Press release

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Basic information

Name: Thomas Ravn Lassen Email: thomasravnl@clin.au.dk Phone: +45 41 29 04 50

Department of: Clinical Medicine

Main supervisor: Hans Erik Bøtker

Title of dissertation: Cardioprotection mediated by exosomes in acute myocardial infarction

Date for defence: 04 september 2020 at (time of day): 14:30 Place: Auditorium A (G206-142)
indgang G plan 2
Aarhus Universitetshospital
Palle Juul-Jensens Boulevard 99
8200 Aarhus N

Press release (Danish)

Hjertebeskyttelse medieret af exosomer i akut myokardieinfarkt

Et nyt ph.d.-projekt fra Aarhus Universitet, Health undersøger signalmekanismerne, der igangsættes ved hjertebeskyttelse ved hjælp af såkaldt fjernkonditionering og om signalet bliver medieret af exosomer. Exosomer er cirkulerende vesikler, som transporterer signalmolekylær i blodet. Projektet er gennemført af Thomas Ravn Lassen, der forsvarer sin afhandling d. 04/09 2020

Skaden efter en blodprop i hjertet kan mindskes, hvis det er forudgået af kortet episoder af iltmangel inden selve blodproppen. Dette hedder iskæmisk pre-konditionering. Effekten kan også opnås, hvis de korte episoder med iltmangel forgår i et andet organ, som for eksempel overarmen, hvilket kaldes fjernkonditionering. I dette PhD-studie har vi i en række dyremodeller undersøgt, hvordan signalet kommer fra armen til det område, der er blevet skadet af blodproppen.
Først har vi etableret en helkrops rottemodel, der sammen med en allerede etableret model med et isoleret hjerte har givet os mulighed for at undersøge exosomernes rolle ved fjernkonditionering. Vi demonstrerede at exosomer kan bære det beskyttende signal ved fjernkonditionering via blodet til hjertet. Vores fund tyder på, at signalet medieres ved at ændre exosomernes indhold af signalmolekylær. Desuden viste vi i helkropsmodellen, at exosomer ophobes netop i det beskadigede hjertevæv, som optræder efter en blodprop.
Overordnet set har disse studier givet os vigtig viden omkring de mekanismer, der sættes i gang ved fjernkoditionering. Resultaterne er derfor et begyndende skridt mod at udnytte disse mekanismer i behandlingen af patienter med blodpropper i hjertet.

Forsvaret af ph.d.-projektet er offentligt og finder sted den 04/09 2020 kl. 14:30 i Auditorium A (G206-142) indgang G plan 2, Aarhus Universitetshospital, Palle Juul-Jensens Boulevard 99, 8200 Aarhus N. Titlen på projektet er "Cardioprotection mediated by exosomes in acute myocardial infarction". Yderligere oplysninger: Ph.d.-studerende Thomas Ravn Lassen, e-mail: thomasravnl@clin.au.dk, tlf. +45 41 29 04 50.

Bedømmelsesudvalg:
Professor Christian Aalkjær (formand), MD, DMSc
Institut for Biomedicin
Aarhus Universitet, Danmark

Professor Ylva Hellsten, MSc, PhD, DMSc
Institut for Idræt og Ernæring
Københavns Universitet, Danmark

AARHUS UNIVERSITY

Professor Sean Davidson MSc, PhD
The Hatter Cardiovascular Institute
University College London, England

Press release (English)

Cardioprotection mediated by exosomes in acute myocardial infarction

A new PhD-project from Aarhus University, Health investigates the role of exosomes in mediating cardioprotection by remote ischemic conditioning after myocardial infarction. The project was carried out by Thomas Ravn Lassen, who is defending his dissertation on 04/09 2020

When suffering from a myocardial infarction, brief episodes of ischemia can protect against the damage caused to the myocardium by initiating cardioprotective mechanisms, so-called ischemic preconditioning. Additionally, the brief episodes of ischemia can be applied to a distant organ, such as the upper arm. This is referred to as remote ischemic conditioning (RIC). We studied how the signal is mediated from the arm to the area damaged by myocardial infarction in a variety of animal models. Initially, an in vivo model of myocardial infarction was established and in combination with a pre-established ex vivo model these two models enabled us to study the role of exosomes for mediating cardioprotection by RIC. The studies demonstrated that exosomes are involved in mediating the cardioprotective signal of RIC by modification to their content og signalling compounds. Additionally, we demonstrated that exosomes accumulate specifically in infarcted tissue.
Overall, the studies provide new and significant knowledge on the mechanisms initiated by RIC and how we may utilize this knowledge for short- and long-term improvements in health after myocardial infarction.

The defence is public and takes place on 04/09 2020 kl. 14:30 in Auditorium A (G206-142) indgang G plan 2, Aarhus Universitetshospital, Palle Juul-Jensens Boulevard 99, 8200 Aarhus N. The title of the project is Cardioprotection mediated by exosomes in acute myocardial infarction. For more information, please contact PhD student Thomas Ravn Lassen, email: thomasravnl@clin.au.dk, Phone +45 41 29 04 50.

Assessment committee:
Professor Christian Aalkjær (Chariman), MD, DMSc
Institute of biomedicine
Aarhus University, Denmark

Professor Ylva Hellsten, MSc, PhD, DMSc
Department of Nutrition, Exercise and Sport
University of Copenhagen, Denmark

Professor Sean Davidson MSc, PhD
The Hatter Cardiovascular Institute
University College London, England

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