

Press release

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Basic information

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Department of: Clinical Medicine

Main supervisor: Professor Bente Jespersen, Department of Renal Medicine, Aarhus University Hospital, Skejby, Denmark

Title of dissertation:

"The Functional and Molecular Response to Ischemia-Reperfusion Injury in the Kidney. Modulating Effects of Two Conditioning Interventions: Remote Ischemic Conditioning and Unilateral Nephrectomy"

Date for defence: 12th of April 2018 at (time of day): 14 Place: Auditorium J116-113, entrance J, Aarhus University Hospital, Skejby, Palle Juul-Jensens Boulevard 99, DK-8200 Aarhus N, Denmark

Press release (Danish)

Akut nyreskade efter utilstrækkelig blodforsyning og potentielt forebyggende tiltag – studier i en rottemodel.

Akut nyresvigt er en hyppig lidelse, som ses hos 1 % af de patienter, der bliver indlagt på sygehuset. Det er associeret til overdødelighed. Den hyppigste årsag til akut nyresvigt er utilstrækkelig blodforsyning, iskæmi, hvilket fører til iltmangel i nyren. Grundforskning inden for dette felt kan bidrage til viden om, hvordan nyresvigt kan forebygges eller behandles, og hvordan en nyre kan komme til at fungere bedst muligt og i længst mulig tid efter en transplantation. Korte uskadelige perioder med iskæmi forud for en længerevarende periode med iskæmi, kaldet iskæmisk konditionering kan beskytte imod nyreskade.

I en dyremodel for akut nyresvigt har vi anvendt iskæmisk konditionering for at undersøge de underliggende beskyttende molekulære mekanismer. Vi fandt ingen nyrebeskyttende effekt af behandlingen. Til gengæld så vi, at nyren i sig selv havde en bemærkelsesværdig evne til at genvinde dens tabte funktion. Dette var relateret til et øget udtryk af flere proteiner, herunder en særlig gruppe af proteiner kaldet heat shock proteiner. I et andet dyrestudie brugte vi en moderne laboratorieteknik, som hjalp os til at identificere nye molekyler, som i fremtiden vil kunne målrettes med lægemidler for at forebygge akut nyresvigt. Disse fund er resultatet af et nyt ph.d.-projekt fra Aarhus Universitet, Health. Projektet er gennemført af Casper Kierulf Lassen, der forsvare det d. 12/4-2018

Forsvaret af ph.d.-projektet er offentligt og finder sted den 12/4 kl. 14 i Auditorium J116-113, indgang J, Aarhus Universitetshospital, Skejby, Palle-Juul Jensens Boulevard 99, DK-8200 Aarhus N. Titlen på projektet er "The Functional and Molecular Response to Ischemia-Reperfusion Injury in the Kidney. Modulating Effects of Two Conditioning Interventions: Remote Ischemic Conditioning and Unilateral Nephrectomy". Yderligere oplysninger: Ph.d.-studerende Casper Kierulf Lassen, e-mail: ckl@clin.au.dk, tlf. 26708130.

Bedømmelsesudvalg:

Professor Jens Georg Leipziger (formand)
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Press release (English)

Acute kidney injury after inadequate blood supply and potential preventive strategies – studies in a rat model.

Acute renal failure, also termed acute kidney injury is a frequent condition seen in 1 % of patients admitted to the hospital and is associated with increased mortality risk. The most common cause is inadequate blood supply, ischemia, leading to a lack of oxygen in the kidney. Basic research in this field could help identifying new ways of preventing or treating acute kidney injury and to improve the function and survival of kidneys after transplantation. Brief episodes of harmless ischemia prior to a longer period of harmful ischemia, termed ischemic conditioning, have been reported to protect against kidney injury.

In an animal model of acute kidney injury, using rats, we applied this preventive strategy in order to investigate the underlying molecular mechanisms. We did not observe any effect of the intervention. However, we found that the kidney inherently had a remarkable ability to recover function. This was associated with increased levels of several proteins, including a group of distinct proteins, termed heat shock proteins. In a second animal study, using a modern genomic laboratory technique, we identified new molecules that may be the target for pharmacological modification in order to prevent acute kidney injury in the future. The project was carried out by Casper Kierulf Lassen, who is defending his dissertation on 12th of April 2018.

The defence is public and takes place on 12th of April 2018 at 2pm in Auditorium J116-113, entrance J, Aarhus University Hospital, Skejby, Palle Juul-Jensens Boulevard 99, DK-8200 Aarhus N, Denmark. The title of the project is "The Functional and Molecular Response to Ischemia-Reperfusion Injury in the Kidney. Modulating Effects of Two Conditioning Interventions: Remote Ischemic Conditioning and Unilateral Nephrectomy". For more information, please contact PhD student Casper Kierulf Lassen, email: ckl@clin.au.dk, Phone +45 26708130.

Professor Jens Georg Leipziger (chairman and moderator of the defence)
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