Clinical trial results:
The Effects of Nitric Oxide for Inhalation on Myocardial Infarction Size.

Summary

EudraCT number	2007-002931-95
Trial protocol	BE DE HU
Global end of trial date	01 May 2016

Results information

Result version number	v1 (current)
This version publication date	15 March 2024
First version publication date	15 March 2024
Summary attachment (see zip file)	NOMI publication (NOMI_EHJ_June2018.pdf)

Trial information

Trial identification

Sponsor protocol code	LCC2010.01102

Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT01398384
WHO universal trial number (UTN)	-

Notes:

Sponsors

Sponsor organisation name	UZ Leuven
Sponsor organisation address	Herestraat 49, LEUVEN, Belgium, 3000
Public contact	Stefan Janssens, UZ Leuven, 32 16344246, stefan.janssens@uzleuven.be
Scientific contact	Stefan Janssens, UZ Leuven, 32 16344246, stefan.janssens@uzleuven.be

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	02 June 2016
Is this the analysis of the primary completion data?	Yes
Primary completion date	02 June 2014
Global end of trial reached?	Yes
Global end of trial date	01 May 2016
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:

The primary objective of the trial is to assess whether or not inhaled nitric oxide can decrease myocardial infarction (MI) size as a fraction of left ventricular (LV) size at 48-72 hours in patients presenting with an ST segment elevation MI who undergo successful percutaneous coronary intervention.

Protection of trial subjects:

See protocol

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	01 October 2010
Long term follow-up planned	No
Independent data monitoring committee (IDMC) involvement?	Yes

Notes:

Population of trial subjects

Subjects enrolled per country

Country: Number of subjects enrolled	Poland: 56
Country: Number of subjects enrolled	Belgium: 93
Country: Number of subjects enrolled	Hungary: 100
Worldwide total number of subjects	249
EEA total number of subjects	249

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)	155
From 65 to 84 years	84

85 years and over	10

Subject disposition

Recruitment

Recruitment details:

The patient must meet the following inclusion criteria:
1. Acute myocardial infarction (defined as an episode of chest pain or related symptom lasting greater than 2 hours but less than 12 hours and electrocardiographic evidence of ST elevation (measured as 0.08 seconds after the J point; sum > or = to 0.6 mV in leads I, II, III, AVL, AVF, V1-V6

Pre-assignment

Screening details:

The patient must meet the following inclusion criteria:
1. Acute myocardial infarction (defined as an episode of chest pain or related symptom lasting greater than 2 hours but less than 12 hours and electrocardiographic evidence of ST elevation (measured as 0.08 seconds after the J point; sum > or = to 0.6 mV in leads I, II, III, AVL, AVF, V1-V6

Period 1

Period 1 title	Study period (overall period)
Is this the baseline period?	Yes
Allocation method	Randomised - controlled
Blinding used	Double blind
Roles blinded	Subject, Investigator

Arms

Are arms mutually exclusive?	Yes
Arm title	Nitric oxide

Arm description: -

Arm type	Active comparator
Investigational medicinal product name	Nitric oxide
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Inhalation solution
Routes of administration	Inhalation use

Dosage and administration details:

80 ppm nitric oxide, 4 h inhalation

Arm title	Placebo

Arm description: -

Arm type	Placebo
Investigational medicinal product name	nitrogen gas
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Inhalation solution
Routes of administration	Inhalation use

Dosage and administration details:

80 ppm nitrogen gas, 4h inhalation

Number of subjects in period 1	Nitric oxide	Placebo
Started	122	127
Completed	122	127

Baseline characteristics

Reporting groups	
Reporting group title	Nitric oxide
Reporting group description: -	
Reporting group title	Placebo
Reporting group description: -	

Reporting group values	Nitric oxide	Placebo	Total
Number of subjects	122	127	249
Age categorical Units: Subjects			

Age continuous			
Age continuous			
Units: years			
arithmetic mean	63	60	
standard deviation	± 13	± 11	-
Gender categorical Units: Subjects			
Female	44	33	77
Male	78	94	172

End points

End points reporting groups	
Reporting group title	Nitric oxide
Reporting group description: -	
Reporting group title	Placebo
Reporting group description: -	

Primary: Primary endpoint	
End point title	Primary endpoint
End point description:	
The primary efficacy objective was myocardial infarction size as percentage of left ventricular mass at 48–72 h after randomisation measured using magnetic resonance imaging (MRI).	
End point type	Primary
End point timeframe:	
48–72 h after randomisation	

End point values	Nitric oxide	Placebo		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	109	116		
Units: MI size / LV mass (%)				
arithmetic mean (standard deviation)	18.0 (± 13.4)	19.4 (± 15.4)		

Statistical analyses

Statistical analysis title	Myocardial Infarction Size as a Fraction of Left V
Comparison groups	Nitric oxide v Placebo
Number of subjects included in analysis	225
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.43
Method	ANOVA
Parameter estimate	Mean difference (final values)
Point estimate	-1.52
Confidence interval	
level	95 %
sides	2-sided
lower limit	-5.3
upper limit	2.2

Adverse events

Adverse events information

Timeframe for reporting adverse events:

48-72 hours and 4 months

Adverse event reporting additional description:

Any untoward or unfavorable medical occurrence in a participant, including any abnormal sign (for example, abnormal physical exam or laboratory finding), symptom, or disease, temporally associated with the participant's participation in the research, whether or not considered related to the participant's participation in the research.

Assessment type	Systematic

Dictionary used

Dictionary name	MedDRA
Dictionary version	13

Reporting groups

Reporting group title	Nitric oxide
Reporting group description: -	
Reporting group title	Placebo

Reporting group description: -

Serious adverse events	Nitric oxide	Placebo	
Total subjects affected by serious adverse events			
subjects affected / exposed	9 / 122 (7.38%)	5 / 127 (3.94%)	
number of deaths (all causes)	5	8	
number of deaths resulting from adverse events			
Vascular disorders			
Hypotension			
subjects affected / exposed	0 / 122 (0.00%)	1 / 127 (0.79%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Cardiac disorders			
left heart failure			
subjects affected / exposed	1 / 122 (0.82%)	0 / 127 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
ventricular fibrillation			
subjects affected / exposed	3 / 122 (2.46%)	0 / 127 (0.00%)	
occurrences causally related to treatment / all	0 / 3	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
cardiogenic shock			

subjects affected / exposed	3 / 122 (2.46%)	0 / 127 (0.00%)	
occurrences causally related to treatment / all	0 / 3	0 / 0	
deaths causally related to treatment / all	0 / 2	0 / 0	
ventricular tachycardia			
subjects affected / exposed	2 / 122 (1.64%)	1 / 127 (0.79%)	
occurrences causally related to treatment / all	0 / 2	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
total AV block			
subjects affected / exposed	2 / 122 (1.64%)	0 / 127 (0.00%)	
occurrences causally related to treatment / all	0 / 2	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
stenosis			
subjects affected / exposed	1 / 122 (0.82%)	1 / 127 (0.79%)	
occurrences causally related to treatment / all	0 / 1	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Respiratory, thoracic and mediastinal disorders			
Pulmonary oedema			
subjects affected / exposed	0 / 122 (0.00%)	1 / 127 (0.79%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	

Frequency threshold for reporting non-serious adverse events: 5 %

Non-serious adverse events	Nitric oxide	Placebo	
Total subjects affected by non-serious adverse events			
subjects affected / exposed	11 / 122 (9.02%)	11 / 127 (8.66%)	
Vascular disorders			
Ischaemia			
subjects affected / exposed	11 / 122 (9.02%)	11 / 127 (8.66%)	
occurrences (all)	11	11	

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/29800130