

Press release

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Basic information

Name: Thomas Winther Buus
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Department of: Clinical Medicine

Main supervisor: Erik Morre Pedersen

Title of dissertation: Whole-Body MRI and Spectral CT in Metastatic Breast Cancer

Date for defence: 11.12.2020 at (time of day): 14.00 Place: Auditorium C114-101, Entrance C, Aarhus University Hospital, Palle Juul-Jensens Blvd. 99, 8200 Aarhus N and online (Zoom link on request from the PhD student)

Press release (Danish)

Avancerede skanningsteknikker forbedrer diagnostikken af metastatisk brystkræft.

Brystkræft er den hyppigste kræftform blandt danske kvinder og rammer hvert år 4000 kvinder. Brystkræft begrænset til brysterne har en god prognose, mens metastatisk brystkræft (MBK) sjældent kan helbredes. Knoglerne og lymfeknuderne i armhulen er de hyppigste steder for spredning. Det er dog vanskeligt at påvise knoglemetastaser med standard skanningsteknikker, og ofte kræver det et kirurgisk indgreb at påvise spredning til lymfeknuderne.

I dette ph.d.-projekt sammenlignede vi den diagnostiske kvalitet af helkrops MR og spektral CT med almindelig CT til at diagnosticere MBK, samt undersøgte om kvantitative skanningsteknikker kunne detektere lymfeknudemetastaser. Til sidst brugte vi prototypesoftware til at reducere skanningstiden for helkrops MR.

I studiet fandt vi, at helkrops MR og spektral CT forbedrede diagnostikken af MBK sammenlignet med almindelig CT. Kvantitative spektral CT-teknikker havde samme følsomhed som ultralydsvejledte vævsprøver for at påvise lymfeknudemetastaser. Skanningstiden for helkrops MR kunne reduceres uden at gå på kompromis med billedkvaliteten.

Helkrops MR og spektral CT forbedrer diagnosen af MBK. Reduceret skanningstid for helkrops MR gør det muligt at implementere helkrops MR i udredningen af kvinder mistænkt for MBK.

Ovenstående er et nyt ph.d.-projekt fra Aarhus Universitet, Health. Projektet er gennemført af Thomas Winther Buus, der forsvare det d. 11/12.

Forsvaret af ph.d.-projektet er offentligt og pga. COVID-19 vil det være delvist fysisk (40 deltagere max.) og delvist online. Det fysiske forsvar finder sted den 11/12 kl. 14.00 i auditorium C114-101, indgang C, Aarhus Universitetshospital, Palle Juul-Jensens Blvd. 99, 8200 Aarhus N. Titlen på projektet er "Whole-Body MRI and Spectral CT in Metastatic Breast Cancer".

Link til virtuelt forsvar fås ved at kontakte Thomas Winther Buus, e-mail: thomas.winther.buus@auh.rm.dk, tlf. 28898191.

Bedømmelsesudvalg: Formand for bedømmelsesudvalget Professor Michael Pedersen, MSc, PhD, Institut for Klinisk Medicin - Comparative Medicine Lab, Professor Anwar R. Padhani, MBBS, FRCR, Paul Strickland Scanner Centre, Mount Vernon Cancer Centre og Professor Henrik S. Thomsen, MD, DMSc, Røntgen og Skaning, Herlev-Gentofte Hospital

Press release (English)

Advanced imaging techniques improve the diagnosis of metastatic breast cancer.

Breast cancer is the most common cancer among Danish women. While breast cancer confined to the breast has a good prognosis, metastatic breast cancer (MBC) is seldom curable. The bones and

axillary lymph nodes are the most common sites for metastases. However, it is difficult to detect bone metastases with standard imaging techniques and lymph node metastases often require surgery to diagnose.

In the present PhD project, we compared the diagnostic performance of whole-body MRI (WB-MRI) and spectral CT with conventional CT for diagnosing MBC and investigated new quantitative imaging techniques for detecting lymph node metastases. Finally, we applied prototype software to reduce the scan time of WB-MRI.

We found that WB-MRI and spectral CT increased the diagnostic performance compared to conventional CT for diagnosing MBC. Quantitative spectral CT measurements showed comparable sensitivity to ultrasound-guided biopsy for detecting lymph node metastases. Finally, the scan time of WB-MRI could be significantly reduced without sacrificing image quality.

WB-MRI and spectral CT improves the diagnosis of MBC. Scan time reduction of WB-MRI has made it feasible to implement into routine diagnostic work-up of women suspected of MBC.

The project was carried out by Thomas Winther Buus, who is defending his dissertation on 11/12.

The defence is public and due to COVID-19 will be partly physical (40 persons max) and partly online. The physical defence takes place on 11/12 at 14.00 in auditorium C114-101, Entrance C, Aarhus University Hospital, Palle Juul-Jensens Blvd. 99, 8200 Aarhus N. The title of the project is "Whole-Body MRI and Spectral CT in Metastatic Breast Cancer".

Zoom link to the virtual PhD defence is available by contacting Thomas Winther Buus, e-mail: thomas.winther.buus@auh.rm.dk, tlf. 28898191.

Assessment committee: Chairman Professor Michael Pedersen, MSc, PhD, Institut for Klinisk Medicin - Comparative Medicine Lab, Professor Anwar R. Padhani, MBBS, FRCR, Paul Strickland Scanner Centre, Mount Vernon Cancer Centre, and Professor Henrik S. Thomsen, MD, DMSc, Røntgen og Skaning, Herlev-Gentofte Hospital

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