

Press release

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Basic information

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Department of: Clinical Medicine

Main supervisor: Erik Sloth

Title of dissertation: Basic haemodynamic effect of pleural effusion evaluated by ultrasonography in an experimental porcine model. With main emphasis on systolic function

Date for defence: 15/6 2017 at (time of day): 1530 Place: Aud. B AUH Skejby

Press release (Danish)

Pleuravæskes betydning for hjertets basale fysiologi

Pleuravæske opstår ved væskeophobning i brysthulen og er hyppigt blandt kritisk syge patienter. Stigende mængder pleuravæske kan forårsage gradvist kredsløbssvigt. Kredsløbssvigt behandles generelt med væske og hjerte- kredsløbsstimulerende medicin. Dog er pleuravæskes grundlæggende fysiologiske mekanismer stadig ringe belyst, hvortil betydningen af samtidig behandling for kredsløbssvigt er ukendt. Derfor undersøgedes virkningen af væskebehandling samt hjerte- og kredsløbsstimulerende medicin i kombination med pleuravæske.

Tre dyreeksperimentelle studier på grise med pleuravæske hhv.: Etablerede en pleuravæskemodel, undersøgte effekten af pleuravæske og samtidig hjertestimulerende medicin samt effekten af væskebehandling samt kredsløbsstimulerende medicin.

Hjertets dimensioner samt øvrige indikatorer for hjertets fyldning målt ved hjælp af ultralyd suppleret med målinger af blodtryk og cirkulation.

Pleuravæske nedsatte hjertets fyldning hvilket forstærkedes af hjertestimulerende medicin der dog normaliserede blodtryk og cirkulation. Væske og kredsløbsstimulerende medicin normaliserede derimod hjertets fyldning, men reducerede den gavnlige effekt af pleuravæske udtømning.

Hjertets fyldning forringes altså af pleuravæske og hjertestimulerende medicin, hvilket kan korrigeres med væske og kredsløbsstimulerende medicin. Disse reducerer dog samtidig den gavnlige effekt af udtømning. Samtidig normaliserede væske og hjerte- kredsløbsstimulerende behandling cirkulationen. Pleuravæske kan altså forårsage svær påvirkning af hjertets basale funktion, hvilket maskeres af standardbehandling af kredsløbssvigt.

et nyt ph.d.-projekt fra Aarhus Universitet, Health. Projektet er gennemført af Kristian Borup Wemmelund, der forsvare det d. 15/6

Pressemeddelelsen - afsluttes med: Forsvaret af ph.d.-projektet er offentligt og finder sted den 15/6 kl. 1530 i auditorium B, Aarhus Universitet, Palle Juul-Jensens Boulevard 99, 8200 Aarhus N. Titlen på projektet er "Basic haemodynamic effect of pleural effusion evaluated by ultrasonography in an experimental porcine model. With main emphasis on systolic function". Yderligere oplysninger: Ph.d.-studerende Kristian Borup Wemmelund, e-mail: kristianwemmelund@gmail.com, tlf. +45 30139743.

Press release (English)

Basic haemodynamic effect of pleural effusion evaluated by ultrasonography in an experimental porcine model. With main emphasis on systolic function

Lead paragraph, ending with: The project was carried out by Kristian Borup Wemmelund, who is defending his dissertation on 6/15.

The press release

Pleural effusion is frequent among critically ill patients and develops due to thoracic fluid accumulation. Incremental volumes successively lead to circulatory instability, which is often treated with fluids and cardiovascular stimulating medicine. However, the basic physiologic effect of pleural effusion and concomitant treatment of circulatory instability is relatively unknown.

The purpose was therefore to investigate the effect of common treatment strategies to circulatory instability in a porcine model of pleural effusion.

Three substudies served to: Establish a pleural effusion model and investigate the additional effect of inotropic support, fluids and vasopressor treatment. The basic physiologic effect was evaluated by estimation of dimensions and indices of cardiac filling using ultrasonography along with additional measures of blood pressure and circulation.

Inotropic support aggravated the cardiac filling in addition to pleural effusion though overall circulatory parameters normalized. Fluids and vasopressor treatment on the other hand improved both cardiac filling and overall circulatory parameters, while the effect of drainage was diminished by these treatments.

In conclusion pleural effusion reduces cardiac filling, which was aggravated by inotropic support. Fluid and vasopressor treatment improved cardiac filling. Interestingly, all treatments generally normalized overall circulatory parameters, which potentially masks the presence of a pleural effusion causing circulatory instability.

The defence is public and takes place on 6/17 at 03.30 pm in Auditorium B, Aarhus University, Palle Juul-Jensen Blvd 99, 8200 Aarhus N. The title of the project is Basic haemodynamic effect of pleural effusion evaluated by ultrasonography in an experimental porcine model. With main emphasis on systolic function. For more information, please contact PhD student Kristian Borup Wemmelund, email: kristianwemmelund@gmail.com, Phone +45 30139743.

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