

Stem cell injection gives 'jump start' to stroke victims

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Stroke patients have recovered control over their bodies after having stem cells syringed directly into their brains in an early-stage clinical trial.

The injection, which involves drilling a hole through the skull, appears to "jump start" the damaged brain circuits without any serious side-effects, although it is still not quite clear how the therapy works. Some of the patients were able to abandon their wheelchairs and walk after the operation.

More than 150,000 strokes occur each year in Britain — one every three and a half minutes. A quarter are fatal within 12 months and half of all survivors have some kind of disability.

The condition, where the blood supply to an area of the brain is cut off, is difficult to treat. The most effective emergency medicine, alteplase, only works on patients who have suffered blood clots and if it is delivered within four and a half hours of the stroke.

The findings from a new stem cell therapy trial in the US are the strongest evidence yet that there may be another, more powerful tool. Scientists at Stanford University and the University of Pittsburgh recruited 18 patients with an average age of 61. Some could no longer walk after their strokes, while others had lost the use of an arm.

The researchers took mesenchymal cells — which can graduate into muscle, fat or bone tissue — from the bone marrow of two healthy donors and modified them so they would grow more quickly. The patients were given a light anaesthetic but remained awake while surgeons drilled a small hole into

their skulls and injected the cells into the region of the brain that had been hit by the stroke. They were all sent home the following day.

Writing in the journal *Stroke*, the scientists said the benefits to the patients' control over their limbs were significant even a month after the operation. Some had headaches, but there were no other obvious health problems linked to the surgery.

"Patients improved by several standard measures, and their improvement was not only statistically significant but clinically meaningful," said Gary Steinberg, professor of neurosurgery at Stanford, who carried out 12 of the procedures. "Their ability to move around has recovered visibly. That's unprecedented. At six months out from a stroke, you don't expect to see any further recovery."

Professor Jack Price, who led Britain's first trial of a similar therapy at King's College London, said: "I think this is an exciting development that brings stem cell therapy for stroke, and probably other brain disorders, a substantial step closer. That said, this is a controversial approach. This is not cell replacement, the original rationale for stem cell therapy in the brain. These cells do not even survive very long, and the mode of action is far from clear. Some commentators will not welcome this outcome."

Shamim Quadir, a spokesman for the Stroke Association, said: "The trial adds to a growing body of early clinical evidence suggesting stem cell treatment could promote recovery in people months, and even years, after having a stroke, bringing hope to many people living with a disability."