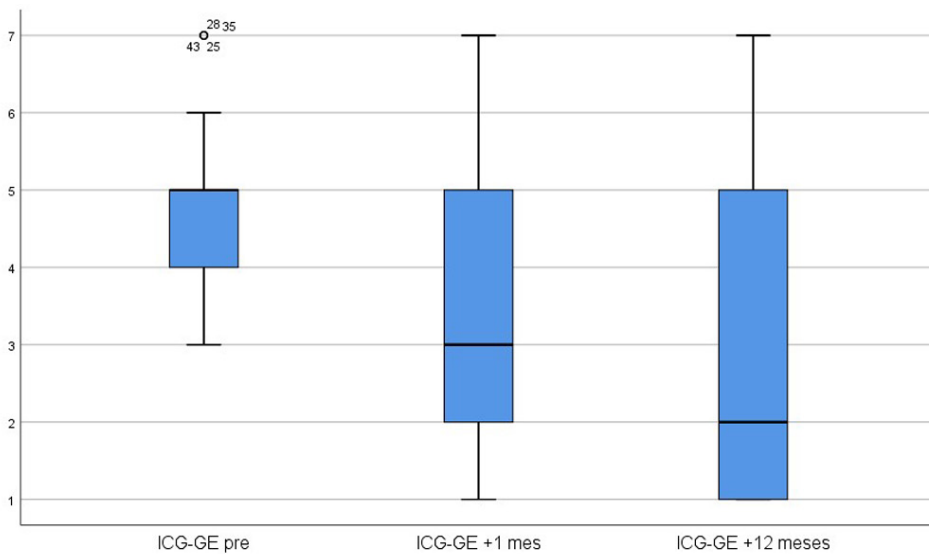
No significant correlation was found between treatment response (CGI-S) at the 1-month post-hypnosis assessment and the variables of age ($r = -0.034$; $p = 0.817$) or time since onset of symptoms ($r = -0.174$; $p = 0.228$). Despite observing a better response in female subjects, the relationship was not significant ($p = 0.134$). Correlations remained insignificant at the 12-month post-treatment assessment (age $r = -0.119$; $p = 0.409$; time since onset, $r = -0.205$; $p = 0.154$; sex $p = 0.198$).

Discussion

Our study shows that ultra-brief clinical hypnosis (maximum of three sessions) improved FND symptoms in about 60% of patients, with a total resolution of symptoms in 25% of cases within the first month of treatment. This improvement was persistent and had increased at twelve months post-intervention (68% improvement with 40% *ad integrum* recovery). Furthermore, no adverse effects of the therapy were detected.

These results provide evidence for the psychogenic characteristics of FNDs. Over a century ago, Freud suggested that dissociation disorders, such as FNDs, occur as a defence mechanism that converts an emotional stressor into a physical symptom. Although the DSM-5 reduced the importance of psychosocial stressors when establishing the diagnosis, emotions are traditionally considered crucial in the development of FNDs. Thus, functional symptoms are thought to be generated unconsciously as a consequence of underlying psychological stressors. Indeed, when only symptom cessation is obtained and the patient does not resolve the precipitating conflict, conversion symptoms can reappear in a new form (Loriedo et al., 2011).

Neuroscience has studied the role of the cognitive and emotional processes underlying FNDs, especially the connections between brain areas associated with motor, sensory, emotional processing and reflex functions (Cojan et al., 2009; Voon et al., 2010). Converging neuroimaging findings have implicated abnormal limbic and motor interactions in response to emotional stimuli in FNDs (Sojka, 2018). Other neurobiological abnormalities that have been described include hypoactivity of the supplementary motor area and a relative disconnection with areas that select or inhibit movements, and are associated with a sense of agency (Espay et al., 2018).

Patients with an FND present a loss of a sense of control over their motor function and an impaired sense of agency (Haggard et al., 2004). Indeed, patients with a motor FND show a diminished connection between intention and action execution in normal voluntary movements compared to healthy volunteers (Kranick et al., 2013; Voon et al., 2010). Recent evidence indicates that the involvement of top-down mechanisms can alter motor function in patients with a motor FND, through coupling with neural systems associated with internal self-control, emotion regulation and memory, leading to the emergence of functional symptoms (Bègue, 2018).

Hypnosis reorganises frontal executive control networks and monitoring networks, yielding a reduction in cognitive control (Egner & Raz, 2007). Hypnotic suggestion obviates the need for cognitive control and reduces conscious perception of the stimuli or representations that arouse the problematic response. It can also override automatic processes and induce profound alterations in subjective experience, enabling atypical conscious experiences and circumventing deep-seated processes quickly and effortlessly (Casiglia et al., 2010; Lifshitz et al., 2013).

Recent studies using functional neuroimaging (Bell et al., 2011) have confirmed Charcot's hypothesis that the neural processes occurring in hysteria and hypnosis

are very similar. These findings suggest that executive system involvement in automatic and voluntary cognitive processing is central to hysteria and hypnosis alike. Thus, it has been suggested that there is a phenomenon of autosuggestion in hysteria, whereas in hypnosis the suggestion is external, triggered by a therapist. Consequently, subjects under hypnosis may experience reversible paralysis phenomena induced by hypnotic suggestion in a conscious manner, whereas patients with an FND have unconscious fixed ideas based on autosuggestion (Espay et al., 2018).

FNDs are relatively common in tertiary hospitals (Binzer et al., 1997; Carson et al., 2011; Carson & Lehn, 2016; Stone et al., 2009). The prognosis is not good, as symptoms become chronic in 65-90% of cases (Gelauff et al., 2014). A recent meta-analysis evaluated the efficacy of pharmacological treatments for conversion disorder (mainly barbiturates and benzodiazepines) (Poole et al., 2010). There were no controlled studies. Two studies found a positive response when the drug was administered in a face-to-face interview, reporting that use of suggestion during the interview was associated with a positive outcome. Meanwhile, the need to combine two treatments and psychiatric comorbidity were both negatively associated with treatment response.

Very little research has been conducted to evaluate the efficacy of hypnosis in FNDs. A first study with 24 patients showed that complex clinical management (symptom explanation, psychotherapy, physiotherapy and group therapy) that included hypnosis had clear positive effects on the reduction of conversion symptoms; however, the hypnosis treatment —which consisted of eight weekly one-hour sessions— was not specifically analysed (Moene et al., 2002). In a later study of 20 patients with conversion disorder, the same authors conducted a comparative analysis of hypnosis or no treatment (Moene et al., 2003). Of the patients treated with hypnosis, 90% showed an improvement compared to 26% in the control group.

Consistent negative predictors described for any FND therapy are time since onset of symptoms and age (Gelauff et al., 2014). In our case series, we found no significant correlations between a worse (or better) outcome and either of these variables. However, we did find a non-significant correlation with the variable of sex, observing a better response to therapy in female patients.

There are no comparative studies of the different therapies assayed in patients with an FND (hypnosis, psychological therapies, physiotherapy) (Espay et al., 2018; Ricciardi & Edwards, 2014). Nonetheless, there is consensus that treatment of FNDs should be individually tailored to each patient using the most appropriate technique(s) in each case. It is possible that the simultaneous use of several therapeutic techniques could yield a better response rate than the application of a single therapy. Hypnosis and psychological therapies can be used in all patients, whereas physiotherapy techniques would be reserved for motor FNDs.

The main limitation of this study was the absence of a randomised control group; however, we included a large number of patients and therefore believe it is of interest to report our study. In addition, although we consider that hypnosis was

the main ingredient of our intervention, we cannot rule out the possible effect of the preparatory sessions, which were necessary to plan the hypnotic intervention.

In conclusion, our study shows that clinical hypnosis can prove a good therapeutic alternative in patients with an FND and should be included in multidisciplinary treatment of this clinical entity. Further controlled studies are required to confirm our findings.

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