Deep brain's electrical stimulation alleviates chronic pain: Study

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Electrical stimulation of a deep, middle brain structure blocks pain signals at the spinal cord level without drug intervention, finds a new study.

"This is the first study to use a wireless electrical device to alleviate pain by directly stimulating the ventral tegmental area of the brain," said Yuan Bo Peng, a psychology professor at the University of Texas in Arlington.

"While still under laboratory testing, this new method does provide hope that in the future we will be able to alleviate chronic pain without the side effects of medications," Peng added.

Peng and J.C. Chiao, an electrical engineering professor, detail their discoveries in the neuroscience journal Experimental Brain Research.

In their experiments, the researchers used their patented custom-designed wireless device to demonstrate that stimulation of the ventral tegmental area reduced the sensation of pain. They also confirmed that this stimulation reduced pain signals in the spinal cord, effectively blocking the perception of pain.

The process also triggered the release of beneficial dopamine, which may reduce the emotional distress associated with long-term pain, researchers said.

"Until this study, the ventral segmental area of the brain was studied more for its key role in positive reinforcement, reward and drug abuse," Peng said. "We have now confirmed that stimulation of this area of the brain can also be an analgesic tool," he added.