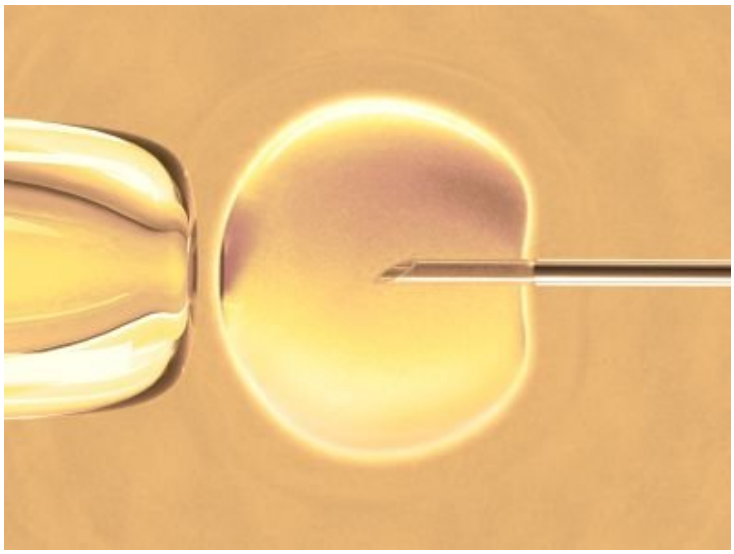
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Stem cells can help prevent Alzheimer's disease

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Stem cells can help prevent Alzheimer's disease



Singapore: In the first study of its kind, researchers at one of Korea's leading university and the RNL Bio Stem Cell Technology Institute have found that adult stem cells may not only have a positive effect on those suffering from Alzheimer's disease, but also can prevent the disease. Using fat-derived adult stem cells from humans (adMSCs, or human, adipose-derived mesenchymal stem cells), researchers were able to cause Alzheimer's disease brains in animal models to regenerate.

The researchers, for the first time in history, used stem cells to identify the mechanism that is key to treatment of Alzheimer's disease, and demonstrated how to achieve efficacy as well as prevention of the symptoms of Alzheimer's with adult stem cells, a "holy grail" of biomedical scientists for decades.

Alzheimer's disease, the most common form of dementia (loss of brain function), is the 6th leading cause of death, and affects one in eight people - more than breast cancer. As of 2010, there were 35.6 million people with Alzheimer's disease in the world, but this number is expected to double every 20 years.

It is estimated that the total cost of Alzheimer's is $604 billion worldwide, with 70 percent of this cost in the US and Europe. To put that in perspective, Alzheimer's care costs more than the revenues of Wal-Mart ($414 billion) and Exxon Mobil ($311 billion), according to the British World Alzheimer's Report of ADI. The cost of Alzheimer's is at the top of health economists' list of the disorders of aging that could topple nations' entire economies, and that regularly ruin not only the lives of patients but of their relatives.

According to the results of this first major study, Alzheimer's may soon be a preventable disease, or even a thing of the past. Equally important, the safety human administration of the kind of adult stem cells used in this experiment has been established in multiple articles and government-approved clinical trials.

The study was jointly led by Seoul National University Professor Yoo-Hun Suh and RNL Bio Stem Cell Technology Institute director Dr Jeong-Chan Ra. The researchers and their teams injected stem cells into mice genetically designed to have the core symptoms and physiology of Alzheimer's disease. They were able to identify that these human stem cells, derived from adipose tissue, behave in a very special way when injected into the tail vein of mice subjects. The cells migrated through the blood brain barrier, thought by many to be impossible for adult stem cells to cross, and went into the brain. In fact, fluorescent labeled cells were monitored for distribution in subjects and the team identified that the infused cells migrated throughout the bodies including brain except the olfactory organ, and therefore confirmed that IV infused stem cell can reach to the brain across the blood brain barrier.

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The team infused human adipose stem cells intravenously in Alzheimer model mice multiple times two weeks apart from three month to 10 month. Once there, the mice who received cells improved in every relevant way: ability to learn, ability to remember, and neuropathological signs. More important, for the first time ever, Alzheimer model mice showed the mediation of IL-10, which is known for anti-inflammation and neurological protection.

The team also found that stem cell restored special learning ability from Alzheimer model subjects with great reduction of neuropathy lesions. This was found using tests used for Alzheimer's disease: behavioral assessment. In assessment it was found that stem cells' therapeutic effect on Alzheimer's disease was tremendous. This was also found in pathological analysis. The key though was prevention: the scientists showed that stem cells, when infused into Alzheimer's mice, decreased beta amyloid and APP-CT, known to cause brain cell destruction, leading to dementia and Alzheimer's disease. In the lab it was clear that stem cells increased neprilysin, which hydrolyzes toxic proteins. No other compound or treatment has ever suggested so strongly the potential to prevent, as well as stop, this epidemic of incurable dementia sweeping across suffering patients and their families.

Stopping Alzheimer's disease, let alone preventing it, is the focus of thousands of researchers worldwide. Speaking of their breakthrough discovery, Professor Yoo-Hun Suh, who led the study, said, "It is a ground breaking discovery that such a simple method as IV injection of the safest autologous adipose stem cells, without causing any immune rejection, or any ethical issues, opened a new door to conquering Alzheimer's disease, one of the most horrible, expensive and incurable diseases of our time."

Dr Jeong-Chan Ra said, "It has never been more clear that it is an ethical imperative for governments to provide patients with incurable diseases with their right to participate not only in studies like this but in therapies with such obvious potential, once they have been tested as many times for safety as has our technology." Both scientists stressed that the real breakthrough in their complex research is the prevention of the onset of symptoms.