Quantification of vascular and neuronal pathology in dementia using PET and MRI

https://neurodegenerationresearch.eu/survey/quantification-of-vascular-and-neuronal-pathology-in-dementia-using-pet-and-mri/

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Country

United Kingdom

Title of project or programme

Quantification of vascular and neuronal pathology in dementia using PET and MRI

Source of funding information

EPSRC

Total sum awarded (Euro)

€ 1,491,346

Start date of award

01/03/2015

Total duration of award in years

3.7

The project/programme is most relevant to:

Alzheimer's disease & other dementias

Keywords

Neurodegenerative disease in general

Research Abstract
The increasing occurrence of dementia within our ageing population is one of the pressing challenges facing society. Successful management of patients with dementia is significantly

aided by early and accurate diagnosis. Imaging methods such as magnetic resonance imaging (MRI) and positron emission tomography (PET) are already used in the diagnostic process; we believe that there is substantial scope for both methods to be improved to provide more precise and sensitive diagnostic information, and to do so in a way that is easily tolerated by patients. If we are correct in this belief, then the methods we develop within this project will not only help in early diagnosis, but may also help in the discovery of new therapies and in the longer term with helping doctors select the best therapeutic strategies for patients with different forms of dementia.

Imaging methods such as MRI and PET can tell us a lot more about brains than simply providing a picture of brain shape and size. We will focus on improving MRI and PET to be sensitive to two important microscopic aspects of dementia. Firstly, we will develop and validate new methods for measuring the loss of brain cells due to the condition; this loss is the cause of many of the symptoms of dementia, such as memory problems, and we hope to be able to detect these changes earlier than has previously been possible. Secondly we will develop and validate new methods for measuring changes in blood delivery to the brain and how this can affect oxygen delivery. These changes are thought to be part of one of the important processes involved in causing cell death and tissue loss, and are likely to be particularly relevant to vascular dementia.

We will also spend considerable time checking that the measurements we develop are both accurate and practical for application in dementia patients in the future. We will optimise the way in which the scanning processes take place so that the time required for patients to lie in the scanner(s) is minimised. This will be important for future adoption of these methods in the clinical environment.

Lay Summary
Further information available at:

Types:
Investments > €500k

Member States:
United Kingdom

Diseases:
Alzheimer's disease & other dementias

Years:
2016

Database Categories:
N/A

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N/A