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Eyes the key to spotting Alzheimer's

NZ scientists make ground-breaking discoveries in diagnosis of the disease

by Martin Johnston
health reporter

The eye has proven to be an effective window on the brain in a ground-breaking study of Alzheimer's disease.

Researchers from Auckland University and Auckland City Hospital have shown the potential value of eye measurements in diagnosing the degenerative brain disease which is the commonest cause of dementia.

The researchers measured the optic nerve where it enters the back of the eye in 40 people with Alzheimer's and 50 without. The optic nerve carries visual information to the brain. In Alzheimer's disease it atrophies, as does nerve tissue in the brain.

The measurements were made with a scanning laser ophthalmoscope, a highly accurate machine which takes a three-dimensional picture. It is also used to diagnose glaucoma.

One of the researchers, Associate Professor Helen Danesh-Meyer, an eye specialist, said yesterday the study produced clear results.

"It showed people with Alzheimer's have a three to five times greater risk of showing evidence of loss of optic nerve tissue."

With further research it might be possible to develop the technique into a more effective diagnostic test for Alzheimer's than current methods, which involved mental state assessment and magnetic resonance imaging (MRI) scans of the brain.

CREEPING CONDITION

- Alzheimer's is mainly a disease of the elderly and one that is difficult to diagnose in its early stages.
- It affects up to 30,000 people in New Zealand.

RESEARCH: Helen Danesh-Meyer with a scanning laser opthalmoscope. PICTURE / MARTIN SYKES

But a single session of optic nerve measurements alone was not yet capable of diagnosing the disease, Dr Danesh-Meyer said, because of the wide variation of the measurements across the population.

"What I think is going to be most useful is to see if we can follow Alzheimer's patients progressively — to see whether, with serial examinations six-monthly or yearly, they are continuing to loose optic nerve tissue.

"That may give a window. Perhaps you can get a reflection of what's happening in the brain and what's happening in response to treatment.

"If they are on medication you can see whether the rate of loss of nerve tissue may be predictive of how they are responding to the treatment and decide whether you continue treatment or not.

"That's the exciting next step of the study. We would certainly like to do that."

The study will be published next month in *Neurology*, the world's leading journal in the field.

A medical adviser to Alzheimer's NZ, Dr Phil Wood, a Waitemata District Health Board geriatrician, said the optic nerve tests might, if used with tests of "peripheral markers" of the disease, like certain MRI brain scans, prove useful for early diagnosis.

"Hopefully, coupled with good treatment, we can get on to things before Alzheimer's becomes an obvious problem."

Dr Danesh-Meyer said the thinning of the optic nerve in Alzheimer's patients was discovered in the 1980s in samples from dead patients. Photographs were taken of the optic nerve, but the process took several hours and was not clinically relevant.

Scanning laser ophthalmoscopes, which cost up to $100,000, had been available for a decade, she said, and were now used widely in the United States. Only a few clinics in New Zealand had them because of their cost.