ISRCTN38385178 https://doi.org/10.1186/ISRCTN38385178

A randomised comparison of cardioversion and catheter cryoablation in patients with persistent atrial fibrillation

Submission date
04/12/2017

Recruitment status
No longer recruiting

Registration date
13/03/2018

Overall study status
Completed

Last Edited
23/06/2023

Condition category
Circulatory System

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

Plain English summary of protocol

Background and study aims
Persistent atrial fibrillation (AF) is the most common sustained heart rhythm disorder and is associated with a variety of symptoms including lethargy and breathlessness. This can be treated with cardioversion with long-term medication, or a more definitive treatment with ablation. The usual first line treatment for persistent AF is cardioversion but recurrence rates following this are up to 90%. The aim of this study is to determine whether cryoablation is more effective than cardioversion at preventing recurrence of persistent AF.

Who can participate?
Patients aged over 18 with persistent AF who are suitable for cryo catheter ablation

What does the study involve?
Participants are randomly allocated to one of two groups. Group 1 undergo AF ablation with pulmonary vein isolation using cryoablation. Cryoablation is a minimally invasive procedure and has a success rate of between 57-69% in treating persistent AF. The procedure involves passing two tubes into a vein from the groin. After crossing to the left chamber of the heart (atrium), a balloon is used to engage the pulmonary veins which are then frozen. The procedure lasts around 90 minutes. Group 2 undergo cardioversion, which involves a controlled electric shock to the chest wall under general anaesthesia or heavy sedation. This is usually performed as a day case procedure. Participants are followed up with three clinic visits 3, 6 and 12 months later, along with a 24-hour Holter monitor to assess symptoms and medication review as well as a telephone interview at 9 months. All patients are provided with and trained to use a home monitor to send weekly ECGs and further ECGs at times of symptoms. Patients are also asked to complete questionnaire forms at the beginning and end of the study.

What are the possible benefits and risks of participating?
Depending on the group participants are allocated to, taking part in this study may involve exposure to ionising radiation through x-ray imaging. This will occur if participants are in the cryoablation group (not cardioversion). The cryoablation procedure may or may not be considered part of normal standard of care. Participant's local study centre will be able to advise

on whether this is the case.
The dose of radiation from this procedure could be up to 7.4 mSv. This represents a total lifetime cancer risk of about 1 in 1400 for females aged between 20 and 29 years (the risk reduces for older patients and is lower for male patients). This compares to a natural baseline lifetime risk of getting cancer in the UK of about 1 in 3. This dose of radiation is equivalent to about 3.4 years of natural background radiation to which we are all subjected. As this is an invasive procedure, there are risks associated with it. These risks are small but include bleeding and vascular problems (1%), phrenic nerve damage (1%), stroke (0.25%), pericardial effusion (2%) and death (0.1%). There are no additional risks in taking part in the study. During the study and ablation procedure, there will be a full complement of catheter laboratory staff present who are fully trained to deal with urgent medical situations. The risks of cardioversion include superficial burns and chest discomfort. It is important that participants remember to take their anticoagulation medication to minimize the risk of stroke.

Where is the study run from?
1. Brighton and Sussex University Hospitals NHS Trust (UK)
2. Portsmouth Hospitals NHS Trust (UK)
3. University Hospital Southampton NHS Foundation Trust (UK)
4. East Sussex Healthcare NHS Trust (UK)
5. Leeds Teaching Hospitals NHS Trust (UK)

When is the study starting and how long is it expected to run for?
August 2017 to September 2021

Who is funding the study?
Medtronic (USA)

Who is the main contact?
Duncan Fatz, duncan.fatz@nhs.net

Contact information

Type(s)
Scientific

Contact name
Mr Duncan Fatz

Contact details
Brighton & Sussex University Hospitals NHS Trust
Research & Development Office
SH353, 2nd Floor Sussex House
1 Abbey Road
Brighton
United Kingdom
BN2 1ES
+44 (0)1273 696955 ext. 4225
duncan.fatz@nhs.net

Additional identifiers

Protocol serial number
36582

Study information

Scientific Title
Randomised controlled trial of cryoablation versus cardioversion in persistent atrial fibrillation

Acronym
CHILLY-AF

Study objectives
The aim of this study is to determine whether cryoablation is more effective than cardioversion at preventing recurrence of persistent atrial fibrillation (AF).

Ethics approval required
Old ethics approval format

Ethics approval(s)
East of England – Essex Research Ethics Committee, 01/12/2017, ref: 17/EE/0448

Study design
Randomised; Interventional; Design type: Treatment, Complex Intervention

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Atrial fibrillation

Interventions
The study is a randomised comparison of cardioversion (DCCV) to catheter cryoablation in patients with persistent atrial fibrillation (AF).

Prior to intervention participants will have a physical examination, electrocardiogram and routine blood tests. Participants will be started on an antiarrhythmic medication and randomised to either a cardioversion or a cryoablation, which will continue for 6 weeks after the intervention. A cardioversion involves a "jump-starting" the heart under sedation or general anaesthesia. The procedure takes around 20 minutes. The cryoablation procedure involves freezing around the pulmonary veins using a balloon (cryoballoon) and measurement of electrical signal around the veins to ensure it has been successful. The procedure lasts around 90 minutes.

Patients will then be followed up with three clinic visits at 3, 6 and 12 months from intervention, along with a 24-hour Holter monitor to assess symptoms and medication review as well as a telephone interview at 9 months. All patients will be provided with and trained to use a home monitor to send weekly ECGs and further ECGs at times of symptoms. Patients will also be asked

to complete questionnaire forms (EQ-5D-5L and AFEQT questionnaires) at the beginning and end of the trial.

Intervention Type
Procedure/Surgery

Primary outcome(s)
1. Time to event analysis of first recurrence of atrial arrhythmia measured 90 days after index procedure: documented arrhythmia recurrence (atrial fibrillation, flutter or tachycardia), >30 seconds on Holter at 3, 6 and 12 months, sustained arrhythmia on hand held ECGs
2. Safety endpoint: composite of death from any cause and serious adverse events during the study based on patient history and medical records

Timepoint(s): Duration of the study

Key secondary outcome(s))
1. Death from any cause, death from arrhythmia, first rehospitalisation for cardiovascular causes, total number of hospitalizations for cardiovascular causes during the study based on patient history and medical records
2. Time to recurrent atrial fibrillation (any time), time to symptomatic atrial fibrillation is measured using either 24 hour Holter monitor or hand-held ECGs
3. Quality of life is measured using the EQ-5D-5L and AFEQT questionnaires at baseline and 12 months

Completion date
24/09/2021

Eligibility

Key inclusion criteria
1. First presentation of persistent atrial fibrillation
2. Suitable for cryo catheter ablation
3. EHRA (European Heart Rhythm Association) Class 2 or higher after optimal rate control

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Sex
All

Total final enrolment
150

Key exclusion criteria

1. Renal failure with creatinine > 200 µmol/L or on dialysis
2. Pregnancy: current or currently planning
3. Previous ablation for atrial fibrillation
4. Previous DC cardioversion
5. Current participation in another clinical trial
6. Sinus rhythm at screening

Date of first enrolment
01/02/2018

Date of final enrolment
30/09/2019

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
Brighton and Sussex NHS Hospitals (lead centre)
Royal Sussex County Hospital
Eastern Road
Brighton
United Kingdom
BN2 5BE

Study participating centre
University Hospital Southampton NHS Foundation Trust
Southampton General Hospital
Tremona Road
Southampton
United Kingdom
SO16 6YD

Study participating centre
Portsmouth Hospitals NHS Trust
Queen Alexandra Hospital
Southwick Hill Road
Cosham
Portsmouth
United Kingdom
PO6 3LY

Study participating centre
Leeds Teaching Hospitals NHS Trust
St James's University Hospital
Beckett Street
Leeds
United Kingdom
LS9 7TF

Study participating centre
East Sussex Healthcare NHS Trust
Eastbourne District General Hospital
Kings Drive
Eastbourne
United Kingdom
BN21 2UD

Sponsor information

Organisation
Brighton and Sussex University Hospitals NHS Trust

Funder(s)

Funder type
Industry

Funder Name
Medtronic

Alternative Name(s)
Medtronic Inc.

Funding Body Type
Private sector organisation

Funding Body Subtype
For-profit companies (industry)

Location
United States of America

Results and Publications

Individual participant data (IPD) sharing plan

Individual participant data that underlie the results reported in the current study, after de-identification (text, tables, figures, and appendices) and Study Protocol, Statistical Analysis Plan, Analytic Code will be available upon request beginning 3 months and ending 5 years following article publication. The data will be available to researchers who provide a methodologically sound proposal. Proposals should be directed to james.mccready@bsuh.nhs.uk. To gain access, data requestors will need to sign a data access agreement.

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Basic results			23/06/2023	No	No
HRA research summary			28/06/2023	No	No