

Alzheimer's damage occurs early

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The first changes in the brain of a person with Alzheimer's disease can be observed as much as ten years in advance - ten years before the person in question has become so ill that he or she can be diagnosed with the disease. This is what a new study from Lund University in Sweden has found.

Physician Oskar Hansson and his research group are studying biomarkers – substances present in spinal fluid and linked to [Alzheimer's disease](#). The group has studied close to 140 people with mild memory impairment, showing that a certain combination of markers (low levels of the substance beta-amyloid and high levels of the substance tau) indicate a high risk of developing Alzheimer's disease in the future.

As many as 91 per cent of the patients with mild memory impairment who had these risk markers went on to develop Alzheimer's within a ten-year period. In contrast, those who had [memory impairment](#) but normal values for the markers did not run a higher risk of getting Alzheimer's than healthy individuals.

Oskar Hansson previously carried out a study showing that pathological changes can be seen in the brain of an Alzheimer's patient five years before the diagnosis. The new study has thus doubled this time span to ten years.

"This is a very important finding with regard to the development of new therapies against the disease. All prospective therapies have so far shown to be ineffective in stopping the disease, and many people are concerned

that the pharmaceutical companies will give up their efforts in this field. But these failures may depend on the fact that the new therapies were initiated too late. When a patient receives a diagnosis today, the damage has already gone too far," says Oskar Hansson.

With the help of the biomarkers studied by the group, pharmaceutical companies will now be able to identify the people with mild symptoms who run the highest risk of developing Alzheimer's within a ten-year period. These individuals can then be offered the opportunity of taking part in trials for new medicines, while those who run a low risk of developing the disease do not need to be involved. A new trial of this kind is already underway, on the basis of the earlier study by the Hansson group.

The 90 per cent accuracy of the risk markers means that they are not sufficient as the only method for early diagnosis of Alzheimer's. But if they can be combined with a clinical assessment and, for example, imaging of the blood flow in the brain, it should be possible to increase the level of accuracy, according to Oskar Hansson. However, this will only be relevant once drugs that are effective in slowing down the disease have been developed. Only then will it really be meaningful to identify patients earlier than is currently possible.

By observing how the levels of the biomarkers develop over the ten years before the patient's diagnosis, the research group has also been able to map the progression of the disease in the [brain](#). The results indicate that it starts with a modified turnover of beta-amyloid. Only later is this followed by changes in the tau protein and damage to nerve cells. This can be important information for those developing new therapies for Alzheimer's.

Provided by Lund University

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