

Researchers identify out of control immune system linked to neurodegenerative diseases

Published on May 13, 2016 at 10:17 AM

AN out of control immune system has been identified as a possible cause of neurodegenerative diseases such as Alzheimer's.

Researchers at the University of Adelaide in South Australia have assembled strong evidence to suggest the body's immune system can develop an inflammatory response that kills brain cells.

Research Assistant Danielle Fornarino said millions of people were affected by neurodegenerative diseases and dementia but there had previously been no definitive cause.

"People had looked at various forms of proteins that can be produced in neurodegenerative diseases, which can have a tendency to aggregate," she said.

"That's definitely the case with Alzheimer's disease and there have been longstanding studies that have looked at the potential involvement of protein deposits called amyloid plaques.

"We have a model for Huntington's that looks at the type of cellular signalling that occurs and through our genetic interactions studies we identified the innate immune system as being directly involved in cellular toxicity."

The immune system is the body's defence against disease and foreign cells but is susceptible to inactivity because of various triggers including genetic mutations, infection, toxins or physical injury.

Neurodegenerative diseases occur after nerve cell damage or loss in the brain or peripheral nervous system. The most distinct forms include Alzheimer's, Parkinson's and Huntington's.

More than five million people are currently diagnosed with Alzheimer's disease in the United States alone with a further 500,000 estimated to be living with Parkinson's disease.

University of Adelaide Head of Genetics and Evolution Professor Robert Richards said each disease had the same underlying mechanism and common pathway of nerve cell loss.

"When we pulled the evidence together, it made a very strong case that uncontrolled innate immunity is indeed the common cause," he said.

"We now need to further investigate the immune signalling molecules, to identify new drug targets that will delay the onset and/or halt the progression of these devastating diseases."

Professor Richards, who is leading the study, recently travelled to the United States to work at the National Institute of Health in Washington to extend collaboration and build a stronger understanding of the involvement of innate immune pathways and processes.

The research has been published in the journal *Frontiers in Neuroscience*.

Source:

<http://www.adelaide.edu.au/>
