Epigenetic Biomarkers in Sudden Cardiac Arrest

Published: 27-05-2019
Last updated: 09-04-2024

To study whether epigenetic profiles of study participants who suffered an out-of-hospital cardiac arrest (OHCA) that were collected immediately after OHCA (in ARREST biobank) are similar their epigenetic profiles collected at least 9 months after...

Ethical review	Approved WMO
Status	Recruiting
Health condition type	Cardiac arrhythmias
Study type	Observational invasive

Summary

ID

NL-OMON49594

Source
ToetsingOnline

Brief title
Epigenetic Biomarkers in Sudden Cardiac Arrest

Condition

- Cardiac arrhythmias

Synonym
out-of-hospital cardiac arrest, sudden cardiac arrest

Research involving
Human

Sponsors and support

Primary sponsor: Academisch Medisch Centrum
Source(s) of monetary or material Support: EU Horizon 2020 subsidie

Intervention

Keyword: epigenetics, sudden cardiac arrest

Outcome measures

Primary outcome

Epigenetic profile / markers.

Secondary outcome

Not applicable.

Study description

Background summary

The causes of out-of-hospital cardiac arrest (OHCA) are highly complex and not fully resolved. To elucidate these causes, we set up the ongoing ARREST study, a community-based study in which consecutive victims of all-cause OHCA in one contiguous region (N-Holland province) are registered and their medical data and environmental factors are collected. We also collect a biobank of DNA samples extracted from residual blood samples taken after OHCA for patient care in order to study genetic factors that contribute to OHCA. In the present study, we aim to test the hypothesis that epigenetic factors also contribute to OHCA risk. This hypothesis stems from indications that OHCA risk is partly determined by environmental factors such as diet, smoking or socio-economic/psychosocial stress; these factors impact on the human genome by altering its transcriptional regulation. To test this hypothesis, we plan to analyse the epigenetic profiles of the DNA samples in the biobank. However, a potential difficulty is the fact that these samples were obtained after OHCA had already occurred, while it is unknown whether OHCA per se alters the epigenetic profile. If so, the epigenetic profile found in these samples is confounded by the effects of OHCA, rendering it unclear to which extent they also caused OHCA. To rule out this possibility, we plan to conduct the present study, in which we compare the epigenetic profiles from 15 study participants of samples in the biobank with samples that will be collected at least 9 months after OHCA. We assume that the OHCA-induced changes in epigenetic profiles (if at all present), will have abated, and the epigenetic profiles will have returned to their pre-OHCA values by that time.

Study objective

To study whether epigenetic profiles of study participants who suffered an out-of-hospital cardiac arrest (OHCA) that were collected immediately after OHCA (in ARREST biobank) are similar their epigenetic profiles collected at least 9 months after OHCA. This is done to determine whether the epigenetic profile is a cause, rather than the result of the OHCA.

Study design

Cohort study of 15 adult study participants who suffered an out-of-hospital cardiac arrest (OHCA). The epigenetic profiles of their DNA samples previously collected and stored in the ARREST biobank will be compared to newly collected DNA samples taken at least 9 months after OHCA.

Study burden and risks

Participation in the trial means that the study participant has to answer questions about their smoking habits, medication use and socio-economic status. Study participants will have their blood drawn once. Their visit for this study will be combined with their regular visit to the cardiology outpatient clinic as much as possible. There are no direct benefits for the study participant. Minimal risks (associated with one-time blood draw) are associated with this intervention. However, the benefits for the population could be large.

Contacts

Public
Academisch Medisch Centrum

Academisch Medisch Centrum Meibergdreef 9
Amsterdam 1105AZ
NL
Scientific
Academisch Medisch Centrum

Academisch Medisch Centrum Meibergdreef 9
Amsterdam 1105AZ
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

The patients need to have had an out-of-hospital cardiac arrest, and have to be treated in the Academic Medical Centre (Amsterdam). Additionally, we include only men and they need to have given consent to participation in the ARREST study and to being contact again in light of the ARREST study.

Exclusion criteria

Patients are excluded when they are smokers, or when they have rigorouly changed their lifestyle since their sudden cardiac arrest.

Study design

Design

Study type: Observational invasive

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

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	23-12-2020
Enrollment:	15

Type:	Actual

Ethics review

Approved WMO Date:	27-05-2019
Application type:	First submission
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	NL68702.018.19