

Paris, 1 February 2016

Press release

Alzheimer's disease: a new immunotherapy approach?

A study conducted on mice by researchers at Inserm and UPMC (Pierre and Marie Curie University) offers a new type of immunotherapy approach for treating Alzheimer's disease. This involves amplifying a specific population of T lymphocytes that regulate immune and neuroinflammatory mechanisms that develop during the disease.

These results are published in the journal *Brain*.

A new immunotherapy strategy for treating Alzheimer's disease. This may be validated by the new work carried out by the Inserm team "Immune System, Neuroinflammation and Neurodegenerative Diseases" at UMRS 938 "Saint-Antoine Research Centre" (Inserm/UPMC) in Paris. In recent years, a body of substantive work has enabled the start of gaining further insight into complex immune and neuroinflammatory mechanisms associated with Alzheimer's disease. The Inserm team at the Saint-Antoine Research Centre offers further proof of concept on the efficacy of innovative immunotherapy strategy in mice that is based on an immunomodulation approach.

Researchers have shown, in earlier work with mice, that a specific population of T lymphocytes, known as T regulators (or Treg), modulated specific A β peptide T lymphocytes that accumulate in the brains of sick people. "Treg cells may act in different ways to modulate T lymphocyte response in general. However, there are other aspects of neuroinflammatory reactions observed in this type of disease", states Guillaume Dorothée, Inserm Research Fellow in charge of this study. As such, researchers chose to evaluate the effect of Treg cells on disease progression using a mouse model.

Interleukin-2: Therapeutic Strategy

To do this, they either depleted or amplified Treg cells at the early stage of the disease. They found that a Treg deficiency accelerated the onset of cognitive disorders and was associated with a decrease in the presence of microglial cells in deposits of A β peptide. "Additional studies seem to suggest a change in the functional profile of these inflammatory cells that are chronically activated during the disease which would have a rather beneficial role early in the disease process", according to the researcher. By contrast, prolonged Treg amplification using low doses of interleukin-2 injected intraperitoneally increases the microglial cell response and delays the onset of memory impairment.

This immunomodulation approach involving the injection of low doses of interleukin-2, already tested in some bone marrow transplant clinical protocols and for type 1 diabetes, now seems to be a new therapeutic strategy for Alzheimer's disease. Researchers are already planning a pilot clinical trial in humans and are also considering the possibility of modulating some specific sub-populations of T lymphocytes to refine the response.

Sources

Regulatory T cells delay disease progression in Alzheimer-like Pathology

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Brain, 01 February 2016

DOI: [dx.doi.org/10.1093/brain/awv408](https://doi.org/10.1093/brain/awv408)

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