ISRCTN76049483 https://doi.org/10.1186/ISRCTN76049483

Intramuscular or combined intramuscular/intra-arterial administration of bone marrow mononuclear cells in patients with advanced limb ischaemia

Submission date
16/07/2007

Registration date
16/07/2007

Last Edited
31/12/2020

Recruitment status
No longer recruiting

Overall study status
Completed

Condition category
Circulatory System

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

Plain English summary of protocol
Not provided at time of registration

Contact information

Type(s)
Scientific

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Additional identifiers

Study information

Scientific Title

Intramuscular or combined intramuscular/intra-arterial administration of bone marrow mononuclear cells in patients with advanced limb ischaemia

Study objectives
The primary aim of our study was to test the feasibility and safety of exclusively intramuscular, and combined intramuscular/intra-arterial delivery of Bone marrow Mononuclear Cells (BMC) in patients with advanced limb ischaemia without conventional options for surgical or endovascular treatment.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Ethics approval received from the Medical Ethical Committee of the Leiden University Medical Centre on December 12, 2003 (ref: P03.149).

Study design
Randomised controlled trial

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Bone marrow mononuclear cells in patients with advanced limb ischaemia

Interventions
Hospital admittance was planned in a short-stay setting (24 - 48 hours). The harvest procedure was performed according to standard protocols for bone marrow donation for allogenic transplantation. 750 millilitre bone marrow was collected from the posterior iliac crest under epidural or general anaesthesia. The suspension was filtered and subsequently concentrated in a final volume of 40 mL. Upon concentration of the BMC-fraction, the erythrocyte fraction was collected separately and re-infused to the patient.

The mononuclear cells were implanted approximately 4 hours after bone marrow aspiration. The method of administration was randomly assigned to the patients using a random number table:
1. By local injection into the gastrocnemius muscle
2. By combined Intramuscular (IM) and Intra-Arterial (IA) delivery

The investigators were not blinded for the assignment. In case of total IM delivery, we implanted 1 ml using a 26-gauge needle on 40 sites, 1.5 cm deep, using the full surface of the gastrocnemius muscle. In patients assigned to the combined treatment arm, the volume of each IM injection was 0.5 ml. The remaining 20 ml was slowly infused after selective catheterisation of the superficial femoral artery (or profunda femoral artery in case of occlusion of the Superficial Femoral Artery [SFA]), performed according to the standard procedures within the Department of Radiology.

Intervention Type

Other

Phase
Not Specified

Primary outcome(s)
1. Wound healing/limb salvage (Fontaine 3/4), measured at 6 months
2. Pain-free walking distance (Fontaine 2), measured at 6 months

Key secondary outcome(s))
1. Ankle/brachial index, measured at 3, 6 and 12 months
2. Pain scores (Brief Pain Inventory), measured at 3, 6 and 12 months
3. Quality of Life (RAND-36), measured at 3, 6 and 12 months
4. Artery scores (angiogram), measured at 6 months
5. Limb salvage/wound healing and pain free walking distance at 3 and 12 months

Completion date
01/01/2006

Eligibility

Key inclusion criteria
1. Disabling claudication (Fontaines stages IIb/III or Rutherfords categories 3/4) or critical limb ischaemia (Fontaines stages IV or Rutherfords categories 5/6) despite greater than six months optimal medical therapy
2. Ineligibility for angioplasty or bypass procedures
3. Male of female, greater than 18 years old
4. Life expectancy greater than one year
5. Written informed consent

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Sex
All

Total final enrolment
16

Key exclusion criteria

1. Candidates for angioplasty or bypass procedures
2. Inability to undergo bone marrow harvesting
3. Life threatening co-morbidity
4. International Normalised Ratio (INR) greater than 2
5. History of malignant disease in five years prior to treatment
6. Inability to undergo arterial catheterisation
7. Inability to follow the protocol and to comply with the follow up requirements
8. Any other conditions that, in the opinion of the investigators, could interfere with the therapy or could pose a significant threat to the subject if the investigational therapy was to be initiated

Date of first enrolment
01/01/2004

Date of final enrolment
01/01/2006

Locations

Countries of recruitment
Netherlands

Study participating centre
Leiden University Medical Centre
Leiden
Netherlands
2300 RC

Sponsor information

Organisation
Leiden University Medical Centre (LUMC) (The Netherlands)

ROR
https://ror.org/027bh9e22

Funder(s)

Funder type
Hospital/treatment centre

Funder Name

Leiden University Medical Centre (LUMC) (The Netherlands)

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	01/01/2010	31/12/2020	Yes	No