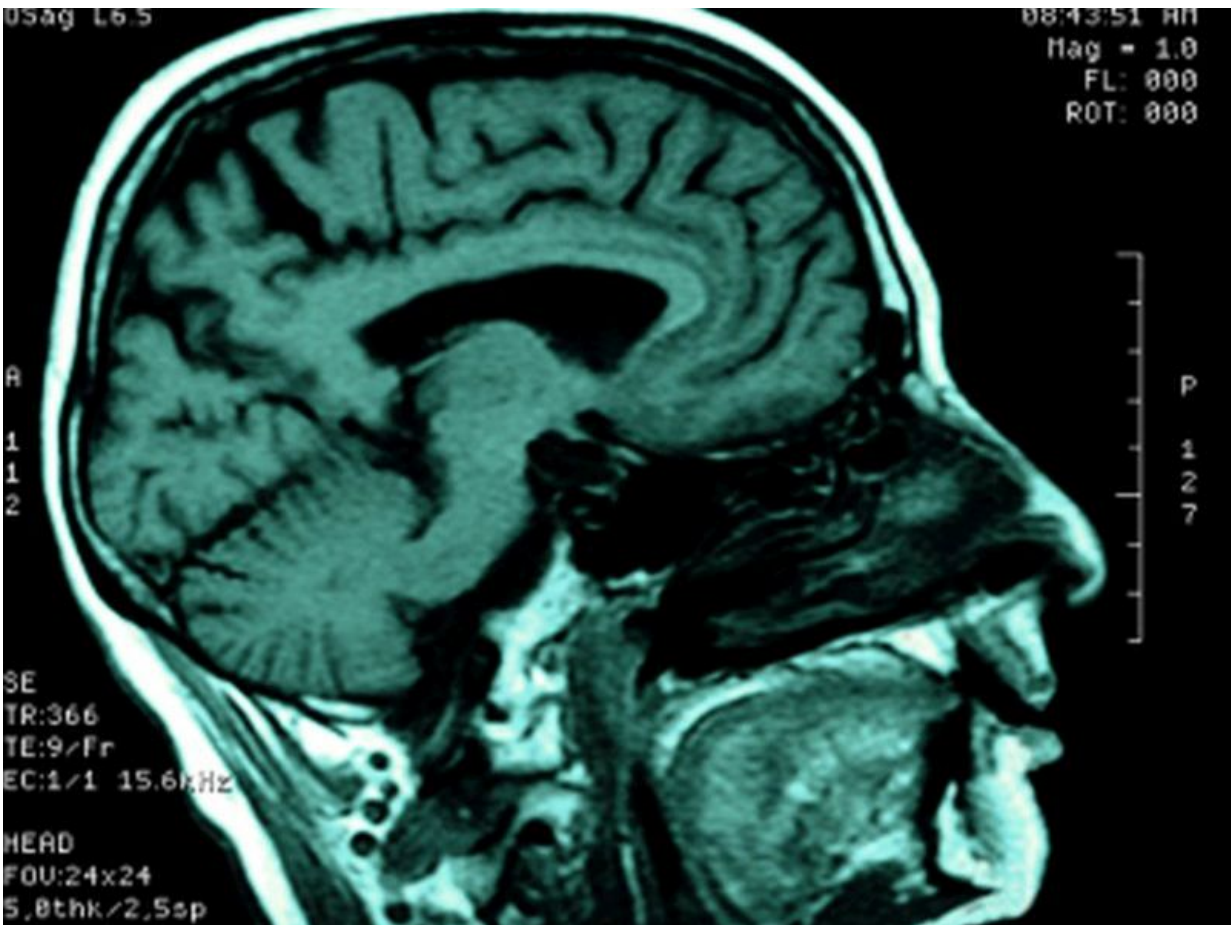


Stem cells may offer new hope to stroke survivors

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(HealthDay)—Preliminary research suggests that injecting adult stems

cells directly into the brain may give stroke patients a new shot at recovery long after their stroke occurred.

"We don't want to oversell this," stressed study lead author Dr. Gary Steinberg, chair of neurosurgery at Stanford University School of Medicine in Palo, Alto, Calif.

"This isn't the first stem cell trial for [stroke](#), and we're in the early phase, with only 18 patients. But after injecting [stem cells](#) directly into the brain of chronic [stroke patients](#), we were blown away," he said.

"These were patients who had significant motor deficits for six months or more," said Steinberg. "People who had a hard time moving their arm or leg, or walking. People for whom we have no real treatment. But after the injections we saw improvement in all 18 patients, as a group, within a month. Within days some were lifting their arms over their head. Lifting their legs off their bed. Walking, when they hadn't in months or years. The results were very exciting."

About 800,000 Americans experience a stroke every year. There are roughly 7 million [chronic stroke](#) survivors in the United States. Many of these survivors end up facing a new reality, in which lost motor function is unlikely to return, the researchers said.

"We're used to 90 percent or more of [stroke recovery](#) taking place in the first six months," Steinberg said. "So the thinking has been that we really can't restore function in chronic stroke patients because their circuits are dead."

But the new research set out to upend this thinking.

First, the research team selected people who had severe, but not extreme, motor impairment from a stroke. Most had experienced their stroke at

least one year prior to the study launch. Their average age was 61.

One such patient was Long Beach, Calif., resident Sonia Olea Coontz.

"I was 31 when I had my stroke on May 14, 2011," she said. Between then and her 2013 enrollment in the trial, Coontz struggled with a debilitating loss of mobility.

"I could only move my right arm very little," she recalled. "And I was in a lot of pain. Same with my leg. Walking was very difficult. Every time I went to the hospital I was in a wheelchair because it was just a lot easier. And speaking was hard. I always needed someone to help me communicate."

The experimental stem cell procedure began with doctors drilling a small hole through the skull. Patients had minimal anesthesia. In turn, neurosurgeons injected modified stem cells directly into multiple areas of the brain near the site of each patient's stroke.

The result: with no apparent blood abnormalities or significant side effects, all of the patients experienced significant motor control recovery within the first month. Younger patients tended to fare better, the investigators found.

Mobility continued to improve throughout the first three months. Gains were maintained at both the six month and one-year follow-up.

"After the surgery I was immediately better," said Coontz. "It was amazing. After the surgery the pain in my shoulder was gone. My arm, I could move it all the way up to the ceiling and back. And my leg was stronger. I didn't use a wheelchair after that. Ever."

And, she added in a clear voice, "I was also much better with speaking. I

still needed a little help. But my words were stronger. And it continued to get better. Even now it's still getting better."

How do the stem cells seem to help?

"We're still not exactly sure what's happening," admitted Steinberg. Because the stem cells tend to die off one to two months following injection, he suggested that "it's probably not that the stem cells are becoming neurons and reconstituting circuits. That's not what appears to be going on."

Dr. Ralph Sacco is chairman of neurology at the University of Miami's Miller School of Medicine. "A lot of people assume that the point of stem cells is that they will become new brain cells," he said.

"But in fact, we know that much of stroke recovery seems to take place in the parallel or surrounding or connecting regions next to the damaged stroke area," he added. Sacco is also the president-elect of the American Academy of Neurology.

"The latest thinking is that the big virtue of stem cells—in addition to their anti-inflammatory and immunological effect—may be their ability to secrete chemicals that activate those surrounding brain cells so that they can start to pick up function for the parts of the brain that no longer work right," Sacco said.

"In other words," Steinberg said, "we think these cells turn the adult brain into a neonatal or infant brain. And infants recover very well after a stroke, because their brains have greater plasticity, and the ability to form new connections between cells already in the brain."

Steinberg said that "somehow putting these stem cells directly into the brain jumpstarts circuits we had thought were irreversibly damaged or

dead, with remarkable results."

But as the research team embarks on a larger study involving 156 chronic stroke patients, Sacco urged caution.

"The results do sound amazing," he said. "But keeping in mind that everyone has long been looking for a miracle cure for stroke. It's really premature to draw conclusions. This is one very small study that was really set up to establish safety. More work will be needed."

But for patients like Coontz, the jury is already in.

"The other treatments before surgery didn't work," she said. "Not really. I felt like my whole body was dead. Like it wasn't working at all. Rehab didn't help. But after the surgery, it felt like my body was all of a sudden awake."

The study was published online June 2 in the journal *Stroke*.

More information: The American Heart Association has more on [current stroke treatments](#).

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