A study to compare function and phenotype of bone marrow and circulating immune cells of healthy control subjects to vascular patients

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The main objective of this study is to compare the function and phenotype of bone marrow HSPC*s in AMI patients to those of healthy control subjects.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Coronary artery disorders
Study type	Observational invasive

Summary

ID

NL-OMON46975

Source
ToetsingOnline

Brief title
ACCESS

Condition

- Coronary artery disorders
- Arteriosclerosis, stenosis, vascular insufficiency and necrosis

Synonym
heart attack, myocardial infarction

Research involving
Human

Sponsors and support

Primary sponsor: Academisch Medisch Centrum

Source(s) of monetary or material Support: onderdeel van nano-athero (FP7 project)

Intervention

Keyword: acute cardiovascular event, bone marrow, immune cells

Outcome measures

Primary outcome

The primary study parameter is GM-CFU of bone marrow HSPCs (=function)

Secondary outcome

The secundary study parameter is flow cytometry of HSPCs (=phenotype) from bone

marrow and blood

Study description

Background summary

Atherosclerosis is the main cause of cardiovascular disease, including acute myocardial infarction (AMI). It is a progressive disease, resulting in the formation of plaques in the vessel wall. After a long asymptomatic period, patients with atherosclerosis can present with symptoms of impaired blood flow due to stenosis (e.g. stable angina pectoris) or with an acute event due to plaque rupture (e.g. AMI).
Studies have consistently shown that patients with an AMI have an elevated risk of recurrence of this event. A pathophysiological explanation is that an acute cardiovascular event exacerbates atherosclerosis by inducing a systemic inflammatory response. In brief, an acute cardiovascular event triggers the release of hematopoietic stem and progenitors cells (HSPC*s) from the bone marrow (BM) and spleen, resulting in an increased number of activated monocytes in the circulation. These monocytes play a major role in the progression of atherosclerosis, contributing to destabilisation of pre-existent atherosclerotic plaques Furthermore, studies have shown that in mice with an ischemic event bone marrow CD11b+ myeloid cells are increased compared with naive control mice.
Unpublished data (F. van der Valk et al) shows increased BM activity in patients is still present after several months after an acute ischemic event.

Study objective

The main objective of this study is to compare the function and phenotype of bone marrow HSPC*s in AMI patients to those of healthy control subjects.

Study design

This study is designed as a single centre observational study. The study consist of 1 study visit for healthy controls. Healthy controls will undergo a bone marrow puncture to harvest bone marrow cells. These procedure will be performed when the patient is already anesthetized for elective surgery or under local anaesthetics in case of no elective surgery. The total duration of this procedure will be around 30-60 minutes before the operation. HSPC*s from AMI patients will be obtained from the historical HEBE cohort.

Study burden and risks

The results of this study contribute to the general understanding of the mechanism by which an acute cardiovascular event elicits a systemic pro-inflammatory state which in turn may contribute to the high risk of recurrence. Individual subjects will gain no direct benefit from this study. The risk of participating in this study is estimated to be low. Complications of a bone marrow puncture are rare, a bleeding or an infection may occur.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

- Age: >34 years old (mean age 57 years)
- Gender: subjects of either gender (85% male)
- BMI between 18 and 33 kg/m2

Exclusion criteria

- Clinically evidence or at increased risk for cardiovascular disease or diabetes
- Clinically evidence for chronic inflammation
- Use of any cardiovascular medication, including but not limited to lipid-lowering therapy, antihypertensive drugs, antidiabetic drugs, platelet aggregation inhibitors and anticoagulants
- Any other known systemic disorder such as hepatic, renal, hematologic, and malignant diseases or any clinically significant medical condition that could interfere with the conduct of the study in the opinion of the investigator.

Study design

Design

Study type: Observational invasive

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Basic science

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	08-02-2017
Enrollment:	20
Type:	Actual

Ethics review

Approved WMO Date:	17-02-2016
Application type:	First submission
Review commission:	METC Amsterdam UMC
Approved WMO Date:	21-11-2016
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	18-04-2018
Application type:	Amendment
Review commission:	METC Amsterdam UMC

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	NL53093.018.15