An Improved Method of Deep Brain Stimulation for the Treatment of Parkinson's Disease

Published date: March 28, 2017

Technology description

Researchers at the University of California, Santa Barbara have developed an improved method of deep brain stimulation (DBS) for people with Parkinson’s disease. Based on the hypothesis that DBS’s efficiency is directly related to its ability to desynchronize pathologically synchronized neurons, this method calculates the optimal DBS stimuli for desychronization using weaker, non-pulsatile stimuli. This (i) allows the pacemaker battery to last longer, (ii) reduces the stimuli’s effect on other parts of the brain, and (iii) reduces the likelihood of adaptation by the neurons.
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Additional Information

Background
Parkinson’s disease affects an estimated 3-4 million people in the United States alone. A current FDA-approved treatment for Parkinson’s disease is deep brain stimulation (DBS), in which a neurosurgeon implants an electrode into the patient’s motor control region that periodically injects a high frequency, pulsatile electrical current. Some issues/dangers of pulsatile DBS are (i) The battery in the implanted stimulus must be replaced every few years, which is expensive and has surgical risks; (ii) The stimulus might affect other parts of the brain; and (iii) The neurons might adapt so that the treatment loses its effectiveness.

Application area

Parkinson's treatment
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Advantages

Longer pacemaker battery life
Reduced risk of affecting other parts of the brain
Continual efficiency by preventing adaptation

Institution

University of California, Santa Barbara

Inventors

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