Vagal Suppression Of Neurally-Induced Atrial Fibrillation

Tech ID: 28772 / UC Case 2015-792-0

SUMMARY

UCLA researchers in the Department of Cardiology have identified a novel mechanism for controlling atrial fibrillation via neuromodulation.

BACKGROUND

Atrial fibrillation (AF), an abnormal heart beat characterized by rapid and irregular beating, affects more than 3 million people in the United States and by 2050 is projected to affect between 5-12 million people. Current therapy options include pharmacologic and surgical treatments such as blood thinners or beta blockers, and cardiac ablation respectively. Ablation and surgical procedures provide short term AF management (80% success at 1 yr) but suffer from failure over the long term where success rate drops to 60% at 5 years after treatment. Surgical ablation is also associated with complications such as atrial stiffness, micro-embolic episodes and risk of stroke. Therefore, a novel treatment for AF with greater long term success and less risk of complications remains an unmet need.

INNOVATION

Professor Ardell has identified a novel means of preventing or blunting atrial fibrillation by modulating the neuronal network which controls the heart. Research to date has demonstrated that therapeutic potential of targeting cardiac neurons to modify atrial arrhythmia and the ability of vagal nerve suppression to blunt atrial fibrillation that results from excessive neural inputs. Targeting the network of cardiac neurons that contribute to atrial fibrillation therefore represents a novel approach to treat AF. This novel therapeutic approach is innovative for its rapid therapeutic onset, ability to be rapidly reversed, therapeutic memory (3 minutes of treatment can confer protection against AF for over 25 minutes).

APPLICATIONS

Treatment for atrial fibrillation

ADVANTAGES

- A single point of treatment can modulate a wide range of neurons within the local heart nerve network
- Rapid therapeutic onset and retains therapeutic memory, but is quickly reversible

STATE OF DEVELOPMENT

Neuromodulation of cardiac neurons to prevent or blunt atrial fibrillation has been demonstrated in canines

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,241,579	02/08/2022	2015-792

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Neural Modulation Of Autonomic Nervous System To Alter Memory And Plasticity Of The Autonomic Network
- Spatio-Temporal Pacing and Recording for Evaluation, Induction, and Mapping of Arrhythmias

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OTHER INFORMATION

KEYWORDS

atrial fibrillation, vagal nerve suppression, neuromodulation, cardiac, cardiovascular, nerve stimulation, nerve modulation

CATEGORIZED AS

- **Medical**
  - Disease: Cardiovascular and Circulatory System

RELATED CASES

2015-792-0

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