AARHUS UNIVERSITY

Press release

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Basic information

Name: Rola Ismail Email: rola.ismail@clin.au.dk

Department of: Clinical Medicine

Main supervisor: Professor David J. Brooks

Title of dissertation: Study of the temporal and spatial relationships between neuroinflammation, beta-amyloid and tau aggregation in mild cognitive impairment and Alzheimer's disease – a longitudinal PET-study

Date for defence: 06/01/2020 at (time of day): 14.00 Place: Aarhus Universitetshospital, Palle Juul Jensens Boulevard 165, indgang J, Auditorium J116-113, 8200 Aarhus N

Press release (Danish):
Undersøgelse af den tidsmæssige og rumlige sammenhæng mellem neuroinflammation og aflejring af proteinerne beta-amyloid og tau i hjernen ved mild kognitiv svækkelse og Alzheimers sygdom – et longitudinelt PET studie

Et nyt ph.d.-projekt fra Aarhus Universitet, Health benytter hjerneskanninger til at undersøge den tidmæssige sammenhæng mellem patologierne ved tidlig Alzheimers sygdom. Projektet er gennemført af Rola Ismail.

Pressemeddelelse:
Alzheimers sygdom er en irreversibel neurodegenerativ sygdom, som er karakteriseret ved svækkelse af kognitive of funktionelle evner og ved ophobningen af amyloide plaques og neurofibrillære tau tangles i hjernen. Neuroinflammation spiller en vigtig, men endnu ikke fuld klarlagt rolle. Det anslås, at over 90.000 danskere har demens, heraf udgør Alzheimers sygdom 60-70 % af alle tilfælde.
Formålet med denne afhandling var at bruge PET-hjerneskanninger til at klarlægge den rumlige og tidsmæssige relation mellem inflammation og aflejring af proteinerne beta-amyloid og tau i hjernen hos en gruppe deltagere med mild kognitiv svækkelse, som vi har fulgt i to år og undersøgt med spatielle skanninger og kognitive tests. Vores fund er i overensstemmelse med teorien om et tofaset inflammationsforløb, heraf en første beskyttende fase, der korrelerer med amyloid-niveauerne i de tidligere faser og en senere skadelig fase, der korrelerer med tau-niveauerne i de sene sygdomsfaser. Vi fandt også en sammenhæng mellem inflammation og kognitive værdier i forskellige kortikale områder på forskellige stadier af sygdommen.
Behandlingsstrategierne for Alzheimers sygdom, der er rettet mod inflammation, bør designes således, at de stimulerer den beskyttende tidlige fase og undertrykker den sene skadelige fase af neuroinflammationen.
Forsvaret af ph.d.-projektet er offentligt og finder sted den 6/1-2020 kl. 14.00 på Aarhus Universitetshospital, Palle Juul Jensens Boulevard 165, indgang J, Auditorium J116-113.
Titlen på projektet er "*Undersøgelse af den tidsmæssige og rumlige sammenhæng mellem neuroinflammation og aflejring af proteinerne beta-amyloid og tau i hjernen ved mild kognitiv svækkelse og Alzheimers sygdom – et longitudinelt PET studie*".
Yderligere oplysninger: Ph.d.-studerende Rola Ismail, e-mail: rola.ismail@clin.au.dk.

Bedømmelsesudvalg:
Formand: Professor Leif Østergaard, CFIN, Aarhus Universitet
Opponenter: Professor Oskar Hansson, Clinical Memory Research Unit, Lund Universitet, Sverige
Professor Steen Hasselbalch, Videnscenter for demens, Rigshospitalet, Denmark

Press release (English):
The temporal and spatial relationship between neuroinflammaion, amyloid and tau in mild cognitive impairment and Alzheimer's disease - a longitudinal PET study

The project was carried out by Rola Ismail who is defending her dissertation on 6th January 2020.

The press release:
Alzheimer's disease is an irreversible neurodegenrative disorder, characterized by progressive cognitive and functional impairment and deposition of amyloid and tau in the brain. Neuroinflammation plays an important, but yet not fully clear role in the trajectory of the disease pathology. Currently, no effective disease modifying treatments are available. More recently, increasing interest in the pathological role of inflammation as a target for treatment to halt progression has been seen.
The aim of this thesis was to use PET imaging to examine the longitudinal interrelationships between Alzheimer's disease pathologies in a cohort of mild cognitive impairment cases.
We found an association between brain inflammation levels and amyloid load in the early MCI and between inflammation and tau in the later MCI supporting the view that inflammation has a biphasic trajectory in early Alzheimer's disease which may comprise an early protective and a later cidal phase. We also found that cognitive decline was associated with levels of amyloid, tau and inflammation in different areas of the brain at different stages of the disease.
The defence is public and takes place on January 6th 2020 at 14.00 at Aarhus University Hospital, Palle Juul Jensens Boulevard 165, Entrance J, J116-113.
The title of the project is "*Study of the temporal and spatial relationships between neuroinflammation, beta-amyloid and tau aggregation in mild cognitive impairment and Alzheimer's disease – a longitudinal PET-study*"
For more information, please contact PhD student Rola Ismail, email: rola.ismail@clin.au.dk.

Assessment committee:
Chairman: Professor Leif Østergaard, CFIN, Aarhus University
Examiners: Professor Oskar Hansson, Clinical Memory Research Unit, Lund Universitet, Sweden
Professor Steen Hasselbalch, Danish Dementia Research Centre, Rigshospital, Denmark.

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