ASORAS Trial;AssOciation between Renal sympathetic denervation and Arterial Stiffness

Published: 10-04-2013
Last updated: 05-10-2024

The main purpose of this study is to assess the impact of arterial stiffness on the response in 24h ambulatory blood pressure reduction following renal sympathetic denervation in patients with primary hypertension with or without diastolic...

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Heart failures
Study type	Interventional

Summary

ID

NL-OMON54630

Source
ToetsingOnline

Brief title
ASORAS Trial

Condition

- Heart failures
- Vascular hypertensive disorders

Synonym
high blood pressure, hypertension

Research involving
Human

Sponsors and support

Primary sponsor: Erasmus MC, Universitair Medisch Centrum Rotterdam
Source(s) of monetary or material Support: Medtronic,Medtronic Trading NL BV

Intervention

Keyword: Arterial stiffness, Diastolic dysfunction, Renale Sympathetic denervation

Outcome measures

Primary outcome

Primary endpoint:

To assess the predictive value of arterial stiffness measured by MRI on the blood pressure response to renal artery denervation in patients with or without diastolic dysfunction using 24h ambulant blood pressure monitoring.

Primary safety endpoint

The occurrence of cardiovascular death, major access site bleeding, acute kidney injury and renal artery stenosis at 6 months.

Secondary outcome

1. To evaluate the change in arterial stiffness at baseline vs. 6 and 12 months post procedure.

2. To assess the impact of diastolic function using echo at baseline on the blood pressure response to renal artery denervation.

3. To assess the change in left ventricular volume and diastolic function following renal artery denervation.

4. To assess the change in renal perfusion at baseline vs. 6 and 12 months post procedure

5. To assess the change in blood pressure pre- vs. post procedure using 24h ambulatory blood pressure measurement.

6. Acute procedural safety (defined as the absence of peri-procedural safety

endpoints)

7. The individual items of the primary safety endpoint.

8. Newly acquired renal artery stenosis and/or repeat renal artery intervention.

9. Development of renal failure and/or requirement of dialysis

10. Hospitalization for hypertensive emergency.

Study description

Background summary

The estimated incidence of hypertension in the general population is estimated to be between 30 and 40% and suboptimal blood pressure control is the largest contributor to death worldwide. Despite the prevalence of hypertension and its associated complications, control of the disease is far from adequate. The prevalence of therapy resistant hypertension reaches up to 25% of all hypertensive patients treated in Europe. Increased sympathetic nervous system (SNS) activity has been documented in systolic-diastolic and isolated systolic hypertension, in white coat and masked hypertension and pregnancy induced hypertension by using sophisticated techniques for measuring adrenergic activity. Furthermore, SNS activity increases progressively and in parallel with hypertensive stages. The contribution of the kidney*s somatic afferent nerves, as an underlying cause of elevated central sympathetic drive, and the consequences of excessive efferent sympathetic signals to the kidney itself, as well as other organs, identify the renal sympathetic nerves as a logical therapeutic target for diseases linked by excessive central sympathetic drive. Renal sympathetic denervation is an emerging technology for the treatment of therapy resistant hypertension. By one single invasive procedure taking about 45 minutes, approximately 6 radiofrequency ablations will be delivered to each renal artery. Previous studies already showed that the technology is safe and effective. Nevertheless, despite the fact that almost all patients did show a significant reduction in blood pressure after 1 to 2 years of follow-up, there seems be an apparent inter-individual difference in the treatment effect.
In recent years, great emphasis has been placed on the role of arterial stiffness in the development of cardiovascular diseases. More specifically, arterial stiffening has been identified as a marker for increased cardiovascular disease risk and is increasingly used as a parameter in the clinical assessment of patients.

Study objective

The main purpose of this study is to assess the impact of arterial stiffness on the response in 24h ambulatory blood pressure reduction following renal sympathetic denervation in patients with primary hypertension with or without diastolic dysfunction. In addition, the effect of renal denervation on arterial stiffness and diastolic function will be assessed.

Study design

Two-arm study of patients with primary hypertension and a systolic blood pressure of 160 mmHg or more despite the use of at least three antihypertensive drugs (including one diuretic). Arm 1 will include 15 patients with diastolic dysfunction; arm 2 will include 15 patients without diastolic dysfunction.
In order to assess the natural evolvement in aortic stiffness in patients not undergoing renal denervation 5 patients out of both group will undergo standard analyses including MRI at screening and at 6 months without having been treated. This cohort of 10 patients will undergo renal denervation at 6 months and will be followed in a similar manner as those having received the treatment at baseline. Yearly follow-up will be continued up until 5 years.

Intervention

Placed percutaneously, the Simplicity renal denervation catheter will be advanced into the renal artery using a routine femoral artery approach in a cardiac catheterization laboratory setting. Radiofrequency ablation will be applied by using an automated programmed algorhythm (pre-programmed time and intensity)

Study burden and risks

Patients will undergo thorough pre-procedure assessment and imaging assessment (both MRI ultrasound) prior to selection and inclusion into the study. The procedure is initiated by puncture of the femoral artery with its inherent risks including bleeding, aneurysm formation, dissection, thrombosis and perforation. However, these risks are not different from each comparable form of angiography in which the groin is punctured and the access procedure is known for its low and acceptable complication risk. An additional potential procedure risk is caused by the radiofrequency ablation of the renal artery with focal damage of the endothelium on the coagulation spots. However, study data thus far do not show any signs of arterial damage due to the ablation procedure.

Based on previous studies using the Simplicity renal denervation system in approximately 350 patient, the following complications were recorded:
- damage to the blood vessels of the kidney in approximately 1% of the patients
- blood clots leading to heart attach or stroke in approximately 1-2%
- extended hospital stay in 1-2%

- pseudoaneurysm of the femoral artery in approximately 1-2% of the patients
- (temporarily) low blood pressure in 1-2% of the patients
- urinary tract infection in 1-2% of the patients
- renal artery stening in 1-2% of the patients
- arrhythmias during the procedure in 1-2%

Contacts

Public
Erasmus MC, Universitair Medisch Centrum Rotterdam

Dr. Molewaterplein 40
Rotterdam 3015 GD
NL
Scientific
Erasmus MC, Universitair Medisch Centrum Rotterdam

Dr. Molewaterplein 40
Rotterdam 3015 GD
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

1. Age >=18 years;
2. Systolic blood pressure of 160 mmHg or more despite the use of at least three antihypertensive drugs (including one diuretic);
3. Presence of diastolic dysfunction at baseline in 50% of the population.
4. A glomerular filtration rate of 45ml/min/1.73m2 or more;

5. Written informed consent;
6. The patient agrees to the follow-up including the imaging modalities;

Exclusion criteria

1. Pregnancy;
2. Renal artery abnormalities;
3. Known secondary causes of hypertension with the exception of obstructive sleep apnea syndrome;
4. General MRI contra-indications (Appendix I);
5. The patient has other medical illness (i.e., cancer or congestive heart failure) that may cause the patient to be non-compliant with the protocol, confound the data interpretation or is associated with limited life expectancy (i.e., less than one year);
6. A mean systolic blood pressure of less than 135mmHg pre procedure by 24h ambulatory blood pressure measurement;

Study design

Design

Study phase:	4
Study type:	Interventional
Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	29-05-2013
Enrollment:	30
Type:	Actual

Medical products/devices used

Generic name:	Medtronic Symplicity catheter
Registration:	Yes - CE intended use

Ethics review

Approved WMO Date:	10-04-2013
Application type:	First submission
Review commission:	METC Erasmus MC, Universitair Medisch Centrum Rotterdam (Rotterdam)
Approved WMO Date:	19-08-2013
Application type:	Amendment
Review commission:	METC Erasmus MC, Universitair Medisch Centrum Rotterdam (Rotterdam)
Approved WMO Date:	14-07-2017
Application type:	Amendment
Review commission:	METC Erasmus MC, Universitair Medisch Centrum Rotterdam (Rotterdam)
Approved WMO Date:	07-07-2023
Application type:	Amendment
Review commission:	METC Erasmus MC, Universitair Medisch Centrum Rotterdam (Rotterdam)
Approved WMO Date:	25-07-2024
Application type:	Amendment
Review commission:	METC Erasmus MC, Universitair Medisch Centrum Rotterdam (Rotterdam)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL42280.078.12