The comparison of electrophysiological characteristics of human induced pluripotent stem cell derived cardiomyocytes and human mature cardiomyocytes.

Published: 23-11-2010
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The main objective is to compare the electrophysiological differences and similarities between cardiomyocytes obtained by iPS and mature human cardiomyocytes.

Ethical review	Approved WMO
Status	Pending
Health condition type	Cardiac disorders, signs and symptoms NEC
Study type	Observational invasive

Summary

ID

NL-OMON34235

Source
ToetsingOnline

Brief title
The comparison of iPS-CM and cardiomyocytes

Condition

- Cardiac disorders, signs and symptoms NEC

Synonym
cardiomyocytes, heart cells

Research involving
Human

Sponsors and support

Primary sponsor: Academisch Medisch Centrum
Source(s) of monetary or material Support: AMC/AMR

Intervention

Keyword: electrophysiology, iPS-CM, mature cardiomyocytes

Outcome measures

Primary outcome

The two cell types will be characterized on a molecular and cellular

electrophysiological level.

Secondary outcome

na

Study description

Background summary

Because of recent development of new techniques in stem cells, it is possible to reprogram somatic cells into an embryonic like state, the so called induced pluripotent stem cells (iPS). The technique to differentiate stem cells to cardiomyocytes is already accessible. This is a huge step forward towards new cell models for cardiac diseases. However, little is known about the differences or similarities and variability between mature human cardiomyocytes and iPS derived cardiomyocytes (iPS-CM) on electrophysiological level e.g. ion channels and ion currents. In this study we want to compare these two cell types on molecular and cellular electrophysiological level to broaden our knowledge about these cells and their suitability.

Study objective

The main objective is to compare the electrophysiological differences and similarities between cardiomyocytes obtained by iPS and mature human cardiomyocytes.

Study design

The two cell types will be collected by skin biopsy and ventricular puncture during open heart surgery. By use of the patch clamp technique iPS-CM and mature cardiomyocytes of 10 patients will be evaluated and compared.

Study burden and risks

Inclusion in the study does not bring additional burden of risk for these patients.

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

Patienten admitted for aortic valve replacement

Over 18 years and under 80 years old.

Exclusion criteria

The inclusion criteria includes only the study population. Since there is a minimal burden on patients, there is no reason why someone in this group can not participate in this study based upon exclusion criteria.

Study design

Design

Study type: Observational invasive

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

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-11-2010
Enrollment:	10
Type:	Anticipated

Ethics review

Approved WMO

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	NL33980.018.10