New clue that Alzheimer's is an infection, like 'mad cow' disease

Injection of diseased tissues causes disease in healthy mice

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Alzheimer's disease is becoming more and more, for scientists, to mad cow disease and prions, those misfolded proteins that mysteriously spread it, would be the culprits. Experiments carried out in recent years point to an infectious origin of this senile dementia with no known cause, and the most recent one constitutes one more important clue, although it cannot yet be assured.

Claudio Soto, from the University of Texas and the Spanish Joaquín Castilla, from the CIC bioGUNE have inoculated extracts from the brains of Alzheimer’s patients into the brains of mice and have found that the consequence is the formation of deposits of the beta-amyloid protein (misfolded) that characterize the disease. The accumulation of amyloid plaques increased progressively over time after inoculation, with characteristic lesions observed in areas of the brain far removed from the injection site, the scientists note. "Our results suggest that some of the brain abnormalities associated with Alzheimer’s disease may be induced by a transmission mechanism similar to that which occurs in transmissible spongiform diseases, also called prion diseases," explains Castilla. The research is published in the journal Molecular Psychiatry.

This type of experiment has become common with respect to diseases caused by prions that are clearly communicable, such as mad cow disease. Does this mean that it can already be said that Alzheimer's has an infectious origin? "The main difference between prion diseases, eminently infectious, and Alzheimer's disease is that in the former, the process of accumulation of prions in the brain of the infected individual inevitably causes their death, while the accumulation of amyloidogenic peptide from plaques of Alzheimer’s does not cause it," Castilla says. Prions are very particular infectious agents, which are not easily transmitted between individuals as far as is known. This is the case if other neurodegenerative diseases,

Alzheimer’s is a complicated disease, of which many aspects are still unknown. For example, it is not known whether misfolded protein plaques are the cause of the pathology, which results in neuronal death, or one more symptom of excess of this peptide. In fact, the mice showed no pathology. "The main problem when classifying Alzheimer’s disease as an infectious disease lies in the absence of adequate models that reproduce each of the pathogenic processes of the disease. Although we have shown that the main event, the formation of plaques amyloides, can reproduce artificially in a similar way to what happens in a prion infection, extrapolating this data to the fact that
Alzheimer’s disease is an infectious disease is still premature", concludes the Spanish researcher.