

MRI scans gain attention as diagnostic tool for Alzheimer's detection

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(Medical Xpress)—Scientists can now detect early features of Alzheimer's disease using magnetic resonance imaging (MRI) scans.

In a study conducted by the Queensland Brain Institute (QBI) at The University of Queensland (UQ), researchers using MRI scans were able to detect loss of basal forebrain cholinergic neurons – an early and key feature of Alzheimer's disease.

Lead researcher Professor Elizabeth Coulson from QBI and her team used modeling techniques to observe the protein [receptors](#) in the brain responsible for [cell death](#) in the relevant region of the brain before the onset of Alzheimer's disease.

"The aim of this study was to determine whether loss of basal forebrain cholinergic neurons underpins changes, which can be detected through MRI using [diffusion tensor imaging](#) (DTI)," Professor Coulson said.

"By doing this, we were able to pinpoint significant signs of Alzheimer's onset, before the basal forebrain [cells](#) had actually deteriorated.

"Detecting cells before they die or degenerate gives opportunity for targeted intervention.

"It allows patients the opportunity to receive treatment to either reduce the effects or cease the onset of Alzheimer's."

Scientists are now looking to use DTI scans to detect these early signs of Alzheimer's in humans.

"These findings provide increased support for using DTI and probabilistic tractography as non-invasive tools for diagnosing and/or monitoring the progression of conditions affecting the integrity of the basal forebrain cholinergic system in humans, including Alzheimer's disease," Dr Coulson said.

The project will be published in *NeuroImage*, Volume 66, 1 February 2013, Pages 133–141.

More information: www.sciencedirect.com/science/article/pii/S105381191300066X

Provided by University of Queensland

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