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A feasibility study of magnetic stimulation (using TMS - Transcranial Magnetic Stimulation) of the brain to improve limb weakness in motor conversion (functional neurological) disorder disorder

Submission date
18/09/2017

Recruitment status
No longer recruiting

Registration date
02/10/2017

Overall study status
Completed

Last Edited
15/10/2020

Condition category
Nervous System Diseases

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Conversion disorder (CD), also known as Functional Neurological Disorder (FND) is where neurological symptoms, such as weakness, occur but no structural neurological disease can be found – therefore they are disorders of function, rather than structure. There are few proven treatments for weakness that is caused by CD. There is encouraging preliminary evidence that Transcranial Magnetic Stimulation (TMS) could be an effective and safe treatment for such symptoms. This is a noninvasive procedure that uses magnetic fields to stimulate nerves in the brain. However, this treatment requires a randomization controlled trial to establish whether this is could be a treatment. The aim of this study is to examine if TMS can be a new treatment for CD.

Who can participate?
Adults aged 18 and older who have a motor conversion disorder.

What does the study involve?
Participants who are suitable for this study are randomly allocated to one of two groups. Those in the first group receive the active treatment and those in the second group receive in the inactive treatment. Participants attend two treatment sessions, separated by one month. Each TMS treatment session takes around 30 minutes. Some tests and questionnaires are completed before and after each TMS session, to assess current symptoms and health. In total, each treatment session will take around 1.5 hours. Two months after the first treatment session, participants are invited to attend a final follow-up session, during which several questionnaires and a short examination will be completed, but no additional TMS treatment will be delivered.

What are the possible benefits and risks of participating?
The main benefit to taking part is the potential to improve understanding about treatments that

are effective for people with weakness caused by conversion disorder. There are some risks to taking part in the study as TMS can, in some cases, cause side effects including discomfort around the area it is delivered to (the scalp), headaches, and seizures. These side effects are relatively uncommon, particularly at low doses of TMS, such as that used in this trial. It is, however, also possible that some of the questionnaires might cause distress as they ask about psychological symptoms and potentially traumatic life events. Appropriate support will be provided to patients who disclose any significant distress or side effects during the study.

Where is the study run from?
King's College London (UK)

When is the study starting and how long is it expected to run for?
June 2014 to March 2018

Who is funding the study?
National Institute for Health Research (UK)

Who is the main contact?
Dr Tim Nicholson

Contact information

Type(s)
Public

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Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
v1.0

Study information

Scientific Title
Trial Of Neurostimulation In Conversion Symptoms (TONICS) feasibility study

Acronym
TONICS feasibility

Study objectives
Transcranial Magnetic Stimulation (TMS) is more effective than placebo in improving weakness in motor conversion (functional neurological) disorder.

Ethics approval required
Old ethics approval format

Ethics approval(s)
London - Stanmore Research Ethics Committee, 12/06/2017, ref: 17/LO/0410

Study design
Single-centre, single-blind, placebo-controlled parallel trial feasibility study

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Hospital

Study type(s)
Treatment

Participant information sheet
See additional files

Health condition(s) or problem(s) studied
Motor conversion (functional neurological) disorder

Interventions
Participants are initially provided with a detailed information sheet and have time to consider participation and to ask questions. Once a patient has provided written informed consent, they attend an initial baseline appointment (approx. 1.5 hours) during which a research associate collects relevant background details about the patient (e.g., demographic details, psychological symptoms, medical history). A careful assessment of the safety of TMS for each individual is also completed during the baseline visit.

Patients diagnosed with motor conversion disorder (functional weakness of at least one limb) are randomised to one of two treatment arms using a computerised randomisation system. The treatment arms are active and inactive Transcranial Magnetic Stimulation (TMS). Both treatment arms involves single pulse TMS being delivered to primary motor cortex in both hemispheres. A total of 120 pulses are delivered during each of the two treatment sessions, which are one month apart. TMS is delivered by a suitably trained neurophysiologist or neuropsychiatrist. All TMS delivery takes in specialist TMS laboratories.

The aims are to investigate the feasibility of a trial of the above intervention.

Participants attend four sessions in total. One initial baseline assessment, two treatment sessions and a follow-up session. TMS session 1 takes place 0-14 days after baseline, TMS session 2 approximately one month after TMS session 1, and follow-up approximately three months after TMS session 1.

Intervention Type
Device

Phase
Not Applicable

Primary outcome measure
Patient reported changes in symptoms measured using the patient-rated Clinical Global Impression of Improvement scale (CGI-I) at TMS session 1, TMS session 2 and at follow-up.

Secondary outcome measures
1. Assessor-rated symptom change measured using clinician-rated Clinical Global Impression of Improvement scale (CGI-I) at TMS session 1, TMS session 2 and follow-up
2. Disability and activities of daily living measured using functional rating scales: SF-36, Barthel, FIM/FAM at TMS session 1, TMS session 2 and follow-up
3. Current symptom severity measured using objective and subjective measures of strength: dynamometry and patient ratings at TMS session 1, TMS session 2 and follow-up
4. Current psychological symptoms measured using self-report questionnaires: GAD7, PHQ9, PHQ15 and CORE-10 at TMS session 1, TMS session 2 and at follow-up
5. Psychosocial outcomes measured with a self-report questionnaire: Work and Social Adjustment Scale at TMS session 1, TMS session 2 and at follow-up
6. Health economics measured using the Client Service Receipt Inventory at TMS session 1, TMS session 2 and at follow-up

Overall study start date
01/06/2014

Completion date
29/03/2018

Eligibility

Key inclusion criteria

1. DSM5 diagnosis of motor conversion disorder made by consultant neurologist and/or neuropsychiatrist, causing weakness of at least one limb
2. Age ≥18 years
3. Ability to give written informed consent

Participant type(s)
Patient

Age group
Adult

Lower age limit
18 Years

Sex
Both

Target number of participants
20

Total final enrolment
22

Key exclusion criteria
1. Epilepsy (or considered high risk of epilepsy from medical history)
2. Other contraindication to TMS (e.g. cochlear implants, metallic intracranial clips or intracranial surgery in last 12 months)
3. Comorbid organic neurological condition
4. Pain as primary symptom
5. Previous treatment with TMS (for any condition)
6. Non-fluent English speakers (if unable to accurately complete self-report questionnaires).
7. Major mental health disorder: current +/- previous diagnosis of schizophrenia or bipolar disorder; current drug/alcohol dependence
8. History of factitious disorder
9. Currently involved in another trial

Date of first enrolment
03/10/2017

Date of final enrolment
29/12/2017

Locations

Countries of recruitment
England

United Kingdom

Study participating centre
King's College London
Neurophysiology Department Fourth floor
Ruskin Wing
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Sponsor information

Organisation
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Sponsor type
University/education

ROR
https://ror.org/0220mzb33

Funder(s)

Funder type
Not defined

Funder Name
National Institute for Health Research

Alternative Name(s)
National Institute for Health Research, NIHR Research, NIHRresearch, NIHR - National Institute for Health Research, NIHR (The National Institute for Health and Care Research), NIHR

Funding Body Type

Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Results and Publications

Publication and dissemination plan
The trial will be published in a high-impact peer-reviewed journal.

Intention to publish date
10/07/2020

Individual participant data (IPD) sharing plan
Participant level data is not expected to be made available as it is not deemed necessary to do so for a feasibility study and we did not request ethical approval to publish these data. These data will be held at the host department (Section of Cognitive Neuropsychiatry, Institute of Psychiatry Psychology & Neuroscience, King's College London).

IPD sharing plan summary
Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	version V1	13/03/2017	02/10/2017	No	Yes
Results article	results	06/10/2020	15/10/2020	Yes	No
HRA research summary			28/06/2023	No	No