Clinical trial results:
Bone marrow-derived mesenchymal stromal cell treatment in patients with severe ischaemic heart failure: a randomized placebo-controlled trial (MSC-HF trial)

Summary

EudraCT number	2008-001850-42
Trial protocol	DK
Global end of trial date	31 July 2014

Results information

Result version number	v1 (current)
This version publication date	07 April 2020
First version publication date	07 April 2020
Summary attachment (see zip file)	MSC CHF summary (Summary.docx) Publication European Heart Journal (Mathiasen - MSC-HF EHJ 2015 published.pdf)

Trial information

Trial identification

Sponsor protocol code	MSC-HF

Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT00644410
WHO universal trial number (UTN)	-

Notes:

Sponsors

Sponsor organisation name	Rigshospitalet
Sponsor organisation address	Blegdamsvej 9, Copenhagen, Denmark, 2100
Public contact	Jens Kastrup Professor, Department of Cardiology 2014, +45 35452819, jens.kastrup@regionh.dk
Scientific contact	Jens Kastrup Professor, Department of Cardiology 2014, +45 35452819, jens.kastrup@regionh.dk

Notes:

Paediatric regulatory details

Is trial part of an agreed paediatric investigation plan (PIP)	No
Does article 45 of REGULATION (EC) No 1901/2006 apply to this trial?	No
Does article 46 of REGULATION (EC) No 1901/2006 apply to this trial?	No

Notes:

Results analysis stage

Analysis stage	Final
Date of interim/final analysis	30 November 2014
Is this the analysis of the primary completion data?	Yes
Primary completion date	31 July 2014
Global end of trial reached?	Yes
Global end of trial date	31 July 2014
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:

It is a single centre, randomised controlled study of the effect of NOGA guided direct intramyocardial injection of mesenchymal stromal cells on the developement of new myocardium and blood vessels in patients with heart failure.

Stem cells will be obtained from the bone marrow and culture expanded for 6 - 8 weeks before injected into the myocardium.

The patients will be followed for safety, clinical symptoms, MRI and CT for 12 months

Protection of trial subjects:

The GMP unit in the Capital Region of Denmark monitored the study.

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	21 April 2009
Long term follow-up planned	Yes
Long term follow-up rationale	Safety, Efficacy, Scientific research
Long term follow-up duration	1 Years
Independent data monitoring committee (IDMC) involvement?	No

Notes:

Population of trial subjects

Subjects enrolled per country

Country: Number of subjects enrolled	Denmark: 60
Worldwide total number of subjects	60
EEA total number of subjects	60

Notes:

Subjects enrolled per age group

In utero	0
Preterm newborn - gestational age < 37 wk	0
Newborns (0-27 days)	0
Infants and toddlers (28 days-23 months)	0
Children (2-11 years)	0
Adolescents (12-17 years)	0

Adults (18-64 years)	8
From 65 to 84 years	52
85 years and over	0

Subject disposition

Recruitment

Recruitment details:

Patients followed for Heart failure or referred for an invasive investigation to the Department of Cardiology was screened for participation in the study.

Pre-assignment

Screening details:

At time of inclusion the patients were on maximum tolerable medication with no changes in medication for two months. Patients had LVEF≤45% and were New York Heart Association (NYHA) Class II-III. Major exclusion criteria were acute coronary syndrome, stroke or transitional cerebral ischemia within six weeks, revascularization within 4 months, moder

Pre-assignment period milestones

Number of subjects started	60
Number of subjects completed	60

Period 1

Period 1 title	Overall trial (overall period)
Is this the baseline period?	Yes
Allocation method	Randomised - controlled
Blinding used	Double blind
Roles blinded	Subject, Investigator, Monitor, Data analyst, Carer, Assessor

Arms

Are arms mutually exclusive?	Yes
Arm title	Active - MSC

Arm description:

Injection of autologous bone marrow derived mesenchymal stromal cells

Arm type	Active comparator
Investigational medicinal product name	Mesenchymal stromal cells
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Solution for injection
Routes of administration	Intracardiac use

Dosage and administration details:

The patient was treated with the number of cell produced after two cell culture expansion passages : mean of 77.5±67.9 x106 (inter quartile range 53.8x106) MSCs

Arm title	Placebo

Arm description:

Saline injection

Arm type	Placebo
Investigational medicinal product name	Saline
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Injection
Routes of administration	Intracardiac use

Dosage and administration details:

0.2 ml isotonic NaCl

Number of subjects in period 1	Active - MSC	Placebo
Started	40	20
Completed	40	20

Baseline characteristics

Reporting groups	
Reporting group title	Active - MSC
Reporting group description:	
Injection of autologous bone marrow derived mesenchymal stromal cells	
Reporting group title	Placebo
Reporting group description:	
Saline injection	

Reporting group values	Active - MSC	Placebo	Total
Number of subjects	40	20	60
Age categorical Units: Subjects			
Age continuous Units: years			
arithmetic mean	66.1	64.2	
standard deviation	± 7.7	± 10.6	-
Gender categorical Units: Subjects			
Female	4	6	10
Male	36	14	50

End points

End points reporting groups

Reporting group title	Active - MSC
Reporting group description:	
Injection of autologous bone marrow derived mesenchymal stromal cells	
Reporting group title	Placebo
Reporting group description:	
Saline injection	

Primary: Left ventricular end-systolic volume

End point title	Left ventricular end-systolic volume
End point description:	
End point type	Primary
End point timeframe:	
Baseline to 6 months follow-up	

End point values	Active - MSC	Placebo		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	40	20		
Units: ml				
geometric mean (confidence interval 95%)	-7.6 (-11.8 to -3.4)	5.4 (-0.4 to 11.2)		

Statistical analyses

Statistical analysis title	difference
Comparison groups	Active - MSC v Placebo
Number of subjects included in analysis	60
Analysis specification	Pre-specified
Analysis type	equivalence
P-value	< 0.05
Method	t-test, 2-sided

Adverse events

Adverse events information[1]

Timeframe for reporting adverse events:

baseline to 6 months follow-up

Adverse event reporting additional description:

There was no serious adverse event due to the mesenchymcal stem cell therapy

Assessment type	Systematic

Dictionary used

Dictionary name	Hospitals reports
Dictionary version	1

Reporting groups

Reporting group title	Mesenchymal stromal cell

Reporting group description:

Patients treated with mesenchymal stromal cells

Reporting group title	Placebo

Reporting group description:

Patients treated with placebo

Serious adverse events	Mesenchymal stromal cell	Placebo	
Total subjects affected by serious adverse events			
subjects affected / exposed	0 / 40 (0.00%)	0 / 20 (0.00%)	
number of deaths (all causes)	1	1	
number of deaths resulting from adverse events	0	0	

Frequency threshold for reporting non-serious adverse events: 1 %

Non-serious adverse events	Mesenchymal stromal cell	Placebo	
Total subjects affected by non-serious adverse events			
subjects affected / exposed	0 / 40 (0.00%)	0 / 20 (0.00%)	

Notes:

[1] - There are no non-serious adverse events recorded for these results. It is expected that there will be at least one non-serious adverse event reported.
Justification: There were no adverse or serious adverse events that could be related to the treatment.

More information

Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? No

Interruptions (globally)

Were there any global interruptions to the trial? No

Limitations and caveats

None reported

Online references

http://www.ncbi.nlm.nih.gov/pubmed/25926562