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Brain mechanisms of acceptance and commitment therapy for nerve pain

Submission date
08/07/2021

Recruitment status
Stopped

Registration date
16/07/2021

Overall study status
Stopped

Last Edited
11/09/2024

Condition category
Nervous System Diseases

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[_] Record updated in last year

Plain English summary of protocol

Background and study aims
Painful diabetic neuropathy (PDN) is a chronic pain condition related to nerve damage. For many patients, treatments such as pain-killing medications simply do not work well, and not everyone can be successfully treated. This may be because these treatments are not targeting all the causes of the pain. The feeling of pain depends on complex processes in the nervous system including in the brain. Research has found that some changes can occur in the brain (termed neuro-plasticity) that are related to pain symptoms and might even be a cause of why some people develop longstanding (chronic) pain symptoms in the first place. However, researchers do not understand very well what causes these changes or how to treat them. Also, evidence suggests that psychological treatment can reduce the experience of pain as well as improving emotional well-being, but further research is needed to better understand how these treatments work. In this study the researchers will adapt a new form of pain management programme called Acceptance and Commitment Therapy for people with neuropathic pain. The aim is to see whether the treatment is possible to use for patients with PDN, and if they find the treatment acceptable and useful. The researchers also plan to see how the brain changes as a result of the treatment.

Who can participate?
Patients aged 18 years or older with painful diabetic neuropathy (PDN)

What does the study involve?
Participants will be randomly allocated to either the intervention group or a waiting list group. Participants allocated to the intervention group will start treatment directly and will be treated with ACT for PDN. Patients will be offered seven 2-3 hour group sessions of ACT, delivered at weekly to fortnightly intervals within a time frame of around 3 months. A valued ACTion intervention programme is a brief ACT-based group treatment programme aiming to train patients with PDN how to develop acceptance, mindfulness, commitment and behaviour change strategies so that they can return to a rich, full life. The ACT intervention is offered to the waiting list group after the final research visit (at 6 months follow up). The patients will undergo assessments including computer-based tests and MRI scans.

What are the possible benefits and risks of participating?
The main potential benefit is that patients might receive treatment with a new ACT therapy training which is either more effective and/or better tolerated than the standard treatment. The study is unlikely to cause risk to patient's health, but patients could experience distress when discussing their current situation, either during the study assessments or therapy sessions, or their mood may change by the end of therapy.

Where is the study run from?
Liverpool University Hospitals NHS Foundation Trust (UK)

When is the study starting and how long is it expected to run for?
April 2019 to August 2023

Who is funding the study?
Royal Embassy of Saudi Arabia Cultural Bureau (Saudi Arabia)

Who is the main contact?
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Additional identifiers

Integrated Research Application System (IRAS)
275775

Protocol serial number
UoL001605

Study information

Scientific Title
Cerebral mechanisms of acceptance and commitment therapy for neuropathic pain: a longitudinal randomised controlled neuroimaging trial

Study objectives
It is hypothesised that acceptance and commitment therapy (ACT) is effective, feasible and acceptable in people with painful diabetic neuropathy (PDN).

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 05/07/2021, East Midlands - Leicester South Research Ethics Committee (The Old Chapel, Royal Standard Place, NG1 6FS, UK; +44 (0) 207104 8202; leicestersouth.rec@hra.nhs.uk; approvals@hra.nhs.uk), REC ref: 21/EM/0132

Primary study design
Interventional

Study design
Single-centre cross-sectional clinical study and feasibility randomized controlled trial

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Painful diabetic neuropathy (PDN)

Interventions
Patients will be randomised to either the ACT condition (66%) or waiting list condition (33%) using a secure (24-hour) web-based randomisation programme controlled centrally by the Liverpool Clinical Trials Centre (LCTC). Randomisation will take place per patient after the second diagnostic visit with the researcher or during a phone call with the researcher.

Patients randomised to the intervention group will start treatment directly and will be treated with ACT for PDN. Patients will be offered seven 2-3 hour group sessions of ACT, delivered at

weekly to fortnightly intervals within a time frame of around 3 months. A valued ACTion intervention programme is a brief ACT-based group treatment programme aiming to train patients with PDN how to develop more acceptance, mindfulness, commitment and behaviour change strategies to increase psychological flexibility in order to clarify patients' values so that they can return to a rich, full life.

All patients will be informed that randomization to the waitlist condition implies that treatment would be offered after the final research visit (at 6 months follow up), either (a) access the intervention's resources (such as audio sessions to listen to in their own time and a therapy workbook) or (b) take part in the full ACT intervention in person.

Intervention Type
Behavioural

Primary outcome(s)
1. Feasibility-related outcomes will include the following: number of referrals, the number of interviews with researchers, time taken to fill in questionnaires, missing data, and follow-up response rates, measured at T2 (post-treatment periods)
2. Acceptability of the treatment assessed using qualitative methods to provide a better insight into the following: a barrier screening evaluation, burden for not taking part/discontinuationor dropping out, sessions attended rates, homework completion, time dedicated to homework practice, experience (satisfaction, perceptions), acceptability of the protocol to the Aintree Diabetes Centre, measured at T2 (post-treatment periods)
3. The means and standard deviations (SDs) of the SF36 scale and its subscales in the neuropathic pain population are estimated in order to compute a more robust estimate of the sample size and effect size required for future efficacy trials

Key secondary outcome(s)
1. Neuroimaging outcomes: brain plasticity in relation to the neural substrates of pain modulation measured using high-resolution anatomical images obtained using T1- and T2-weighted scans for grey matter anatomy assessments and DTI for white matter assessment. Comparison of functional information will use Blood Oxygen Level Dependent (BOLD) echo-planar imaging in response to painful stimuli and emotional conflicts, and in the resting-state, measured at T1 (pre-treatment periods), T2 (post-treatment periods).
2. Computer-based/neuropsychological tests: neurocognitive functioning measured using Cambridge Neuropsychological Test Automated Battery (CANTAB®) at T1 (pre-treatment periods), T2 (post-treatment periods), T3 (2-month follow-up)
3. Self-report questionnaires:
3.1. Catastrophic thinking measured using the Pain Catastrophizing Scale (PCS) at T1 (pre-treatment periods), T2 (post-treatment periods), T3 (2-month follow-up)
3.2. Perceived control over pain, and Medical utilisation measured using the Survey of Pain Attitudes (SOPA) at T1 (pre-treatment periods), T2 (post-treatment periods), T3 (2-month follow-up)
3.3. Patients' readiness to adopt a self-management approach to their chronic pain and in monitoring their progress in rehabilitation measured using the Pain Stages of Change questionnaire (PSOCQ) at T1 (pre-treatment periods), T2 (post-treatment periods), T3 (2-month follow-up)
3.4. Quality of life (QOL) measured using the SF-36 Health Survey and the General health: EQ-5D-5L at T1 (pre-treatment periods), T2 (post-treatment periods), T3 (2-month follow-up)
3.5. Self-care activity associated with glycaemic control measured using the Diabetes Self-Management Questionnaire (DSMQ) at T1 (pre-treatment periods), T2 (post-treatment periods),

T3 (2-month follow-up)
3.6. Fatigue measured using the Single-item Rhoten Fatigue Scale at T1 (pre-treatment periods), T2 (post-treatment periods), T3 (2-month follow-up)
3.7. Patient's perception of how treatment has affected their level of activity, symptoms, emotions, and overall quality of life measured using the Patient Global Impression of Change (PICQ) at T2 (post-treatment periods), T3 (2-month follow-up)
3.8. The acceptability and experience of treatment measured using the Client Satisfaction Questionnaire-8 (CSQ-8) at T1 (pre-treatment periods), T2 (post-treatment periods), T3 (2-month follow-up)
3.9. Emotional functioning measured using the SF-36 Health Survey (emotional subtest) and the Profile of Mood States at T1 (pre-treatment periods), T2 (post-treatment periods), T3 (2-month follow-up)

Completion date
30/08/2023

Reason abandoned (if study stopped)
Lack of staff/facilities/resources

Eligibility

Key inclusion criteria
1. Age 18 years or older, who have normal or corrected to normal vision and hearing by having a visual acuity of at least decimal 0.5 (6/12) measured on the Snellen scale (e.g., without metal-rimmed glasses or hearing aids)
2. Willing to participate in the study and complete the scientific protocol
3. People with type 1 or type 2 diabetes, with a glycated hemoglobin (HbA1c) level ≤11% at the screening visit, will be considered eligible to participate in the study

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Sex
All

Key exclusion criteria
1. Current or planned hospitalisation during the period of study
2. Patients not giving consent to participate
3. Patients who cannot communicate fluently in English
4. Unable, in the opinion of the research investigator, to comply or adhere to the requirements of the study. This may include, for example, an inability to understand the written

documentation for the study
5. A history of serious head injury, brain surgery or brain injury
6. A history of neurological disease or psychiatric disorder which would negate involvement in the study. For example, Alzheimer's disease, Huntington’s Disease, Epilepsy, Parkinson Disease, large territory cerebrovascular accidents, severe depression, schizoaffective disorders, current under active therapy in psychiatric services
7. Patients that have any underlying medical condition that in the opinion of the investigator will interfere with the study findings. For example: Patients with renal impairment, or hypothyroidism or hyperthyroidism; patients with a previous or current problem of primary or tertiary hyperparathyroidism, hypercalcemia, psychiatric disorder, alcohol dependency, hepatitis B or C, HIV infection or peripheral neuropathy due to a non-diabetic cause; pregnant; patients participating in any other interventional research trial, will be excluded from the study

Date of first enrolment
11/01/2022

Date of final enrolment
23/08/2023

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
UK NHS out-patient diabetic clinics at the Liverpool University Hospitals NHS Foundation Trust
The Pain Relief Foundation
Clinical Sciences Centre
University Hospital Aintree
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Sponsor information

Organisation
University of Liverpool

ROR
https://ror.org/04xs57h96

Funder(s)

Funder type
Government

Funder Name
The Royal Embassy of Saudi Arabia Cultural Bureau

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated and/or analysed during the current study during this study will be included in the subsequent results publication.

IPD sharing plan summary
Other

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
HRA research summary			28/06/2023	No	No