Glycocalyx measurements in people with premature cardiovascular disease.

No registrations found.

Ethical review	Not applicable
Status	Pending
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON25534

Source
Nationaal Trial Register

Brief title
N/A

Health condition

Atherosclerosis is currently the leading cause of death and disability in the developed world, often causing myocardial and cerebral infarction, kidney failure and peripheral arterial occlusive disease. Atherosclerosis is considered to be a chronic inflammatory response of the arterial wall, initiated by injury of the endothelium. The cause of this injury is unknown, but several factors, like hyperlipidemia, hypertension, smoking, toxins and viruses, have been indicated to play a role in its pathogenesis. This injury of the endothelium causes an increased migration of leukocytes and lipids into the intima, hereby inducing chronic inflammation, endothelial dysfunction and eventually formation of atherosclerosis. Flow mediated dilatation (FMD) is a known method to measure endothelial dysfunction, and therefore a measure of atherosclerosis. Unfortunately this method has its shortcomings. There is a widespread discussion about its large variability and normal values. Furthermore, the measurements are conducted in the brachial artery, which implies that this artery is a reflection of the vasculature of the whole body. On the other hand, the brachial artery is a vessel in which atherosclerosis never occurs. Therefore, better methods are needed to unravel the many fundamentals of the etiology of the disease. In this area, more research is needed to explain this complicated disease.

Premature atherosclerosis is even a greater challenge. Patients with premature atherosclerosis often display few risk factors, but the clinical manifestations are evident. The question is, if classic risk factors are not the principle cause, what causes this early

atherogenesis? The answer may lie in the fact that atherosclerosis is not a monogenic process, but involves both genetics and environmental factors. Possibly premature atherosclerosis may be partly a different disease entity as compared with atherosclerosis in the elderly. This possibility is not taken into account during current treatment of these young individuals.

Sponsors and support

Primary sponsor: University of Maastricht, research institute CARIM
Source(s) of monetary or material Support: Nederlandse Hartstichting

Intervention

Outcome measures

Primary outcome

The volume of the intravascular glycocalyx, before and after NTG administration, in subjects with premature atherosclerosis before the age of 40 years as compared to healthy control subjects.

Secondary outcome

No secondary outcomes.

Study description

Background summary

The pathophysiology of premature atherosclerosis is poorly understood. Patients often display few risk factors, but the clinical manifestations are evident. If atherosclerosis is expressed at a very young age, it is likely that besides the classical risk factors there are also genetic factors that play an important role. Therefore, early detection of vascular changes would make it possible to identify unaffected subjects at risk for atherosclerosis. One of these early vascular alterations might be the changes of the vascular glycocalyx, which is a new component of the vasculature and as been associated with surrogate endpoints of cardiovascular disease.
We therefore, hypothesize that glycocalyx volume is diminished in subjects with premature atherosclerosis.
The subjects will be included in the Netherlands.

Study objective

The pathophysiology of premature atherosclerosis is poorly understood. Patients often display few risk factors, but the clinical manifestations are evident. If atherosclerosis is expressed at a very young age, it is likely that besides the classical risk factors there are also genetic factors that play an important role. Therefore, early detection of vascular changes would make it possible to identify unaffected subjects at risk for atherosclerosis. One of these early vascular alterations might be the changes of the vascular glycocalyx, which is a new component of the vasculature and as been associated with surrogate endpoints of cardiovascular disease.
We therefore, hypothesize that glycocalyx volume is diminished in subjects with premature atherosclerosis.

Nitroglycerine (NTG) will allow differentiation between a normal thick glycocalyx in healthy individuals and pathophysiolically swollen glycocalyx, which is instable, and hyperdynamic, in the subjects with premature atherosclerosis.

Study design

We will measure the intravascular glycocalyx volume with OPS, timepoint 2 years.

Intervention

We will measure glycocalyx volumes with sublingual OPS imaging before and after NTG administration.

Contacts

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Eligibility criteria

Inclusion criteria

Cases: Male and female.

Subjects should have premature cardiovascular disease, which will be defined as cardiac, cerebral or peripheral vascular disease before the age of 40 years. Since a diminished glycocalyx volume is viewed as one of the first vascular alterations before overt atherosclerosis develops, we believe it is of no concern when the cardiovascular event had occurred. Furthermore, all of these subjects must have a positive family history for cardiovascular disease. This will be defined as at least one first degree or two or more second degree family members with cardiovascular disease before the age of 55 for men and before the age of 60 for women.

Controls:

Controls will be defined as healthy in case they have no cardiovascular history, such as no cardiac, cerebrovascular or peripheral artery disease and no complaints of angina, claudication or TIA and no family history for cardiovascular disease. Furthermore, they should be between the age of 35 and 55 years old.

Exclusion criteria

Cases:

Patients will be excluded if they have a positive history for hypertension, diabetes mellitus or other disease and in case of pregnancy or lactating women, if subjects are below the age of 18 years, or if subjects are unable to give informed consent.

Controls:

Controls will be excluded if they have had a myocardial infarction, CABG, PTCA, stroke, TIA or peripheral occlusive disease or complaints referring to one of these. They are also excluded if they have a positive family history for cardiovascular disease. Furthermore, they should not have a history of diabetes, hypertension, hypercholesterolemia or other disease. Besides subjects will be excluded in case of pregnancy or lactating women, if subjects are below the age of 18 years, or if subjects are unable to give informed consent.

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Open (masking not used)
Control:	Active

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-05-2009
Enrollment:	40
Type:	Anticipated

Ethics review

Not applicable

Application type:	Not applicable

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
NTR-new	NL1599
NTR-old	NTR1679
Other	MEC AZM/UM Maastricht : 09-3-001
ISRCTN	ISRCTN wordt niet meer aangevraagd

Study results

Summary results
N/A