AARHUS UNIVERSITY

Press release

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Basic information

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Department of: Clinical Medicine

Main supervisor: Professor Jan Alsner

Title of dissertation: Radiogenomic Studies in Prostate, Breast and Head- and Neck Cancer Patients

Date for defence: Monday the 29th of October 2018 at (time of day): 14:00 Place: Patologisk Auditorium, Bygning 18, Aarhus Universitetshospital, Nørrebrogade 44, 8000 Aarhus C

Press release (Danish)

Har vores gener betydning for sværhedsgraden af bivirkninger efter strålebehandling for kræft?

Denne PhD afhandling handler om genetiske variationers betydning for bivirkninger efter strålebehandling for kræft. Dette område betegnes radiogenomisk forskning, eller på engelsk "radiogenomics". Hver kræftsygdom ledsages af et spektrum af typer og sværhedsgrader af bivirkninger efter strålebehandling. Spektret af stråle- inducerede bivirkninger afhænger af fysiske faktorer, der knytter sig til selve strålebehandlingen og af kliniske faktorer knyttet til den enkelte patient. Samtidig er der tiltagende evidens for at også genetiske varianter bidrager til udviklingen af stråle- induceret bivirkninger. Afhandlingen indeholder tre forskningsforsøg blandt patienter, der er behandlet for henholdsvis prostata-, bryst- og hoved-hals kræft, hvor vi søgte at eftervise tidligere identificerede genetiske varianter samt at finde nye genetiske varianter, der kan være knyttet sammen med en særlig lav eller særlig høj risiko for at udvikle bivirkninger efter strålebehandling.

Konklusivt kunne flere resultater fra tidligere publikationer ikke eftervises. Dette kan skyldes at antallet af patienter ikke gav studiet tilstrækkelig styrke eller at endepunkterne kun delvist beskriver det samme biologiske fænomen. Studierne identificerede tre lovende nye genetiske varianter, der var forbundet med stråle- inducerede bivirkninger. Eftervisning i uafhængige studier med sammenlignelige patienter og endepunkter er påkrævet før resultaterne kan betragtes som endelige. Projektering af sådanne studier i et internationalt samarbejde via the Radiogenomics Consortium er igangsat.

Forsvaret af ph.d.-projektet er offentligt og finder sted den 29/10 2018 kl. 14:00 i Patologisk Auditorium, Bygning 18, Aarhus Universitetshospital, Nørrebrogade 44, 8000 Aarhus C.
Titlen på projektet er "Radiogenomic Studies in Prostate, Breast and Head- and Neck Cancer Patients".
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Press release (English)
Radiogenomic Studies in Prostate, Breast and Head- and Neck Cancer Patients

Radiogenomics is the research field of associations between genetic variants and radiotherapy outcome. The radiogenomic studies included in this dissertation investigated the role of common genetic variants in radiotherapy- induced morbidity in cohorts of prostate- , breast- and head and-neck cancer. For each cancer site, there will be a spectrum of types and severity of radiotherapy-induced morbidity. This spectrum depends on factors related to the radiotherapy itself as well as to factors related to clinical characteristics of the patient. Increasing evidence points to common genetic variants as another contributory factor in the development of radiotherapy- induced morbidity. The dissertation includes three studies in patients having received radiotherapy for prostate-, breast-, or head- and neck cancer in which we aimed to replicate previously identified genetic variants associated with radiotherapy-induced morbidity and to identify novel variants.

In conclusion, validation studies generally did not reproduce published results. Insufficient endpoint harmonisation and power issues may be part of the reason. However, a genome-wide association approach identified loci associated with different endpoints of radiotherapy- induced morbidity. Replication in independent comparable cohorts is necessary before findings can be considered conclusive. Further studies on these issues are warranted in an international collaboration via the Radiogenomics Consortium.

The defence is public and takes place on 29/10 2018 at 14:00 in Patologisk Auditorium, Building 18, Aarhus Universitetshospital, Nørrebrogade 44, 8000 Aarhus C, Denmark.
The title of the project is "Radiogenomic Studies in Prostate, Breast and Head- and Neck Cancer Patients".
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