MedicalXpress

Scientists make advance in dementia research

November 8 2010

The preservation of a protein found in particular synapses in the brain plays a key role in protecting against vascular dementia after a stroke, say researchers at King's College London.

The study, funded by the Dunhill Medical Trust, is published today in the 9 November issue of *Neurology*, the medical journal of the American Academy of Neurology. Researchers say the study findings increase understanding of vascular dementia, and highlight a possible target for future diagnoses and treatment of the condition.

Professor Paul Francis, King's College London, said: 'Vascular dementia accounts for 15 to 20 per cent of the 25 million people worldwide with dementia, yet there is currently no effective treatment. It is common for people to develop vascular dementia after suffering a stroke, which can be devastating for patients and their carers.

'Understanding the chemical processes that affect the brain when people develop vascular dementia is a vital step towards identifying potential treatments for this common condition. The findings of this study take us that little bit closer towards achieving this goal.'

Vascular dementia, the second most common form of the condition, is caused by problems in the supply of blood to the brain, such as a stroke, and can affect memory, thinking, behaviour and the ability to perform everyday activities. One in three older people who have a stroke develop dementia within three months, with a 10-fold increased risk of dementia over five years.

The team, led by Professor Paul Francis at King's in collaboration with Newcastle University, studied differences in nerves and synapses in the brain tissue of individuals with and without dementia, over half of which had also suffered a stroke previously.

A synapse is a tiny gap between two neurones (nerve cells) in the brain, and information is transported across this gap by a neurotransmitter. Synapses that use glutamate (an amino acid) as a neurotransmitter are known to be related to memory and cognition, and contain a protein called VGLUT1.

The autopsy study specifically looked at the levels of VGLUT1 by analysing brain tissue from 73 individuals, obtained from the Brains for Dementia Research programme. Forty-seven individuals had a form of cerebrovascular disease, triggered when the blood supply to the brain is disturbed in some way, such as a stroke. Twenty-seven of these people had undergone an annual cognition test in the years before their death as part of the Cambridge Assessment of Mental Health for the Elderly (CAMCOG) evaluation.

The findings show a correlation between levels of VGLUT1 and cognition scores – the higher the concentration of VGLUT1, the better they did in the CAMCOG cognition assessment.

Crucially, the study also showed that in those individuals who did not develop dementia after a stroke, the levels of VGLUT1 were significantly higher.

These findings suggest that if levels of VGLUT1 can be preserved artificially after a stroke, the chances of developing vascular dementia could be significantly reduced.

Provided by King's College London