

Spinal cord device helped mice with Parkinson's

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By Julie Steenhuisen

CHICAGO (Reuters) - A spinal cord stimulator helped rodents with Parkinson's disease move more easily, offering the hope of a less-invasive way of treating the disease in humans, U.S. researchers said on Thursday.

"We see an almost immediate and dramatic change in the animal's ability to function when the device stimulates the spinal cord," said Dr. Miguel Nicolelis of Duke University in North Carolina, whose study appears in the journal *Science*.

If it works in humans, Nicolelis said, the device could be used to treat the disease early on, reaching far more patients than current stimulators, which are implanted deep in the brain, and can benefit only about one third of Parkinson's patients.

It would be easier and safer to install a stimulator in the spinal cord than in the brain, Nicolelis said. Both types of devices use pulses of electricity to control the tremors and stiffness caused by Parkinson's, a disease that affects an estimated 1.5 million Americans.

Parkinson's progressively kills brain cells that produce dopamine, a message-carrying chemical associated with movement. Dopamine replacement drugs can delay symptoms for a while but there is no good treatment and no cure.

"This technique is much easier, cheaper and can be done in conjunction with a much smaller dose of medication," Nicolelis said in a telephone interview. "It addresses Parkinson's disease in a very different way.

In healthy people, neurons fire at different rates as information is sent between the brain and the body to initiate motion. Nicolelis said the problem in Parkinson's disease is that neurons become scrambled and begin firing all at once.

IMPROVING DRUG EFFECTS

"You create this beating pattern that prevents the neurons from actually producing the motor commands the animals or patients need to behave normally," he said. "What we did was find a way to disrupt that."

The new technique involves implanting two paper-thin metal probes into a small slit in the spine so they touch the outside of the spinal cord. Current is then passed over the area to deliver an electrical pulse, stimulating peripheral nerves that pass information between the brain and body.

The researchers tested the device on mice and rats with a form of Parkinson's in combination with different doses of a dopamine replacement drug known as L-dopa.

When they tried the device without the drug, the animals were 26 times more active. When used with the drug, only two doses were needed to produce movement, compared with five doses when they used the medication alone.

L-dopa tends to lose its effect over time, but Nicolelis said the treatment may help patients stay on the medication longer. His team plans to begin testing the device in primates this year, and hopes to begin human trials in 2010.

Device makers such as Medtronic Inc and St. Jude Medical market deep brain stimulation devices for movement disorders including Parkinson's, essential tremor and dystonia, and have begun to study their use in depression and obsessive-compulsive disorder.

(Editing by Maggie Fox)

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