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RACP Foundation Research Awards

FINAL REPORT

Project / Program Title		Alzheimer's Disease, Type 2 Diabetes and Neuroinflammation
Name		Dr Christopher Moran
Award Received		2018 Croxon Research Establishment Fellowship for Alzheimer's Disease Research
Report Date		7 January 2020
Chief Investigator / Supervisor		Dr Christopher Moran
Administering Institution		Monash University
Funding Period	Start Date:	1 January 2018
	Finish Date:	1 January 2020

PROJECT SUMMARY

Type 2 diabetes is associated with an approximately 2-fold increased risk of dementia. However, the mechanisms underlying this association are unclear. Previous work has reported that both type 2 diabetes and dementia are associated with inflammation. However, it is unclear whether type 2 diabetes is associated with inflammation of the brain in people in mid-life without dementia. We recruited people with and without type 2 diabetes aged between 45 and 60 years of age. Using detailed cognitive tests and special brain scans designed to identify brain inflammation, this study is intended to find out whether people with type 2 diabetes and cognitive problems have more low-grade brain inflammation than those without cognitive problems.

PROJECT AIMS / OBJECTIVES

The project aims were:

To conduct a study to investigate whether neuroinflammation is greater in people with dementia and type 2 diabetes compared with those with dementia and no diabetes.

Progress

Recruitment of people with both diabetes and dementia proved very difficult. As a result of these difficulties, we modified our aims to examine the role of inflammation in people with diabetes but without dementia, and have completed recruitment of a sufficient sample of people in midlife with and without type 2 diabetes. Given recruitment difficulty, and because the PET MR scanner coil had to be changed during the study, completion of scanning was delayed and is expected to be complete by mid-2020, and analyses and publication by end 2020.

SIGNIFICANCE AND OUTCOMES

Although we are yet to provide completed analyses at this stage, this study remains, to the best of our knowledge, the first ever study to investigate neuroinflammation and dementia in type 2 diabetes using the best available technique that can directly quantify neuroinflammation in vivo.

This study will generate novel data that will determine the extent to which neuroinflammation is likely to have a major role in the pathogenesis of dementia in type 2 diabetes. In addition, the study will explore, also for the first time, potentially important relationships among neuroinflammation and cerebral atrophy that may help clarify underlying mechanisms. The data from this important study will generate considerable scientific interest regardless of the result, but the demonstration of a positive association between neuroinflammation and type 2 diabetes will have major scientific, clinical and public policy implications.

PUBLICATIONS / PRESENTATIONS

In preparation