Does upregulation of microRNA 'x' influence monocyte function of smoking individuals with subclinical atherosclerosis?

Published: 26-03-2014
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To establish whether there are differences in monocyte function in patients with high expression levels compared to low expression levels of microRNA *x*.

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

Summary

ID

NL-OMON40682

Source
ToetsingOnline

Brief title
microRNA 'x' and monocytes

Condition

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

Synonym
atherosclerosis, cardiovascular disease

Research involving
Human

Sponsors and support

Primary sponsor: Academisch Medisch Centrum

Source(s) of monetary or material Support: CTMM (INCOAG)

Intervention

Keyword: MicroRNA, Premature atherosclerosis, Smoking

Outcome measures

Primary outcome

monocyte function by FACS analysis and cytokine measurement after LPS

stimulation. Moreover, we will perform ChIP analysis for epigenetics and

measure gene expression levels in the monocytes.

Secondary outcome

none

Study description

Background summary

Worldwide, tobacco use is the most important avoidable cause of cardiovascular disease. The risk of developing a myocardial infarction (MI) is twice as high amongst smokers compared to non-smoking individuals. The mechanism by which cigarette smoke induces atherosclerosis has not been completely unravelled yet, but many cell types, amongst which circulating monocytes, are reported to be involved. Monocytes play a key role in the inflammatory immune response to external agents. Therefore, circulating monocytes might be influenced by cigarette smoking.
MicroRNAs (miRNAs) are 18 to 25 nucleotides long, noncoding RNAs, that downregulate gene expression by suppression of messenger RNA (mRNA) translation.
Recently, in an unpublished study we discovered that microRNA *x* in monocytes of smoking individuals exhibit either high or low expression levels, whereas all non-smokers exhibit only low expression levels.
A subsequent study (hereafter referred to as *smoking study*) unrevealed that expression levels of microRNA *x* are significantly higher in smoking subjects with atherosclerosis compared to smoking subjects without atherosclerosis.
Therefore, we hypothesize that smoking in individuals with high microRNA *x* expression levels induces a change in monocyte function thereby promoting atherosclerosis.

To test our hypothesis we will assess the monocyte function these specific patients with high expression levels and compare the monocyte function to patients with low expression levels of microRNA *x*. Since monocyte function analysis can only be performed in fresh blood samples, we will need to invite these patients once to the AMC for blood collection.

Study objective

To establish whether there are differences in monocyte function in patients with high expression levels compared to low expression levels of microRNA *x*.

Study design

case-control study

Study burden and risks

The burden for participants is a venapuncture. The risks are haematomas or mild bleeding. There is no direct benefit for the participants. However in general more insight will be created in the molecular basis of cardiovascular disease.

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

- smoking
- known calcium score assessed with a coronary CT scan
- known microRNA 'x' levels

Exclusion criteria

Patients in which statin therapy is a necessity according to standard European guidelines.

Study design

Design

Study type:	Observational invasive
Intervention model:	Other
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)
Control:	Active
Primary purpose:	Basic science

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	26-05-2014
Enrollment:	30
Type:	Actual

Ethics review

Approved WMO Date:	26-03-2014
Application type:	First submission
Review commission:	METC Amsterdam UMC
Approved WMO Date:	15-05-2014
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	NL48342.018.14