Clinical trial results:
Qualification of 82Rb PET for measurement of tumor perfusion. Uptake in primary prostate cancer vs healthy prostate

Summary

EudraCT number	2016-003185-26
Trial protocol	DK
Global end of trial date	11 September 2017

Results information

Result version number	v1 (current)
This version publication date	14 October 2017
First version publication date	14 October 2017

Trial information

Trial identification

Sponsor protocol code	2016-NUK-01

Additional study identifiers

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

Notes:

Sponsors

Sponsor organisation name	Aarhus University Hospital, Dept. of Nuclearmedicine & PET
Sponsor organisation address	Palle Juul-Jensens Boulevard 99, Århus N, Denmark, 8200
Public contact	Dept. of Nuclearmedicine & PET, Aarhus University Hospital, 0045 78456210, madsjoch@rm.dk
Scientific contact	Dept. of Nuclearmedicine & PET, Aarhus University Hospital, 0045 78456210, madsjoch@rm.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	11 September 2017
Is this the analysis of the primary completion data?	Yes
Primary completion date	11 September 2017
Global end of trial reached?	Yes
Global end of trial date	11 September 2017
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:

It is well known that blood flow in tumors are higher than in healthy tissue. The main objective of the trial is to prove that the increased blood flow in tumors can be detected by the PET flow tracer 82Rb. In this project we examine the prostate.

Protection of trial subjects:

None (None needed)

Background therapy:

None

Evidence for comparator:

The healthy controls have normal PSA values and no known disease of the prostate.

Actual start date of recruitment	01 October 2016
Long term follow-up planned	No
Independent data monitoring committee (IDMC) involvement?	No

Notes:

Population of trial subjects

Subjects enrolled per country

Country: Number of subjects enrolled	Denmark: 30
Worldwide total number of subjects	30
EEA total number of subjects	30

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)	12
From 65 to 84 years	18
85 years and over	0

Subject disposition

Recruitment

Recruitment details:

The 15 patients with prostate cancer were recruited in relation to a clinical 68Ga-PSMA PET/CT scan. The 15 controls were recruited in relation to a clinical 82Rb PET/CT myocardial perfusion scan. The controls had a PSA blood sample taken and were asked about symptoms from lower urinary tract and known prostate disease.

Pre-assignment

Screening details:

The patients had high risk prostate cancer and no other known malignancies.
The controls had a PSA blood sample taken and were asked about symptoms from lower urinary tract and no known prostate disease and no other known malignancies.

Period 1

Period 1 title	Overall trial (overall period)
Is this the baseline period?	Yes
Allocation method	Non-randomised - controlled
Blinding used	Not blinded

Arms

Are arms mutually exclusive?	Yes
Arm title	Patients with prostate cancer

Arm description:

High risk prostate cancer patients

Arm type	Patients with prostate cancer - scanned
Investigational medicinal product name	Cardiogen-82
Investigational medicinal product code	PR1
Other name	
Pharmaceutical forms	Solution for infusion
Routes of administration	Intravenous use

Dosage and administration details:

Radiopharmaceutical diagnostics. The Cardiogen-82 generator can eluate a new dosage of Rubidium-82 every 10 minutes for directly infusion in the patient. The dosage of radioactivity is approximately 1110 MBq.

Arm title	Healthy controls

Arm description:

Men without known disease in the prostate gland

Arm type	No intervention

No investigational medicinal product assigned in this arm

Number of subjects in period 1	Patients with prostate cancer	Healthy controls
Started	15	15
Completed	15	12
Not completed	0	3
We find prostate cancer on the scan	-	1
hip proteses = inkonklusive images	-	1
elevated PSA = eksklusion kriteria	-	1

Baseline characteristics

Reporting groups	
Reporting group title	Overall trial

Reporting group description: -

Reporting group values	Overall trial	Total	
Number of subjects	30	30	
Age categorical Units: Subjects			
Adults (18-64 years)	12	12	
From 65-84 years	18	18	
Age continuous Units: years			
arithmetic mean	65.73		
standard deviation	± 7.35	-	
Gender categorical			
All participants are men			
Units: Subjects			
Female	0	0	
Male	30	30	

End points

End points reporting groups

Reporting group title	Patients with prostate cancer
Reporting group description: High risk prostate cancer patients	
Reporting group title	Healthy controls
Reporting group description: Men without known disease in the prostate gland	

Primary: SUVmean(Tumor, PSMA guided) vs SUVmean(controls)

End point title	SUVmean(Tumor, PSMA guided) vs SUVmean(controls)
End point description:	
End point type	Primary
End point timeframe: 3/2-2017 - 20/7-2017	

End point values	Patients with prostate cancer	Healthy controls		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	14[1]	12		
Units: SUV				
arithmetic mean (standard deviation)				
Tumor SUV mean PSMA guidet	3.19 (± 0.48)	1.68 (± 0.37)		

Notes:

[1] - One of the patients had low or none PSMA expression in the prostata.

Statistical analyses

Statistical analysis title	T-test for difference in means
Statistical analysis description: T-test for analysis of the difference between mean SUV in the tumors of the patients (PSMA guided) and mean SUV in the total prostate in the healthy controls.	
Comparison groups	Patients with prostate cancer v Healthy controls
Number of subjects included in analysis	26
Analysis specification	Pre-specified
Analysis type	equivalence[2]
P-value	< 0.0001 [3]
Method	t-test, 2-sided

Notes:

[2] - T-test for analysis of the difference between mean SUV in the tumors of the patients (PSMA guided) and mean SUV in the total prostate in the healthy controls.

[3] - A very low p-value that proves significantly higher mean SUV in the tumors of the patients (PSMA guided) than mean SUV in the total prostate in the healthy controls.

Secondary: SUVmean(Tumor, 60% threshold) vs SUVmean(controls)

End point title	SUVmean(Tumor, 60% threshold) vs SUVmean(controls)

End point description:

End point type	Secondary

End point timeframe:

3/2-2017 - 30/7-2017

End point values	Patients with prostate cancer	Healthy controls		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	15	12		
Units: SUV				
arithmetic mean (standard deviation)				
SUV mean 60% threshold	3.85 (± 0.82)	1.68 (± 0.37)		

Statistical analyses

Statistical analysis title	T-test for difference in means

Statistical analysis description:

T-test for the difference in SUVmean in the tumors of the patients (60% threshold method) and the SUVmean of the total prostate of the healthy controls.

Comparison groups	Patients with prostate cancer v Healthy controls
Number of subjects included in analysis	27
Analysis specification	Pre-specified
Analysis type	equivalence[4]
P-value	< 0.0001 [5]
Method	t-test, 2-sided

Notes:

[4] - T-test for the difference in SUVmean in the tumors of the patients (60% threshold method) and the SUVmean of the total prostate of the healthy controls.

[5] - A very low p-value proves that SUVmean in the tumors of the patients (60% threshold method) are significantly higher than the SUVmean of the total prostate of the healthy controls.

Adverse events

Adverse events information[1]	
Timeframe for reporting adverse events: 3/2-2017 - 11/9-2017	
Assessment type	Systematic

Dictionary used	
Dictionary name	MedDRA
Dictionary version	1

Frequency threshold for reporting non-serious adverse events: 0 %

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: No adverse events were reported, (this was as expected, as 82Rb has no known adverse effects)

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