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Bolus versus continuous study

Submission date
25/07/2012

Recruitment status
No longer recruiting

Registration date
30/07/2012

Overall study status
Completed

Last Edited
22/01/2019

Condition category
Musculoskeletal Diseases

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

Plain English summary of protocol

Background and study aims
Implanted devices for injecting drugs into the spine (intrathecal pumps) have been used to relieve chronic pain for nearly three decades. The advantage of the intrathecal route is that, compared to delivering the drug to the entire body, equal or better pain relief can be obtained with lower doses and therefore less severe side effects. In addition, it allows the use of drugs that cannot be administered by another route because they would otherwise be broken down or would be unable to cross from the blood into the brain.
We are carrying out a study involving 34 patients to look at the best way to programme intrathecal pumps in order to give the best pain relief. There are two main methods of programming. The first is to programme the pump so that it gives a constant dose regularly throughout the day. This is called a continuous infusion. The other method is to programme the pump to administer doses at intervals throughout the day, also known as intermittent bolus. We want to prove that administration of the same drugs by intermittent boluses will result in wider drug spread in the spinal fluid resulting in better pain relief.

Who can participate?
Across two sites, we aim to recruit 34 male and female patients, aged 18 and above, who have a programmable intrathecal pump implanted to administer morphine, bupivacaine, baclofen or clonidine for chronic pain. These will be recruited from existing pump patients within the outpatients pain clinic.

What does the study involve?
Patients will be randomly allocated to have their intrathecal pumps programmed to either continuous infusion or intermittent bolus. There will be a cross over period which will allow the patient to switch from one programming method to the other, meaning that patients will receive both methods of programming during the study.
Patients will attend the hospital four times over a period of five weeks. Each visit will take about 45 minutes followed by a 3-hour observation period during visit 2 and 3, to ensure patient safety. The first visit is the baseline visit where demographic data is collected before carrying out any study procedures. Visit 2 and 3 are programming visits and at visit 4 patients will be asked which programming method they preferred and the intrathecal pumps will be programmed according to their preference.

What are the possible benefits and risks of participating?
Those taking part may find that they prefer one method of programming over another, if it results in better pain relief. This may be a different programming method than they were used to before the trial.

Where is the study run from?
The James Cook University Hospital, UK (South Tees NHS Foundation Trust) in collaboration with Hopitale de Morge, Switzerland.

When is the study starting and how long is it expected to run for?
May 2011 to December 2012

Who is funding the study?
Medtronic Europe Ltd

Who is the main contact?
Dr Sam Eldabe
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Contact information

Type(s)
Scientific

Contact name
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Additional identifiers

Protocol serial number
9141

Study information

Scientific Title
Comparison of the effects of intermittent boluses to simple continuous infusion on patient global perceived effect in intrathecal therapy for pain

Acronym
BVC

Study objectives

In this study we propose to compare the efficacy of the same daily dose of drugs administered by intermittent boluses compared to simple continuous infusion on the Patients reported Global Impression of Change. We postulate that administration of the same drugs by intermittent boluses will result in wider drug spread in the spinal fluid resulting in better pain relief.

Ethics approval required
Old ethics approval format

Ethics approval(s)
East Midlands Research Ethics Committee, Northampton, 03/08/2010, ref: 10/H0402/54

Study design
Randomised interventional trial

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Musculoskeletal diseases

Interventions
The study is a randomised double blind two period crossover study. Two different modes of administration of the usual daily dose divided into 6 intermittent boluses and the second with the same dose administered as a simple continuous flow will be programmed. Each flow pattern is maintained for 2 weeks in a double blind randomized crossover design. Safety and efficacy are evaluated by means of patient- and assessor-based evaluations.

To ensure patients safety during the trial phases of intermittent bolus (IB) and Continuous Infusion (CI), concentration and dosing ranges for all four IMPs have been carefully considered. The safe maximum daily doses of the drugs Morphine, Baclofen, clonidine and bupivacaine account for both the IB and CI groups.

Intermittent Boluses Group (IB)
Subjects randomized to receive intermittent boluses will undergo programming by the unblinded investigator of their device in order for the device to deliver the smallest possible dose of continuous background infusion (pump programming does not allow for intermittent boluses alone).The remainder of the total daily dose will be fractionated into 6 intermittent maximum speed (delivered over the shortest time period allowable by the ITDD) boluses delivered at 4 hourly intervals by the pump. The total daily dose delivered by the pump will be the same as the patients entry daily dose.

Continuous Infusion Group (CI)
Patients randomized to simple continuous infusion will continue to receive the same dose of drugs at the same rate. Following pump programming patients will be observed in a clinical area for 3 hours with 2 hourly vital signs. Any reported side effects will be noted.
Each group will receive intermittent boluses or continuous infusion for a period of 2 weeks. Subjects who have been in group IB will crossover for a 2 week period to group CI and vice versa.

Intervention Type
Device

Primary outcome(s)
The Patient Global Impression of Change (PGIC), is a self-evaluation of the patients overall change since the start of the study will be completed at the end of each 2 week period using a 7-point Likert scale
Since the last visit to the pain clinic my overall pain control is
We chose the PGIC as a primary outcome measure as it will allow the patient to balance a potential improvement in pain relief with a potential worsening in side effects.

Key secondary outcome(s))
These will be measured at baseline and the end of each 2-week period.
Visual Analogue Scale of pain relief patients will score their pain on a 10cm line anchored with no pain at the 0cm end and Worst Pain Imaginable at the 10cm end. This will be measured by means of a 5 day pain diary to be completed 5 days before each visit
EQ-5D is a health related quality of life questionnaire which is divided into 5 dimensions: mobility, self care, usual activity, pain/discomfort and anxiety/depression, and will be measured at visit 2, visit 3 and visit 4.

Completion date
01/09/2012

Eligibility

Key inclusion criteria
1. Are implanted with a programmable Intrathecal Therapy Drug Device (ITDD)
2. Have achieved stable pain relief on continuous flow
3. Are capable of giving informed consent
4. Are willing to sign the Informed Consent form
5. Are male or female
6. Aged between 18 years and 65 years of age

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Sex
All

Key exclusion criteria

1. Fail to give informed consent
2. Are incapable of answering the questionnaires: PGIC, EQ5D, VAS Score for physical or psychological reasons 3. Have non-Programmable Device ITDD
4. Have Patient Therapy Manager devices (PTM's)
5. Are using Ziconotide Intrathecal Therapy
6. Are programmed with bolus doses (flex doses)
7. Have severe limitation in function and mobility
8. Are pregnant or lactating
9. Are not practising a safe method of birth control

Date of first enrolment
09/05/2011

Date of final enrolment
01/09/2012

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
James Cook Hospital
Middlesbrough
United Kingdom
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Sponsor information

Organisation
South Tees Hospitals NHS Trust (UK)

ROR
https://ror.org/02js17r36

Funder(s)

Funder type
Industry

Funder Name
Medtronic Europe Sarl (EU)

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	01/05/2017	22/01/2019	Yes	No
HRA research summary			28/06/2023	No	No