US scientists demonstrate that electrical stimulation of deep brain structures under the cortex could help ease chronic pain

As a prescription opioid Epidural Infection has led to chronic pain, and so much that the White House has announced new efforts to combat addiction and prevent the thousands of overdose-related deaths reported in the US each year.

But a team of Texas A&M engineers and neuroscientists has been using an alternative solution: electrical stimulation of a deep, mobile brain structure that blocks pain signals at the spinal cord level without drug intervention. The process also triggers the release of beneficial dopamine, which may reduce the emotional connection associated with long-term pain, researchers said.

"This is the first use in a living human being of a therapeutic device that addresses pain by stimulating an area that is part of the brain," said Yuem Bi Peng, a psychology professor at Texas A&M University. "While it is still under laboratory testing, this new method could provide hope that in the future we will be able to alleviate chronic pain without the side effects of medication."

Peng and C. Chia, an electrical and computer engineering professor, detailed their discovery in a new paper published in the leading journal Nature's Scientific Reports. Both researchers are with the Department of Electrical Engineering and Computer Science.

The project was supported partly by grants received from the Texas A&M, the National Institutes of Health, and the Texas Medical Center. It also involved a research partnership among health care providers and engineers with a goal to help people recover from chronic pain.

More than 50 million Americans suffer from some form of chronic pain in 2014, and 120 million were diagnosed in 2015. Almost half were related to opioid use, according to the Centers for Disease Control.

In their experiments, Peng and Chia used their patented custom-designed wireless device to demonstrate that stimulation of the spinal cord relieves the sensation of pain. They also confirmed that the stimulation reduced pain signals in the spinal cord, effectively blocking the perception of pain.

Peng and Chia, with the help of the College of Science, conducted the research on this important work.

"Our approach for chronic pain is at the forefront of current medical research," said Dr. T. Peng and Dr. Chia's research is high impact and focused on health and the human condition, a key theme within the UT’s Strategic Plan 2030. (Full text:)

Clinical Impact

Chia has spent years studying how the brain and its nerves can be used to improve pain management. He has also developed a new technology to treat chronic pain.

Chia and his team believe that their new technology could be used to help people with chronic pain. They have also developed a new technology to treat chronic pain.

Chia et al. have contributed to the study of electrical stimulation in the rodent model of chronic pain. Their research is focused on understanding the mechanisms underlying pain transmission in the spinal cord and how they can be used to develop new therapies for chronic pain.

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